



PROJECT MANUAL

CITY OF SAULT STE. MARIE

PULLAR KITCHEN EXHAUST HOOD

B-24-23

Prepared By:

UP Engineers & Architects, Inc.
October 23, 2023

CITY OF SAULT STE. MARIE
PULLAR KITCHEN – EXHAUST HOOD

B-24-23

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CITY OF SAULT STE. MARIE, MI
B-24-23
NOTICE TO BIDDERS

Sealed Bid Proposals marked “**PULLAR KITCHEN EXHAUST HOOD B-24-23**” will be accepted at the office of the Purchasing Agent, City Hall, 225 E. Portage Avenue, Sault Ste. Marie, Michigan, 49783 until 3:00 P.M. on November 21, 2023, at which time and place all Bid Proposals will be opened and publicly read. The Bid Proposals will be for furnishing the following:

The project consists of installation of a new kitchen hood and associated electrical and carpentry work per drawings and documents contained in the project manual.

A walk thru meeting is being held at the Pullar Stadium on November 9, 2023, at 10:00 a.m. All interested contractors are encouraged to attend.

Questions regarding this project should be directed to jgagnon@upea.com.

Specifications, bid forms, and additional information may be obtained at the office of the Engineer, U.P. Engineers & Architects, Inc. 707 Ashmun Street, Sault Ste. Marie, MI 49783 for a non-refundable fee of \$25.00 for a hard copy or \$10.00 for a pdf. All Bid Proposals shall be submitted in sealed envelopes marked as to the Bidder and the contents therein and submitted to the purchasing agent stated above.

The CITY reserves the right to reject any or all Bid Proposals, waive irregularities in any Proposal and make the award in the best interest of the City.

Robin R. Troyer, MMC
Deputy City Manager



INFORMATION FOR BIDDERS

1. PROPOSALS

Each Proposal shall be made on a form prepared therefore by the CITY and included as one of the Contract Documents, and shall be submitted, in a sealed envelope bound together with the other Contract Documents that are specified to be returned with the Bid Proposal, except the Plans, bearing the title of the Project and the name of the Bidder. The Plans may be returned in a separate package but are not required to be returned.

The Bid Proposal shall be legibly prepared in ink or typewritten. All Unit Price or Lump Sum entries made on the Schedule of Items page in the Bid Proposal by the Bidder in the "Unit Price" column and the "Bid Amount" column shall be handwritten in ink or typed in place.

Where a LUMP SUM (LS) is called for, it shall be entered only in the "Bid Amount" column.

The unit prices, as stated, will govern in determining the correct total of the Bid Proposal. In case of a difference between the stipulated amounts in the Proposal written in words and the stipulated amount written in figures, the stipulated amounts in written words shall govern.

If a unit price or a lump sum already entered by the Bidder on the Bid Proposal is to be altered, it shall be crossed out in ink. The new unit price or lump sum shall be entered above or below it and initialed in ink by the Bidder on the line of the change each time the unit price or lump sum is altered.

The Bid Proposal shall be legally signed, and the complete address of the Bidder given where requested.

Proposals shall be delivered by the time and to the place stipulated in the Advertisement. It is the sole responsibility of any Bidder to see that his Proposal is received in proper time. Any Proposal received after the scheduled time for opening of Proposals shall be returned to the Bidder unopened.

Proposals will be opened and publicly read aloud at the time and place set forth in the Advertisement.

Any Bidder may withdraw his Proposal, either personally or by telegraphic or written request, at any time prior to the scheduled time for opening of Proposals.

Proposals shall not contain any recapitulations of the work to be done. Alternate proposals will not be considered unless expressly requested. Oral proposals or modifications will not be considered.

Any financial or propriety information submitted in response to this Bid Proposal will become a public record subject to disclosure under the Freedom of Information Act. THE INFORMATION WILL NOT BE TREATED AS CONFIDENTIAL.

2. EXAMINATION OF DOCUMENTS AND VISIT TO SITE

Before submitting a Proposal, Bidders shall carefully examine the Plans, read the elements of the Contract Documents, shall visit the site of the work, and shall fully inform themselves as to all existing conditions to be encountered, the nature of the ground, the difficulties and limitations involved in completing the Project and all other factors affecting the work proposed on this Project.

It is the intent of the Contract Documents to provide that the Project to be constructed under this Proposal shall be complete and ready for use, in every respect. Any minor items not specifically called for in the Plans or Specifications, but which are clearly necessary, are to be included, at no increase in the Contract Price.

The Proposal shall include a sum to cover the cost of all items of work to be performed such that the Project to be constructed under this Proposal shall be complete and ready for use in every respect.

The Bidder to whom this Project is awarded will not be entitled to any additional compensation or extension of time by reason of his failure to fully acquaint himself with the conditions at the site or by his failure to fully examine the Contract Documents.

3. SUBCONTRACTS; MATERIAL AND EQUIPMENT QUOTATIONS

The Bidder to whom an award is made will not be entitled to additional compensation or extension of time by reason of his failure to fully understand all sub-proposals or quotations.

The Bidder is responsible for all coordination between Subcontractors and suppliers during the bidding and construction so that a complete Project is furnished for the Contract Price and within the Contract Time. The completed Project includes the furnishing of all equipment, accessories, and appurtenances necessary for the proper operation and maintenance of the Project.

4. AWARD OR REJECTION

The Contract will be awarded to the lowest and/or best qualified and responsible Bidder complying with these instructions and with the Advertisement. The CITY reserves the right to reject any or all Proposals or to waive any irregularities or technicality in any Proposal in the best interest of the CITY.

5. INTERPRETATION OF DOCUMENTS

Interpretations of the meaning of the Plans, Specifications or other elements of the Contract Documents will not be valid if made orally to any Bidder. Oral interpretations, if given, shall be at the Bidder's risk and responsibility.

If any person contemplating submitting a Proposal is in doubt as to the true meaning of any part of the Contract Documents or finds discrepancies in or omissions from the Contract Documents, he shall request a written interpretation or corrections thereof, from the CITY.

Every request for such interpretation must be in writing, and to receive consideration, must be delivered to the CITY at least five (5) days prior to the date fixed for the opening of Proposals.

Any and all such interpretations and any other supplemental instructions will be in the form of written addenda to the Contract Documents which, if issued, will be mailed by certified mail with return receipt requested to all prospective Bidders at the addresses furnished for such purpose, not later than three days prior to the date fixed for the opening of Proposals. Failure of any Bidder to receive any such addendum or interpretation shall not relieve such Bidder from any obligations under his Proposal as submitted.

The CITY will not be responsible for any other explanations or interpretations of the Contract Documents.

Any addenda issued during the time of bidding or forming a part of the Contract Documents shall be included in the Proposal and shall be made a part of the Contract Documents. Receipt of each Addendum shall be acknowledged in the Proposal.

6. TIME

Time is of the essence in the performance of this Contract. The work to be done shall be started upon receipt of the Notice to Proceed and shall be prosecuted expeditiously for completion at the earliest possible date prior to the completion date or dates so specified in the contract documents.

7. PROPOSAL GUARANTY

Each Proposal shall be accompanied by a cashier's check, certified check, money order or a bid bond by a recognized surety company, in an amount of five percent (5%) of the total amount of the Proposal, payable to the CITY. In the event a Bid Bond is used, it must be on the form prescribed by the City of Sault Ste. Marie. The prescribed "Bid or Proposal Bond" form may be obtained by calling (906) 632-5730; it is also found within these bid documents. The Proposal guaranty may be forfeited to the CITY in case of failure on the part of the successful Bidder to enter into the attached form of Agreement to do the work covered by the Proposal at the price and within the time stated therein.

In the event a Certified or Cashier's Check is used for the Bid Bond amount and dated more than 10 days prior to the Bid Opening (Letting) date, the Bid Proposal may be held unresponsive and result in rejection of the Bid Proposal.

8. QUALIFICATIONS OF BIDDERS

It is the intention of the CITY to award this Contract to the Bidder most fully capable, both financially and as regards to experience, to perform and complete all work in a satisfactory manner. Evidence of such competency must be furnished, if desired, including a listing of similar projects which the Bidder has satisfactorily undertaken and completed.

9. REQUIREMENT FOR SIGNING PROPOSALS

Proposals which are not signed by the individual making them shall have attached thereto a power of attorney evidencing authority to sign the Proposal in the name of the person for whom it is signed.

Proposals which are signed by a partnership shall be signed by all of the partners or by an attorney-in-fact. If signed by an attorney-in-fact, there shall be attached to the Proposal a power of attorney evidencing authority to sign the Proposal, executed by the partners.

Proposals which are signed for a corporation shall have the correct corporate name thereof and the signatures of the president or other authorized officers of the corporation manually written below the corporate name following the word "By". If such a Proposal is manually signed by an officer other than the president of the corporation, a certified copy of a resolution of the Board of Directors evidencing the authority of such an official to sign the Proposal shall be attached to it. Such a Proposal shall also bear the attested signature of the secretary of the corporation and the impression of the corporate seal.

All Bidders shall complete the enclosed form entitled "Legal Status of Bidder". (See P-2)

10. EXECUTION OF AGREEMENT

The Bidder to whom an award is made will be required to enter into a written Agreement in the form hereto annexed, within twenty (20) days, Sundays and legal holidays excepted, after being notified of the acceptance of his Proposal and receipt by him of copies of the Contract Documents to be executed.

In case of failure to comply with this requirement, he shall be considered to have abandoned all rights and interest in the award, his Proposal guaranty may be declared forfeited to the CITY and the Contract may be awarded to another.

11. INSURANCE AND BONDS

The successful Bidder will be required to carry insurance in the amounts and kinds specified in Section I 1-2 of the Bid Documents. Such insurance must be with companies and in a form satisfactory to the CITY and the MDOT, and certificates of such insurance must be attached to each copy of the executed Contract Documents. The insurance certificates provided for this project shall include the City of Sault Ste. Marie and also the Michigan Department of Transportation as insured parties under this project.

The successful Bidder will be required to furnish for each set of the executed Contract Documents and conformed copies thereof, an original conformed Performance Bond and Labor and Material (Payment) Bond on the form attached hereto with a surety acceptable to the CITY, as follows:

- a. Performance Bond, Labor and Material (Payment) Bond each in the amount of One Hundred percent (100%) of the Contract Price to insure the completion of the entire Project according to the Contract Documents and to secure Payment of all labor, materials and Subcontractors according to the statutes of the State at that time in effect.

12. PERMITS AND LOCAL CODES

The successful Bidder shall obtain, at his expense, all required local and state construction permits and shall comply with all local and state building, electrical and plumbing codes and inspection requirements as applicable to this project.

13. NONDISCRIMINATION

Contracts for work under this Proposal will obligate the contractors and subcontractors not to discriminate in employment practices.

Bidders must, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the award of the contract.

Successful Bidders must, if requested, submit a list of all subcontractors who will perform work on the project and written signed statements from authorized agents of the labor pools with which they will or may deal for employees on the work together with supporting information to the effect that said labor pools practices and policies are in conformity with Executive Order No. 11246, as amended, and that said labor pools will affirmatively cooperate in or offer no hindrance to the recruitment, employment, and equal treatment of employees seeking employment and performing work under the contract or, a certification as to what efforts have been made to secure such statements when such agents or labor pools have failed or refused to furnish same prior to the award of the contract.

14. HEALTH AND SAFETY

The successful Bidder shall comply with the Health and Safety Regulations, Chapter XVII of Title 29 CFR, Part 1926, as promulgated by the Department of Labor, and/or applicable state and local Safety and Health Regulations. All questions regarding compliance and enforcement, as well as requests for the Regulations should be directed to the Department of Labor and/or local agencies.

15. EXISTING INFORMATION

Any notations shown on the plans are for general information purposes only and are not intended to relieve the Contractor of his responsibility of investigating all local conditions affecting the work. Such locations of public utilities as are shown on the plans are taken from sources believed to be reliable. The CITY will not be responsible for any omissions of, or variations from, the indicated location of existing utilities which may be encountered in the work.

No plea of ignorance of conditions which exist, or which may hereafter exist, or of any difficulties which may be encountered will be accepted as the basis for any failure or omission on the part of the Contractor to fulfill all of the requirements of this Contract, nor will such failure or omission be accepted as the basis for any claims of any nature for extra compensation or extension of time. The submission of a bid shall be considered as prima facie evidence of compliance with this section.

16. EMPLOYMENT OF LOCAL LABOR

In accordance with the goal of the City to increase employment opportunities wherever possible within our community, Bidders should be aware that one factor in considering bid award shall be the amount of local (Chippewa County) labor to be hired by the contractor and subcontractor. Each bidder is required to estimate the total man hours to be expended on the "on-site" construction of the project, and the percentage of those man hours which will involve local labor. Penalties for non-compliance will be agreed to prior to bid award.

The payrolls maintained by the CONTRACTOR shall include address, and shall be furnished to the City of Sault Ste. Marie upon request in order to assure compliance.

Bidders estimate as to total man hours to be expended in "on-site"

Construction. _____Man Hours

Bidders estimate as to man hours which will involve local

Labor _____%

(INFBID-C 04/02/03)

STATEMENT OF CONTRACTOR'S QUALIFICATIONS
FOR ALL CONTRACTS

This form, completely filled in and with attachments, shall be submitted upon request to the City Engineering Department by 10 a.m. on the second business day following date of bid opening. Failure to submit this form may be grounds for rejection of bid.

1. Date of Organization/Incorporation: _____
2. Type of Organization (Corporation, Partnership, etc.): _____
3. Officers/Principals
(Titles and Names): _____

4. States in which Organization is legally
qualified to do business: _____

5. What is your current bonding capacity? _____
6. Name of proposed bonding company for
this Project: _____
- Address and telephone number of agent: _____
7. Attach Financial Statement, including latest Balance Sheet, Income Statement, and Retained Earnings. (To be furnished if requested by City prior to bid award.)
8. List, on an attachment, three completed projects that best represent the building type, type of construction, and dollar amount similar to the project being contemplated. Also provide dates, names, addresses and telephone numbers for references.
.
9. List, on an attachment, all projects currently in progress, including type of work, contract amount, percentage of completion, name, and telephone number of the Owner(s) or their representatives, and Engineer/Architect.

10. List, on an attachment, all projects completed within the last five years, including the type of work, contract amount, and percentage of contract performed by your own forces.
11. During the last five years, what was your largest and average size project amounts in dollars: \$ _____ (Largest)
\$ _____ (Average)
12. Has your organization ever failed to complete any projects? If yes, list when, where and why on an attachment. _____
13. Has your organization or any predecessor or affiliate thereof been involved in bankruptcy, reorganization, insolvency, or receivership proceedings under federal or state law within the past ten years? If yes, describe the date and nature of the proceedings and court involved on an attachment. _____
14. Has your organization been involved in any lawsuits with Owners, Engineers/Architects, or other Contractors involving any projects within the last five years? If yes, describe the date and nature of the proceedings and court involved on an attachment. _____
15. Are there any outstanding liens filed against your organization? If yes, explain on an attachment. _____
16. List the type of work normally performed by your own forces. _____

17. List the names of the project manager and project Superintendent proposed for this project. Attach resumes.

I hereby certify the accuracy and completeness of all information on this form and attachments. The discovery of deliberate misinformation given herein shall be considered as grounds for contract termination.

Organization:

Signature/Title:

Date:

**CITY OF SAULT STE. MARIE
PULLAR KITCHEN
EXHAUST HOOD
B-24-23**

Project Summary

The project consists of installation of a new kitchen hood and associated electrical and carpentry work per drawings and documents contained in the project manual.

Name of Bidder: _____

BID FORM
FOR
Pullar Kitchen Exhaust Hood
BID NUMBER B-24-23
FOR
CITY OF SAULT STE. MARIE, MICHIGAN

To the City of Sault Ste. Marie (herein referred to as CITY):

The undersigned as Bidder hereby declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that he/she has read and examined the Advertisement, Information for Bidders, Agreement, Forms for Bonds (where applicable), Specifications and plans, as prepared by the CITY, and understands all of the same; that he/she or his/her representative has informed himself/herself fully with regard to the conditions to be met in the execution of the Contract, and the undersigned proposes to furnish all labor, materials, tools, power, transportation and construction equipment necessary for completing this project as herein specified for the CITY and perform related work in full accordance with aforesaid Contract Documents, including any and all Addenda officially issued; the receipt of which is hereby acknowledged:

Addendum No.	Date	Signature
_____	_____	_____
_____	_____	_____
_____	_____	_____

Bid Price: The Bidder agrees to complete the Work required for this construction project in accordance with the Contract Documents for the following unit prices and or lump sums as indicated starting on page BF-3.

**NAME, ADDRESS, LEGAL STATUS,
AND SIGNATURE OF BIDDER**

This Bid is submitted in the name of:

(Print) _____

The undersigned hereby designates below his/her business address to which all notices, directions or other communications may be served or mailed:

Street _____

City _____

State _____ Zip Code _____

The undersigned hereby declares that he/she has the legal status checked below:

- ☐ INDIVIDUAL
- ☐ INDIVIDUAL DOING BUSINESS UNDER AN ASSUMED NAME
- ☐ CO-PARTNERSHIP
The Assumed Name of the Co-Partnership is registered in
The County of _____, Michigan
- ☐ CORPORATION INCORPORATED UNDER THE LAWS OF THE STATE OF _____, The Corporation is,
- ☐ LICENSED TO DO BUSINESS IN MICHIGAN
- ☐ NOT NOW LICENSED TO DO BUSINESS IN MICHIGAN

The names, titles and home addresses of all persons who are officers or Partners in the organization are as follows:

NAME AND TITLE	HOME ADDRESS
_____	_____
_____	_____
_____	_____

BID FORM**CITY OF SAULT STE. MARIE, MICHIGAN****B-24-23****Project Title: Pullar Kitchen Exhaust Hood****Location: Pullar Stadium**

<u>Item No.</u>	<u>Item Code</u>	<u>Item Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>TOTAL (\$)</u>
1	BASE BID	Kitchen Hood Work	1	LS	\$	\$
2	BASE BID	Carpentry Work	1	LS	\$	\$
3	BASE BID	Electrical Work	1	LS	\$	\$
					TOTAL	\$

DESCRIPTION OF WORK:

The project consists of installation of a new kitchen hood and associated electrical and carpentry work per drawings and documents contained in the project manual.

The BIDDER agrees to complete all work as described herein and as shown on the plan sheets and specifications for the total sum of:

_____ Dollars (\$ _____)

(Amounts shall be shown in both words and figures; in case of discrepancy, the amount shown in words shall govern. Total will be checked using units & unit prices shown above.)

GENERAL NOTES

Measurement and payment shall be at the Contract Unit Price per pay item in the Proposal.

The undersigned as BIDDER, hereby declares that this Proposal is made in good faith, without fraud or collusion with any person bidding on the same contract.

The undersigned CONTRACTOR and CITY acknowledge for certain public agency construction contracts Michigan Statutes (Act No. 524, Public Acts of 1980) require the payment of interest on retainage. The parties hereto agree however, to waive the requirements of Act No. 524 (MCLA 125.1561) if a contract is entered into between them to perform the construction improvements. In lieu of application of the Statute, the parties adopt the retainage terms and conditions contained in these contract General Conditions for their mutual convenience. The CITY agrees to pay and the CONTRACTOR agrees to accept the applicable sum as indicated in the following table as a stipulated interest on the retained amounts under the terms and conditions of this contract pursuant to the applicable Statute mentioned above. Such sums shall be paid at completion of the project and will be included in the last payment applicable to the project:

ORIGINAL CONTRACT AMOUNT	STIPULATED INTEREST ON RETAINAGE (\$)
\$0 TO 49,999	25
50,000 to 99,999	50
100,000 to 249,000	100
250,000 to 499,999	150
500,000 to 749,999	250
750,000 to 999,999	400
1,000,000 and Over	Act No 524 will apply

The undersigned has examined the specifications and other contract documents, and the location of the work described herein and on the drawings and is fully informed as to the nature of the work and the conditions relating to its performance and understands that the quantities shown are approximate only and are subject to either increase or decrease.

The undersigned hereby proposes to furnish all necessary equipment, perform all the work including traffic control, furnish all the materials and for the unit prices named in the Bid Form, to complete the work as herein described in accordance with the project plans, specifications (referenced or included), the contract Special Provisions and Supplemental Specifications. All materials used will be in strict conformity with the requirements of the specifications and such other supplemental specifications and Special Provisions as may be a part of the Contract Documents.

The undersigned agrees that if the foregoing BID shall be accepted by the CITY, he/she will within ten (10) days (Sundays and legal holidays excepted) after receiving Notice of Award, enter into a Contract Agreement and will complete the project ready for use, at the prices and within the time stated in this Bid Form, and that he/she will furnish the CITY with satisfactory certificates of insurance coverage, Payment Bond, and Performance Bond in amounts as herein specified.

The undersigned further agrees that should this Bid be accepted by the CITY, he/she may commence work April 15, 2024. The base bid work shall be complete by September 1, 2024.

The “completed by” dates as specified have been set with the understanding that the Contract Award is approved through the city commission meeting to be held on **Monday, December 4, 2023.**

The undersigned also agrees that for each and every calendar day that he/she may be in default of substantial completion of the work, within the time specified in this Proposal or within the time to which said time of completion may be extended for good cause shown, the CITY will suffer a damage of Two Hundred and/100 Dollars (\$200.00) per day, and said CITY shall be compensated therefore at that rate as liquidated damages in accordance with the Agreement Form.

In submitting this Bid, it is understood that the CITY reserves the right to accept or reject any or all Bids, waive irregularities in any Bid and make the award in any manner deemed for the best interest of the CITY.

Dated and signed at _____, this the _____ day of _____, 2023.

Bidders Name

Official Address

By

Signature

Title

Telephone

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____ as Principal, and _____ as Surety, are hereby held and firmly bound unto THE CITY OF SAULT STE. MARIE, MICHIGAN as Owner in the penal sum of (5% of Proposal at a minimum) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

Signed, this _____ day of _____, 20_____.

The Condition of the above obligation is such that whereas the Principal has submitted to THE CITY OF SAULT STE. MARIE, MICHIGAN a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing, for the:

Pullar Kitchen Exhaust Hood (B-24-23).

NOW THEREFORE,

- (a) If said Bid shall be rejected, or in the alternate,
- (b) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid,

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

The Surety, for value received, hereby stipulated and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extensions of the time within which the CITY OF SAULT STE. MARIE may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____(L.S.)
Principal

Surety

By: _____

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 Michigan.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that

(Name of Contractor)

(Address of Contractor)

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

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto:

THE CITY OF SAULT STE. MARIE, MICHIGAN

225 E. Portage Avenue, Sault Ste. Marie, Michigan 49783

hereinafter called OWNER, in the penal sum of: \$_____ in lawful money of the United States, for the payment of which sum well and truly to be made, we the Principal and Surety, bind ourselves, our heirs, executors, administrators and successors, to be liable jointly and severally for the performance of the contract defined below in accordance with the plans, specifications, and terms thereof. The Surety is liable for the costs of correcting and completing the Principal's work above the contract balance and shall be liable for liquidated or actual damages caused by the Principal's default or non-performance. This bond is for the protection of the Owner. The balance due on the contract shall be paid to the Surety upon its undertaking of the work for the Principal. Upon demand of Owner, Surety shall undertake the work of the Principal and prosecute the work with diligence to completion. If Surety shall fail to do this within 15 days of Owner's demand, Owner may proceed to enforce any remedy under the contract available to Owner.

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:

Pullar Kitchen Exhaust Hood (B-24-23).

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 extensions thereof which may be granted by the OWNER with or without notice to the Surety, 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 Surety shall make such payments or perform such obligations and this obligation to remain in full force and effect.

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 the 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.

IN WITNESS WHEREOF, this instrument is executed in four (4) counterparts each one of which shall be deemed an original, this the _____ day of _____, 20 ____ .

(Principal)

By: _____

Its: _____

(Surety)

By: _____

Its: _____

(Witness to Surety)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners should execute the Bond.

IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department's most current list as amended and be authorized to transact business in the State of Michigan.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that

(Name of Contractor)

(Address of Contractor)

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

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto:

THE CITY OF SAULT STE. MARIE, MICHIGAN

225 E. Portage Avenue, Sault Ste. Marie, Michigan 49783

hereinafter called OWNER, in the penal sum of: \$_____ 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 and successors, 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:

The project consists of installation of a new kitchen hood and associated electrical and carpentry work per drawings and documents contained in the project manual. B-24-23

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modifications thereof, including all amounts due for materials, lubricants, oil, gasoline, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said work, and all labor, performed in such work whether by subcontractor or otherwise, then this obligation shall be void, otherwise Surety shall make such payments and this obligation to remain in full force and effect.

PROVIDED, FURTHER, 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 extensions thereof which may be granted by the OWNER with or without notice to the Surety, and if the Principal shall satisfy all claims and demand 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 Surety shall make such payments and this obligation to remain in full force and effect.

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 the 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 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 in four (4) counterparts each one of which shall be deemed an original, this the _____ day of _____, 20__.

(Principal)

By: _____

Its: _____

(Surety)

By: _____

Its: _____

(Witness to Surety)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners should execute the Bond.

IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department's most current list as amended and be authorized to transact business in the State of Michigan.

CITY OF SAULT STE. MARIE

AGREEMENT

THIS AGREEMENT, made as of the 20th day of October, 2023, by and between the CITY OF SAULT STE. MARIE, MICHIGAN, hereinafter called the OWNER OR CITY, and _____, hereinafter called the CONTRACTOR.

- WITNESSETH, that whereas the CITY intends to contract for the exterior upgrades per drawings and documents contained in the project manual and presented at the walk through, within the City of Sault Ste. Marie. The project title is "Pullar Kitchen Exhaust Hood (B-24-23)."
 - NOW, THEREFORE, THE CITY AND CONTRACTOR for the considerations hereinafter set forth, agree as follows: The project consists of installation of a new kitchen hood and associated electrical and carpentry work per drawings and documents contained in the project manual.
- I. THE CONTRACTOR AGREES to furnish all the necessary labor, materials, equipment, tools and services necessary to perform and complete, in a workmanlike manner, all work required for the complete construction the above described work, as specified in the Proposal and in strict compliance with applicable local, state and federal codes and the Contract Documents herein mentioned, which are hereby made a part of the Contract, including the following Addenda:

ADDENDUM NO.

DATED

_____	_____
_____	_____
_____	_____

- A. Contract Time: Work under this Agreement shall be commenced upon the CONTRACTOR'S receipt of the executed Agreement signed by the CITY or upon the date as specified in the written Notice to Proceed (if such date is different from the date of the executed Agreement) and the work shall be completed according to the following schedule:

Final Completion: September 1, 2024

as specified in the Bid Form, a copy of which is attached.

a) If the CONTRACTOR refuses or fails to prosecute the work or any separate part thereof, with such diligence as will insure its completion, ready for use, within the number of consecutive calendar days specified herein, or any extension thereof, or fails to complete said work within such time, the CITY may, by written notice to the CONTRACTOR, terminate his/her right to proceed with the Project or such part of the Project as to which there has been delay. In such event, the CITY may take over the Project and prosecute the same to completion, by contract or otherwise, and the CONTRACTOR shall be liable to the CITY for any excess cost occasioned the CITY thereby. If the CONTRACTOR'S right to proceed is so terminated, the CITY may take possession of and utilize in completing the Project such materials, appliances, and plants as may be on the site of the Project and necessary therefore.

B. Liquidated Damages: The CITY and CONTRACTOR recognize that time is of the essence in fulfilling the requirements of this Agreement and also recognize that the CITY will suffer financial loss if the work is not completed within the times specified in paragraph "A" above, plus any extensions thereof allowed in accordance with Section 23 of the General Conditions. The CITY and CONTRACTOR also recognize the delays, expense and difficulties involved in proving the actual loss suffered by the CITY if the work is not completed on time.

If the CONTRACTOR shall neglect, refuse or fail to complete the required work within the time specified in Paragraph I. A. for completion and readiness for final payment or any proper extension thereof granted by the CITY, the CONTRACTOR shall pay the CITY Two Hundred Dollars (\$200.00) for each calendar day that expires after the time specified in Paragraph "A" until such time as Final Completion is attained; ready for final payment.

C. Sub-contractors: The CONTRACTOR agrees to bind every sub-contractor by the terms of the Contract Documents. The Contract Documents shall not be construed as creating any contractual relation between any Sub-contractor and the CITY.

II. THE CITY AGREES to pay, and the CONTRACTOR agrees to accept, in full payment for the performance of this Contract an amount to be determined by the actual constructed quantities and the Unit Prices and Lump Sums set forth in the attached Bid Form. - **Base Bid**. This amount is estimated to be
Dollars (\$.00)

A. Progress payments will be made in accordance with the General Conditions of the Contract.

2. The CONTRACTOR and CITY acknowledge that for certain public agency construction contracts Michigan Statutes (Act No. 524, Public Acts of 1980) require the payment of interest on retainage. The parties hereto agree however, to waive the requirements of Act No. 524 (MCLA 125.1561) if a contract is entered into between them to perform the construction improvements. In lieu of application of the Statute, the parties adopt the retainage terms and conditions contained in these contract General Conditions for their mutual convenience. The CITY agrees to pay and the CONTRACTOR agrees to accept the applicable sum as indicated in the following table as a stipulated interest on the retained amounts under the terms and conditions of this contract pursuant to the applicable Statute mentioned above. Such sums shall be paid at completion of the project and will be included in the last payment applicable to the project:

ORIGINAL CONTRACT AMOUNT	STIPULATED INTEREST ON RETAINAGE (\$)
\$0 TO 49,999	25
50,000 to 99,999	50
100,000 to 249,000	100
250,000 to 499,999	150
500,000 to 749,999	250
750,000 to 999,999	400
1,000,000 and Over	Act No 524 will apply

- III. **CONTRACT DOCUMENTS:** The Contract comprises the Contract Documents listed in the General Conditions of the Contract. In the event that any provision of one Contract Document conflicts with the provision of another Contract Document, the provision in the contract Document first listed below shall govern, except as otherwise specifically stated.
- A. Agreement (this instrument)
 - B. Addenda to Contract Documents
 - C. Legal and Procedural Documents
 - 1. Bid Form
 - 2. Information for Bidders
 - 3. Advertisement
 - D. Detailed Special Provisions and Supplemental Specifications
 - E. General Conditions of the Contract
 - F. Project Drawings
 - G. Bonds
 - 1. Bid Bond
 - 2. Payment Bond
 - 3. Performance Bond
- IV. **AUTHORITY AND RESPONSIBILITY OF THE CITY:** The CITY shall decide all questions which may arise relating to the quality and acceptability of materials furnished and work performed, the manner of performance and the rate of progress of the work, all questions which may arise as to the interpretations of the Plans and Specifications; and all questions as to the acceptable fulfillment of the terms of the Contract. The CITY shall decide all questions as to the rights of different Contractors on the Project.
- V. **SUCCESSORS AND ASSIGNS:** This Agreement and all of the covenants hereof shall inure to the benefit of and be binding upon the CITY and the CONTRACTOR respectively and his/her partners, successors, assigns and legal representatives. Neither the CITY nor the CONTRACTOR shall have the right to assign, transfer or sublet his/her interests or obligations hereunder without written consent of the other party.
- VI. **SPECIAL PROVISIONS:** The CITY and the CONTRACTOR mutually agree that this Agreement shall be subject to the included Special Provisions, if any, which shall supersede other conflicting provisions of this Agreement.

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

BY: _____ (SIGNATURE)	BY: _____ (SIGNATURE)
_____ (PRINT)	_____ (PRINT)
TITLE: _____ (PRINT)	TITLE: _____ (PRINT)

CITY OF SAULT STE. MARIE, MICHIGAN _____
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CITY OF SAULT STE. MARIE

CONTRACTOR INSURANCE REQUIREMENTS

The Contractor shall not commence work under this contract until he/she has obtained the insurance required as outlined following this paragraph. All coverage shall be with insurance companies licensed and admitted to do business in the State of Michigan. All coverage shall be with insurance carriers acceptable to the City of Sault Ste. Marie, Michigan.

1. Workers' Compensation Insurance: The Contractor shall procure and maintain during the life of this contract, Workers' Compensation and Employers Liability Coverage, in accordance with all applicable Statutes of the State of Michigan. Limits of liability for Employers Liability shall be:

\$500,000 Bodily Injury each accident
\$500,000 Disease policy limit and
\$500,000 Disease each employee.

2. Commercial General Liability and Umbrella Liability Insurance: The Contractor shall procure and maintain during the life of this contract, Commercial General Liability Insurance on an "Occurrence Basis" with the following limits:

General Aggregate (other than Products/Completed Operations)	\$3,000,000
Products/Completed Operations Aggregate	\$3,000,000
Personal and Advertising Injury Limit	\$1,000,000
Each Occurrence	\$1,000,000
Fire Damage Limit	\$500,000
Medical Expense	\$5,000

Coverage shall include the following:

- (A) Contractual Liability;
- (B) Products and Completed Operations;
- (C) Independent Contractors Coverage;
- (D) Broad Form General Liability Extensions or equivalent;
- (E) Explosion, Collapse and Underground (XCU) shall not be excluded.
- (F) Coverage shall be Primary and Noncontributory.

3. Business Auto and Umbrella Liability Insurance: The Contractor shall procure and maintain during the life of this contract Business Auto Liability Insurance, including Michigan No-Fault Coverage, and if necessary, umbrella liability, with limits of liability of not less than \$1,000,000.00 per occurrence combined single limit Bodily Injury and Property Damage. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles (Symbol 1).
4. Additional Insured: Commercial General Liability Insurance, as described above, shall include an endorsement stating the following shall be "Additional Insureds": the City of Sault Ste. Marie, all elected and appointed officials, all employees and volunteers, all boards, commissions and/or authorities and board members, including employees and volunteers thereof. (CG 20 10 04 13 and CG 20 01 04 13 or equivalent)

5. Cancellation Notice: Workers' Compensation Insurance, Commercial General Liability Insurance and Business Auto Liability Insurance and Umbrella Liability Insurance, as described above, shall include an endorsement stating the following: "It is understood and agreed that Thirty (30), Twenty One for Workers Compensation, days Advance Written Notice of Cancellation, Non-Renewal, Reduction and/or Material Change shall be sent to:

City Clerk
City of Sault Ste. Marie
225 E. Portage Avenue
Sault Ste. Marie, Michigan 49783

6. Owners' & Contractors' Protective Liability: The Contractor shall procure and maintain during the life of this contract, Owners' & Contractors' Protective Liability with limits of liability not less than \$ 1,000,000.00 per occurrence and/or aggregate, combined single limit, Personal Injury, Bodily Injury and Property Damage. The City of Sault Ste. Marie shall be "Named Insured" on said coverage. Thirty (30) days Notice of Cancellation shall apply to this policy.
7. Proof of Insurance Coverage: **The Contractor shall provide the City of Sault Ste. Marie at the time the contracts are returned by him/her for execution, certificates and policies as listed below:**
- a. Two (2) copies of Certificate of Liability Insurance (ACORD 25) for Workers' Compensation Insurance, Commercial General Liability Insurance, Business Auto Liability Insurance and Umbrella Liability Insurance. This Certificate shall cite the specific endorsement(s) relative to the "Additional Insured" and "Cancellation Notice" as required above.
 - b. Original Policy, or original Binder pending issuance of policy, for Owners' & Contractors' Protective Liability Insurance;
 - c. If so requested, Certified Copies of all policies mentioned above will be furnished.

If any of the above coverages expire during the term of this contract, the Contractor shall deliver renewal certificates and/or policies to the City of Sault Ste. Marie at least ten (10) days prior to the expiration date.

The Contractor shall not cancel or reduce the coverage of any insurance without providing prior written notice to the City. The Contractor shall cease operations immediately on the occurrence of any such reduction or cancellation, and shall not resume operations until new insurance, approved by the City, is in force.

Contractors on City projects shall furnish certificates of insurance **before** work is begun.

(Spec-ins. 01/2014)

CITY OF SAULT STE. MARIE

GENERAL CONDITIONS INDEX

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GENERAL CONDITIONS

SECTION 1 - DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:

AGREEMENT - The written agreement between the CITY and the CONTRACTOR covering the Work to be performed, including the CONTRACTOR'S Bid and the Bonds.

APPLICATION FOR PAYMENT - The form furnished by the CITY which is to be used by the CONTRACTOR in requesting progress payments and which is to include the schedule of values required by Section 26 and an affidavit of the CONTRACTOR that progress payments theretofore received from the CITY on account of the Work have been applied by the CONTRACTOR to discharge in full all of the CONTRACTOR'S obligations incurred in connection with the Work covered by all prior Applications for Payment.

BID - The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

BIDDER - Any person, firm or corporation submitting a Bid for the Work to the CITY.

BONDS - Bid, performance and payment bonds and other instruments of security, furnished by the CONTRACTOR and his surety in accordance with the Contract Documents.

CHANGE ORDERS - A written order to the CONTRACTOR signed by the CITY authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time issued after execution of the Agreement.

CONTRACT DOCUMENTS - The complete bound book describing the Work to be done by the CONTRACTOR, including the Agreement, Specifications, Plans, Addends (whether issued prior to opening of bids or execution of the Agreement) and Modifications.

CONTRACT PRICE - The total moneys payable to the CONTRACTOR under the Contract Documents.

CONTRACT TIME - The number of calendar days stated in the Agreement for the completion of the Work.

CONTRACTOR - The person, firm, or corporation with whom the CITY has executed the Agreement.

FIELD ORDER - A written order issued by the CITY which clarifies or interprets the Contract Documents in accordance with Section 14 or orders minor changes in the Work in accordance with Section 20.

MODIFICATION - (a) a written amendment of the Contract Documents signed by the CITY and the CONTRACTOR, (b) a Change Order, (c) a written clarification or interpretation issued by the CITY in accordance with Section 14 or (d) a written order for a minor change or alteration in the work issued by the CITY pursuant to Section 20. A modification may only be issued after execution of the Agreement.

CITY - The Municipality of Sault Ste. Marie, Michigan.

PLANS - The drawings and plans which show the character and scope of the Work to be performed and which have been prepared or approved by the CITY and are referred to in the Contract Documents.

PROJECT - The entire construction to be performed as provided in the Contract Documents.

PROJECT REPRESENTATIVE - The authorized representative of the CITY who is assigned to the Project or any part thereof.

SHOP DRAWINGS - All plans, drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the CONTRACTOR, a Subcontractor, manufacturer, supplier or distributor and which illustrate the equipment, material or some portion of the Work.

SPECIFICATIONS - The Information for Bidders, these General Conditions, Detailed Specifications, Special Conditions and Technical Provisions.

SUBCONTRACTOR - An individual, firm or corporation having a direct contract with the CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

SUBSTANTIAL COMPLETION - The date, as certified by the CITY, when the construction of the Project or a specified part thereof is sufficiently completed in accordance with the Contract Documents, so that the Project or specified part can be utilized for the purposes for which it was intended; or if there is on such certification, the date when final payment is due in accordance with Section 30.

WORK - Any and all obligations, duties, and responsibilities necessary to the successful completion of the Project assigned to or undertaken by the CONTRACTOR under the Contract Documents, including the furnishing of all labor, materials, tools, equipment and other incidentals.

SECTION 2 - AWARD, EXECUTION OF DOCUMENTS, DELIVERY OF BONDS, ETC.

- 2.1 The award of the contract, if it is awarded, will be to the lowest responsible Bidder whose qualifications indicate the award will be in the best interest of the CITY and whose proposal complies with all the prescribed requirements. No award will be made until the CITY has concluded such investigations as it deems necessary to establish the responsibility, qualifications and financial ability of the Bidders to do the Work in accordance with the Contract Documents to the satisfaction of the CITY within the time prescribed. The CITY reserves the right to reject the Bid of any Bidder who does not pass the investigation to the CITY'S satisfaction. In analyzing Bids, the CITY may take into consideration alternates and unit prices if requested by the Bid forms. If the contract is awarded, the CITY will give the successful Bidder written notice of the award within the time set forth in the Advertisement. The notification of award will be in the form of Two (2) counterparts of the Notice of Award document that will be signed by the CITY and the CONTRACTOR.
- 2.2 At least Three (3) counterparts of the Agreement and such other Contract Documents as practicable will be signed by the CITY and the CONTRACTOR. The unsigned Agreement forms will be provided to the CONTRACTOR when the Notice of Award is issued. The CITY will identify those portions of the Contract Documents not so signed and such identification will be binding on all parties. The CONTRACTOR and the CITY will each receive an executed counterpart of the Contract Documents.
- 2.3 Simultaneously with the CONTRACTOR'S execution and delivery of the Agreement to the CITY, the CONTRACTOR will deliver to the CITY the required Bonds and Insurance. Within ten (10) days thereafter,

the CITY shall deliver one fully signed counterpart of the Agreement to the CONTRACTOR

- 2.4 Failure of the successful Bidder to execute the Agreement and deliver the required Bonds and Insurance within ten (10) days of the issuance of the Notice of Award shall be just cause for the CITY to annul the award and declare the Bid and any guarantee thereof forfeited.

SECTION 3 - PROGRESS AND SUBMISSION SCHEDULES: PRECONSTRUCTION CONFERENCE: TIME OF STARTING THE WORK

- 3.1 Within ten (10) days after the execution of the Agreement, the CONTRACTOR will submit to the CITY for approval, an estimated progress schedule indicating the starting and completion dates of the various stages of the Work, and a schedule of Shop Drawings submissions. At least ten (10) days prior to submitting the first Application for Payment he shall also submit a schedule of values as required by Section 26.
- 3.2 Before starting the Work, a Pre-construction conference will be held to review the above schedules, to establish procedures for handling shop drawings and other submittals, for processing Applications for Payment, to establish a working understanding between the parties, and to discuss the construction safety requirements of the project. Present at the conference will be delegated representatives of the CONTRACTOR, the CITY, and, when possible, other interested parties. The Preconstruction conference will be scheduled by the CITY as soon as possible after the issuance of the Notice of Award to the CONTRACTOR.
- 3.3 Prior to starting the Work the CONTRACTOR will furnish the CITY certificates of insurance as required by Section 34.
- 3.4 The CONTRACTOR will start the Work on the date on which the Agreement is executed by the CITY and delivered, or on such other date, if any, as may be specified in the Agreement. However at the time of the execution and delivery of the Agreement the CITY may give the CONTRACTOR a written notice to proceed, stating the different date on which it is expected that the CONTRACTOR will start the Work, but such date shall not be more than thirty (30) days after the date of execution and delivery of the Agreement. No work shall be done prior to the date on which the work is to start.
- 3.5 The Contract Time shall commence to run on the date when the Work is to start as provided in Section 3.

SECTION 4 - CORRELATION, INTERPRETATION AND INTENT OF CONTRACT DOCUMENTS

- 4.1 It is the intent of the Specifications and Plans to describe a complete Project to be constructed in accordance with the Contract Documents.
- 4.2 The Contract Documents comprise the entire Agreement between the CITY and the CONTRACTOR. They may be altered only by a Modification.
- 4.3 The Contract Documents are complementary; what is called for by one is as binding as if called for by all. If the CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, he will call it to the CITY'S attention in writing before proceeding with the work affected thereby except at his (CONTRACTOR'S) own risk and expense. In resolving such conflicts, errors, and discrepancies, the documents shall be given precedence in the following order: Agreement, Specifications, Plans. Within the Specifications the order of precedence shall be as follows: Special Conditions, Information for Bidders, General Conditions, Detailed Specifications, Technical Provisions. Figure dimensions on Plans shall

govern over scale dimensions, and detailed Plans shall govern over general Plans. Any work that may reasonably be inferred from the Specifications or Plans as being required to produce the intended result shall be supplied whether or not it is specifically called for. Work, materials or equipment described in words which so applied have a well-known technical or trade meaning shall be deemed to refer to such recognized standards. The CONTRACTOR assumes full responsibility for having familiarized himself with the nature and extent of the Contract Documents, Work, locality, and local conditions that may in any manner affect the Work to be done.

SECTION 5 - OWNERSHIP AND COPIES OF DOCUMENTS: RECORD DOCUMENTS

- 5.1 All Specifications, Plans and copies thereof furnished by the CITY shall remain its property. They shall not be used on another Project, and, with the exception of those sets which have been signed in connection with the execution of the Agreement, shall be returned to them on request upon completion of the Project.
- 5.2 The CITY will furnish to the CONTRACTOR up to five (5) copies of the Specifications and Plans as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.
- 5.3 The CONTRACTOR will keep one record copy of all Specifications, Plans, Addenda, Modifications, and Shop Drawings at the site in good order and annotated to show all changes made during the construction process. These shall be available to the CITY and shall be delivered to the same upon completion of the Project.

SECTION 6 - WORK BY OTHERS

- 6.1 The CITY may perform additional work related to the Project by itself or it may let other direct contacts therefore which shall contain General Conditions similar to these. The CONTRACTOR will afford the other contractors who are parties to such direct contracts (or the CITY, if it is performing the additional work himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly connect and coordinate his Work with theirs.
- 6.2 If any part of the CONTRACTOR'S Work depends for proper execution or results upon the work of any such other contractor (or the CITY), the CONTRACTOR will inspect and promptly report to the CITY in writing any defects or deficiencies in such work that render it unsuitable for such proper execution and results. His failure so to report shall constitute an acceptance of the other work as fit and proper for the relationship of his Work except as to defects and deficiencies which may appear in the other work after the execution of his Work.
- 6.3 The CONTRACTOR will do all cutting, fitting and patching of his Work that may be required to make its several parts come together properly and fit it to receive or be received by such other work. The CONTRACTOR will not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with written consent of the CITY.
- 6.4 If the performance of additional work by other contractors or the CITY is not noted in the Contract Documents prior to the award of the contract, written notice thereof shall be given to the CONTRACTOR prior to starting any such additional work. If the CONTRACTOR believes that the performance of such additional work by the CITY or others involves him in additional expense or entitles him to an extension of the Contract Time, he may make a claim therefore as provided in Sections 21 and 23.

SECTION 7 - SUBCONTRACTS

- 7.1 Prior to the execution and delivery of the Agreement, the successful Bidder will submit to the CITY for acceptance a list of the names of Subcontractors and such other persons and organizations (including those who are to furnish materials or equipment fabricated to a special design) proposed for those portions of the Work as to which the identity of the Subcontractors and other persons and organizations must be submitted as specified in the Contract Documents. Prior to the execution and delivery of the Agreement, the CITY will notify the successful Bidder in writing if the CITY, after due investigation, has reasonable objection to any Subcontractor, person or organization on such list. The failure of the CITY to make objection to any Subcontractor, person or organization on the list prior to the execution and delivery of the Agreement shall constitute an acceptance of such Subcontractor, person or organization. Acceptance of any such Subcontractor, person or organization shall not constitute a waiver of any right of the CITY to reject defective Work, material or equipment, or Work, material or equipment not in conformance with the requirements of the Contract Documents.
- 7.2 If, prior to the execution and delivery of the Agreement, the CITY has reasonable objection to and refuses to accept any Subcontractor, person, or organization on such list, the successful Bidder shall prior to such execution and delivery, submit an acceptable substitute without an increase in his Bid Price. If, after the execution and delivery of the Agreement, the CITY refuses to accept any Subcontractor, person or organization on such list, the CONTRACTOR will submit an acceptable substitute and the Contract Price shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate
- Change Order shall be issued; however, no such increase in the Contract Price shall be allowed in respect of any substitution unless the CONTRACTOR has acted promptly and reasonably in submitting a name of the Subcontractor prior to the execution and delivery of the Agreement.
- 7.3 The CONTRACTOR will not employ any Subcontractor (whether initially or as a substitute) against whom the CITY may have reasonable objection, nor will the CONTRACTOR be required to employ any Subcontractor against whom he has reasonable objection. The CONTRACTOR will not make any substitution for any Subcontractor who has been accepted by the CITY unless the CITY determines that there is good cause for doing so.
- 7.4 The CONTRACTOR will be fully responsible for all acts and omissions of his Subcontractors and of persons directly or indirectly employed by them and of persons for whose acts any of them may be liable to the same extent that he is responsible for the acts and omissions of persons directly employed by him. Nothing in the Contract Documents shall create any contractual relationship between any Subcontractor and the CITY or any obligation on the part of the CITY to pay or to see to the payment of any moneys due any Subcontractor, except as may otherwise be required by law. The CITY may furnish to any Subcontractor, to the extent practicable, evidence of amounts paid to the CONTRACTOR on account of specific work done in accordance with the schedule of values.
- 7.5 The divisions and sections of the Specifications and the identifications of any Plans shall not control the CONTRACTOR in dividing the Work among Subcontractors or delineating the Work to be performed by any trade.
- 7.6 The CONTRACTOR agrees to specifically bind every Subcontractor to all of the applicable terms and conditions of the Contract Documents. Every Subcontractor, by undertaking to perform any of the Work, will thereby automatically be deemed to be bound by such terms and conditions.

- 7.7 All work performed for the CONTRACTOR by a subcontractor shall be pursuant to an appropriate agreement between the CONTRACTOR and the Subcontractor which shall contain provisions that waive all rights the contracting parties may have against one another for damages caused by fire or other perils covered by insurance provided in accordance with Section 36, except such rights as they may have to the proceeds of such insurance held by the CITY as trustee under Section 36. The CONTRACTOR will pay each Subcontractor a just share of any insurance moneys received by the CONTRACTOR under Section 36.

SECTION 8 - MATERIALS, EQUIPMENT AND LABOR: SUBSTITUTE MATERIAL OR EQUIPMENT

- 8.1 The CONTRACTOR will provide and pay for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of the Work.
- 8.2 All materials and equipment shall be new. If required by the CITY, the CONTRACTOR will furnish satisfactory evidence as to the kind and quality of materials and equipment.
- 8.3 If it is indicated in the Specifications that the CONTRACTOR may furnish or use a substitute that is equal to any material or equipment specified, and if the CONTRACTOR wishes to furnish or use a proposed substitute, he shall promptly after the award of the contract, make written application to the CITY for approval of such a substitute certifying in writing that the proposed substitute will perform adequately the duties imposed by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified. No substitute shall be ordered or installed without the written approval of the CITY who shall be the judge of equality.
- 8.4 All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator or processors, except as otherwise specifically provided in the Contract Documents.

SECTION 9 - PATENT FEES AND ROYALTIES

- 9.1 The CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use of any invention, design, process or device which is the subject of patent rights or copyrights held by others. He will indemnify and hold harmless the CITY and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorney's fees) arising out of any infringement of such rights during or after completion of the Work, and shall defend all such claims in connection with any alleged infringement of such rights.

SECTION 10 - PERMITS, LAWS, TAXES AND REGULATIONS

- 10.1 The CONTRACTOR will secure and pay for all construction permits and licenses and will pay all governmental and public utility charges and inspection fees necessary for the prosecution of the Work.
- 10.2 The CONTRACTOR will give all notices and comply with all laws, ordinances, rules and regulations applicable to the Work. If the CONTRACTOR observes that the Specifications or Plans are at variance therewith, he will give the CITY prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate Modification. If the CONTRACTOR performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the CITY, he will bear all costs arising therefrom.

- 10.3 The CONTRACTOR will pay all State Sales, Use and other Taxes that are lawfully assessed against the CONTRACTOR on materials and equipment to be incorporated in the Work.
- 10.4 In the event that the Work involved with this contract specifies that the CITY will furnish certain materials that are to be installed by the CONTRACTOR, the CONTRACTOR shall be responsible for payment of any State of Michigan User Tax for such materials. The original cost of such materials shall be used as the basis for computing the User Tax based upon current State of Michigan rates. The CITY will provide such cost information during the bidding phase of the project and will include an allowance in the bid Proposal for the full amount of User Tax for CITY furnished materials. When the costs of any CITY furnished materials are not known during the bidding phase of the project, the CITY will issue a Change Order to the CONTRACTOR to include the amount of such specific User Tax as required based upon the costs of materials, when such costs are subsequently determined. In any event, the CONTRACTOR will be responsible for the payment of the User Tax to the State of Michigan and documentation of the CONTRACTOR'S payment of the User Tax shall be furnished to the CITY.

SECTION 11 - AVAILABILITY OF LANDS: PHYSICAL AND SUBSURFACE CONDITIONS: REFERENCE POINTS

- 11.1 The CITY shall endeavor to provide as indicated in the Contract Documents, not later than the date when needed by the CONTRACTOR, the land upon which the Work is to be done, rights of way for access thereto, and such other lands which are designated for the use of the CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be secured and paid for by the CITY unless otherwise specified in the Contract Documents. If the CONTRACTOR believes that any delay in the CITY'S furnishing these lands or providing such easements entitles him to an extension of the Contract Time, he may make a claim therefore as provided in Section 23. The CONTRACTOR will provide all additional lands and access thereto that may be required for temporary construction facilities or storage of material and equipment. The CONTRACTOR shall confine his operations, equipment and material to lands on which the CITY or the CONTRACTOR has secured the right to perform the Work. Trespassing on private property shall be the sole responsibility of the CONTRACTOR.
- 11.2 The CITY will, upon request, furnish to the CONTRACTOR copies of all available boundary surveys and subsurface tests.
- 11.3 Any soil borings, if taken, are located as indicated on the plans and Test Boring Reports, for general informational purposes only are included under "Test Boring Reports". These Test Boring Reports shall not relieve the CONTRACTOR of his responsibility in investigating all local conditions affecting the work. The CONTRACTOR shall obtain such additional information as he deems necessary before bidding, as no claims for extra work or damage will be considered if it is found during construction that the actual soil or material conditions vary from those shown on the plans or in the Test Boring Reports.
- 11.4 The CITY will establish such general reference points as in its judgment will enable the CONTRACTOR to proceed with the Work. The CONTRACTOR will be responsible for the layout of the Work and will protect and preserve the established reference points and will make no changes or relocations without the prior written approval of the CITY. He will report to the CITY whenever any reference point is lost or destroyed or requires relocations because of necessary changes in grades or locations. The CONTRACTOR will replace and accurately relocate all reference points so lost, destroyed or moved.

- 11.5 All elevations shown on the Plans or referred to herein are in feet above mean sea level datum as established by the United States Geological Survey, unless otherwise noted. The CONTRACTOR shall verify all the existing structure locations and elevations at points of connection or possible interference between his work and the existing structures and shall report at once to the CITY any interferences or discrepancies discovered.

SECTION 12 - USE OF PREMISES

- 12.1 The CONTRACTOR will confine his equipment, the storage of materials and equipment, and the operations of his workmen to areas permitted by law, ordinances, permits, or the requirements of the Contract Documents, and shall not unreasonably encumber the premises with materials or equipment.
- 12.2 The CONTRACTOR will not load nor permit any part of the structure to be loaded with weights that will endanger the structure, nor will he subject any part of the Work to stresses or pressures that will endanger it.
- 12.3 The CONTRACTOR shall use every reasonable precaution to prevent injury to the new structures being constructed hereunder. He shall be responsible for the correction of all injury or damage resulting from his operations and/or occurring while the Project is under his supervisory control. He shall furnish and install such guards, coverings and other protection as may be needed to insure that the structures remain undamaged prior to completion of the entire Project. In the event damage does occur to the finished portions of the Project, or to the work in progress, the CONTRACTOR shall take such corrective action and measures as may be necessary to repair the damage to the satisfaction of the CITY.
- 12.4 The CONTRACTOR shall be solely responsible for any damage to any existing underground services, utilities, or structures, or to structures, utilities and roadways above the ground caused by his operations or those of his Subcontractors and/or suppliers.

SECTION 13 - CITY'S STATUS DURING CONSTRUCTION

- 13.1 The CITY shall be the representative during the construction period. All instructions of the CITY to the CONTRACTOR shall be issued through the CITY'S REPRESENTATIVE. The duties and responsibilities and the limitations of authority of CITY during construction are set forth in Sections 1 through 42 of these General Conditions.
- 13.2 The CITY'S REPRESENTATIVE will make periodic or infrequent visits to the site to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. He will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work nor will he be responsible for the construction means, methods, techniques, sequences or procedures, or the safety precautions incident thereto. His efforts will be directed toward providing assurance for the CITY OF SAULT STE. MARIE that the completed Project will conform to the requirements of the Contract Documents, but he will not be responsible for the CONTRACTOR'S failure to perform the Work in accordance with the Contract Documents. On the basis of his on-site observations as an experienced and qualified design professional, he will keep informed of the progress of the Work and will endeavor to guard against defects and deficiencies in the Work of contractors.
- 13.3 The CITY'S REPRESENTATIVE will have authority to disapprove of or reject Work which is defective; i.e., it is unsatisfactory, faulty or defective, or does not conform to the requirements of the Contract Documents or does not meet the requirements of the Contract Documents or does not meet the requirements of any

inspection, test or approval referred to in Section 16. He will also have authority to require special inspection or testing of the Work as provided in Section 19, whether or not the Work is fabricated, installed or completed.

- 13.4 The CITY'S REPRESENTATIVE shall have permissive authority over the work which is proposed to be done during the winter months. The CONTRACTOR shall provide adequate weather protection, temporary heating and take any other measures which are necessary to insure that the work performed during the winter months is properly installed and protected against damage from freezing. When and if temporary heating is used, the CONTRACTOR shall take every precaution to insure that the hazard of fire is reduced to a minimum, and the CONTRACTOR shall bear full responsibility for any damage which may result from the use of temporary heating devices.
- 13.5 Neither the CITY REPRESENTATIVE'S authority to act under this Section 13 nor any decision made by him in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of the CITY to the CONTRACTOR, any Subcontractor, any of their agents or employees or any other person performing any of the Work.

SECTION 14 - CITY'S INTERPRETATIONS AND DECISIONS

- 14.1 The CITY REPRESENTATIVE will issue with reasonable promptness such written clarifications or interpretations (in the form of plans or otherwise) as he may determine necessary for the proper execution of the Work, such clarifications and interpretations to be consistent with or reasonably inferable from the overall intent of the Contract Documents. If the CONTRACTOR believes that a written clarification and interpretation entitles him to an increase in the Contract Price, he may make a claim therefore as provided in Section 21.
- 14.2 The CITY REPRESENTATIVE will be the initial interpreter of the terms and conditions of the Contract Documents and the judge of the performance thereunder. In his capacity as interpreter and judge he will exercise his best efforts to insure faithful performance by the CONTRACTOR. He shall not be liable for the result of any interpretation or decision rendered in good faith. Claims, disputes and other matters relating to the execution and progress of the Work or the interpretation of or performance under the Contract Documents shall be referred to the CITY'S REPRESENTATIVE for decision, which he shall render in writing within a reasonable time.
- 14.3 Either the CITY or CONTRACTOR may demand arbitration with respect to any such claim, dispute or other matter that has been referred to the CITY, except any which may have been waived by the making or acceptance of final payment as provided in Section 31. Such arbitration to be in accordance with Section 42. However, no request for arbitration of any such claim, dispute or other matter shall be made until either (a) the date on which the CITY has rendered its decision or (b) the 10th day after the parties have presented their evidence to the CITY if it has not rendered its written decision before that date, whichever should occur first. No request for arbitration shall be made later than thirty (30) days after the date on which the CITY rendered its written decision in respect of the claim, dispute or other matter as to which arbitration is sought; and the failure to request arbitration within said thirty (30) days' period shall result in the CITY'S decision being final and binding upon the CITY and CONTRACTOR. If the CITY renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but shall not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned.

SECTION 15 - SHOP DRAWINGS AND SAMPLES

- 15.1 The CONTRACTOR shall submit to the CITY for review, all required shop drawings with such promptness as to cause no delay in the Work under this contract. After checking and verifying all field measurements, the CONTRACTOR will submit to the CITY for review, in accordance with the accepted schedule of Shop Drawing submissions, five (5) copies (or at the CITY'S option, one reproducible copy) of all Shop Drawings, which shall have been checked by and stamped with the approval of the CONTRACTOR and identified as the CITY may require. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction, brochures, layout and installation drawings, manufacturer, pertinent catalog numbers and the use for which intended and the like to enable the CITY to review the information as required.
- 15.2 The CONTRACTOR will also submit to the CITY for review, with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and stamped with the approval of the CONTRACTOR, identified clearly as to material, manufacturer, and pertinent catalog numbers and the use for which intended.
- 15.3 At the time of each submission, the CONTRACTOR will in writing call the CITY'S attention to any deviations that the Shop Drawings or sample may have from the requirements of the Contract Documents.
- 15.4 The CITY will review with reasonable promptness Shop Drawings and samples, but its review shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents. The review of a separate item as such will not indicate approval of the assembly in which the item functions. The CONTRACTOR will make any corrections required by the CITY and will return the required number of corrected copies of Shop Drawings and resubmit new samples. The CONTRACTOR shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections called for by the CITY on previous submissions.
- 15.5 No work requiring a Shop Drawing or sample submission shall be commenced until the submission has been reviewed by the CITY.
- 15.6 The CITY'S review of Shop Drawings or samples shall not relieve the CONTRACTOR from his responsibility for any deviations from the requirements of the Contract Documents unless the CONTRACTOR has in writing called the CITY'S attention to such deviations at the time of submission and the CITY has given written approval to the specific deviations, nor shall any review by the CITY relieve the CONTRACTOR from responsibility for errors or omissions in the Shop Drawings.

SECTION 16 - TESTS AND INSPECTIONS

- 16.1 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to specifically be inspected, tested, or approved by someone other than the CONTRACTOR, the CONTRACTOR will give the CITY timely notice of readiness therefore. The CONTRACTOR will furnish the CITY the required certificates of inspection, testing or approval. All such tests will be in accordance with the methods prescribed by the American Society for Testing and Materials or such other applicable organization as may be required by law or the Contract Documents. If any such Work required so to be inspected, tested or approved is covered up without written approval or consent of the CITY, it must, if directed by the CITY, be uncovered for observation at the CONTRACTOR'S EXPENSE. The cost of all such inspections, tests and approvals shall be borne by the CONTRACTOR unless otherwise provided.
- 16.2 Any work which fails to meet the requirements of any such test, inspection or approval and any Work which

meets the requirements of any such test or approval but does not meet the requirements of the Contract Documents shall be considered defective. Such defective Work may be rejected, corrected or accepted as provided for in Section 25.

- 16.3 Neither observations by the CITY nor inspections, tests, or approvals by persons other than the CONTRACTOR shall relieve the CONTRACTOR from his obligations to perform the Work in accordance with the requirements of the Contract Documents.

SECTION 17 - CONTRACTOR'S SUPERVISION AND SUPERINTENDENCE

- 17.1 The CONTRACTOR shall supervise and direct the Work efficiently and with his best skill and attention. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. Before undertaking the Work he will carefully study and compare the Contract Documents. He will at once report in writing to the CITY any conflict, error or discrepancy which he may discover. The CONTRACTOR will be responsible to see that the finished Work complies accurately with the Contract Documents.
- 17.2 The CONTRACTOR will keep on the Work at all times during its progress a resident superintendent satisfactory to the CITY. The superintendent shall not be replaced without the consent of the CITY except under extraordinary circumstances. The superintendent will be the CONTRACTOR'S representative at the site and shall have authority to act on behalf of the CONTRACTOR. All communications given to the superintendent shall be as binding as if given to the CONTRACTOR.
- 17.3 The CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the work and to perform construction as required by the Contract Documents. He will, at all times, maintain discipline and order among his employees and workmanlike conditions at the site.
- 17.4 The CITY will not be responsible for the acts or omissions of the CONTRACTOR, or any Subcontractors, or any of his or their agents or employees, or any other persons performing any of the Work.

SECTION 18 - SAFETY AND PROTECTION: EMERGENCIES

- 18.1 The CONTRACTOR shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. This is to include all signing, barricades and safety devices related to this Project at the CONTRACTOR'S expense. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to:
- a) All employees on the Work and other person(s) who may be affected thereby,
 - b) All the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and
 - c) Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation or replacement in the course of construction.
- 18.2 The CONTRACTOR shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss. The CONTRACTOR will erect and maintain, at his own expense, as required by the conditions and progress of the Work, all necessary safeguards for safety and protection, including posting danger signs and other warnings against hazards and promulgating safety regulations. He will notify owners of adjacent utilities when prosecution of the work may affect them. When the use of storage of explosives or other hazardous materials is necessary for the prosecution of the Work, the CONTRACTOR will exercise the utmost care and will carry on such activities under the supervision of properly qualified personnel. All

damage, injury or loss to any property referred to in Section 18 caused, directly or indirectly, in whole or in part, by the CONTRACTOR, any Subcontractor of anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, will be remedied by the CONTRACTOR.

- 18.3 The CONTRACTOR will designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the CONTRACTOR'S superintendent unless otherwise designated in writing by the CONTRACTOR to the CITY.
- 18.4 In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, the CONTRACTOR, without special instruction or authorization from the CITY is obligated to act, at his discretion to prevent threatened damage, injury or loss. If at any time, the CONTRACTOR or his authorized representative cannot be contacted to correct an emergency or deficiency affecting the safety of persons or the Work or property at the site or adjacent thereto, the CITY shall correct the emergency or deficiency and charge the costs incurred thereto against the CONTRACTOR. He will give the CITY prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby, and a Change Order shall thereupon be issued covering the changes and deviations involved. If the CONTRACTOR believes that additional work done by him in an emergency which arose from causes beyond his control entitles him to an increase in the Contract Price or an extension of the Contract Time, he may make a claim therefore as provided in Sections 21 and 23.

SECTION 19 - ACCESS TO THE WORK: UNCOVERING FINISHED WORK

- 19.1 The CITY and his representatives will at all times have access to the Work. The CONTRACTOR will provide proper facilities for such access and observations of the Work and also for any inspection, or testing thereof by others.
- 19.2 If any Work is covered contrary to the request of the CITY, it must, if requested by the CITY, be uncovered for its observation and replaced at the CONTRACTOR'S expense.
- 19.3 If any Work has been covered which the CITY has not specifically requested to observe prior to its being covered, or if the CITY considers it necessary or advisable that covered work be inspected or tested by others, the CONTRACTOR, at the CITY'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the CITY may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective or does not meet the requirements of the Contract Documents, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services, and an appropriate Change Order shall be issued deducting all such costs from the Contract Price. If, however, such work is found to be non-defective and meet the requirements of the Contract Documents, the CONTRACTOR will be allowed an increase in the Contract Price or extension of the Contract Time directly attributable to such uncovering, exposure, observation, inspection and testing if he makes a claim therefore as provided in Sections 21 and 23.

SECTION 20 - CHANGES IN THE WORK

- 20.1 Without invalidating the Agreement, the CITY may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by Change Orders. Upon receipt of a Change Order, the CONTRACTOR will proceed with the Work involved. All such work shall be executed under the applicable conditions of the Contract Documents. If any Change Order causes an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, and equitable adjustment will be made as provided in Sections 21 or 23. The CITY reserves the right to decrease the contract quantities up

to twenty five percent (25%) without penalty. The CITY may authorize minor changes or alterations in the Work not involving extra cost and not inconsistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order. If the CONTRACTOR believes that any minor change or alteration authorized by the CITY entitles him to an increase in the Contract Price, he may make a claim therefore as provided in Section 21.

- 20.2 Additional work performed by the CONTRACTOR without authorization of a Change Order will not entitle him to an increase in the Contract Price or an extension of the Contract Time, except in the case of an emergency as provided in Section 18 and except as provided in Sections 16, 19, and 20.
- 20.3 The CITY reserves final approval authority on any Change Order prepared covering changes in the Work to be performed as provided in Section 11 and Work performed in an emergency as provided for in Section 18 and any other claim of the CONTRACTOR for a change in the Contract Time or the Contract Price.
- 20.4 It is the CONTRACTOR'S responsibility to notify his surety of any changes affecting the general scope of the Work or change in the Contract Price and the amount of the applicable Bonds shall be adjusted accordingly. The CONTRACTOR will furnish proof of such adjustment to the CITY.

SECTION 21 - DISPUTED CLAIMS FOR EXTRA COMPENSATION

- 21.1 Any and all claims for extra compensation, whether on behalf of the CONTRACTOR or SUBCONTRACTOR, shall be signed and made directly by the CONTRACTOR. Failure of the CONTRACTOR to file a claim within the following time frames and according to both the CITY's written claim procedures in effect at the time that the CONTRACTOR files the claim and the following process shall constitute waiver of the claim regardless of whether it can be proven that the CITY was prejudiced. When the CONTRACTOR claims extra compensation, which is disputed by the ENGINEER, the following process applies:

- 1) Notice of Claim. All notices of intent to file a claim for extra compensation shall be signed by the CONTRACTOR. If the CONTRACTOR intends to seek extra compensation for any reason not specifically covered elsewhere in the contract, the time requirements for notification shall be as follows:
 - 1. The CONTRACTOR shall notify the ENGINEER in writing before beginning the work or upon or encountering a circumstance on which the CONTRACTOR intends to base a claim.
 - 2. The CONTRACTOR shall notify the ENGINEER in writing within two business days after the commencement of a delay, for which the CONTRACTOR intends to seek compensation. Failure of the CONTRACTOR to give written notification will constitute a waiver of the claim for extra compensation except to the extent that claims are both substantiated by records created by the CITY as to liability and amount, and are for extra costs that were unforeseeable. The determination of extra compensation made by the CITY'S claims process, where the CONTRACTOR has failed to give proper written notice of its claim for extra compensation as provided herein or has failed to afford the ENGINEER proper information for keeping strict account of actual costs, shall be final and binding on the CONTRACTOR.

Neither the refusal of the CONTRACTOR to sign a written Contract Modification or Work Order, nor the CONTRACTOR'S signing a Contract Modification or Work Order under protest, shall constitute the notice required.

- 2) Keeping Records. If a CONTRACTOR files a notice of intent to file a claim, the CONTRACTOR shall keep accurate records of all costs of the work or delay and shall afford the ENGINEER all needed information for keeping costs of the work or delay that is the subject matter of the claim. The CONTRACTOR and ENGINEER shall compare records and bring them into agreement at the end of each day.
- 3) Validity of Claim. The validity of a claim shall not be established either by the filing of notice of intent to file a claim by a CONTRACTOR or the keeping of the cost records by the ENGINEER.
- 4) Timing for Filing of Claim. In addition to filing a timely notice of intent to file a claim, the CONTRACTOR shall file with the ENGINEER every claim for extra compensation within the following time frames (whichever comes first):
 1. No later than 90 days after the work involved in the claim is completed, or the delay, loss of efficiency, loss of productivity, or similar event is terminated; or
 2. No later than 60 days after the contract work is completed.
- 5) No extension of arbitration demand time. The time allowed for filing a claim shall not extend the time allowed for requesting arbitration of a dispute.
- 6) Content of the Claim. The CONTRACTOR'S claim shall include:
 1. All facts which gave rise to the claim;
 2. A copy of the specific provisions of the contract which support the claim; and
 3. When practical, the dollar amount of the claim with an explanation of how the amount was calculated.

The ENGINEER will review timely filed claims pursuant to the CITY'S written claim procedures in effect at the time the claims are filed.

SECTION 22 - CHANGE OF CONTRACT PRICE

- 22.1 The Contract Price constitutes the total compensation payable to the CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by the CONTRACTOR shall be at his expense without change in the Contract Price.
- 22.2 The Contract Price may only be changed by Change Order. If the CONTRACTOR shall claim compensation or extension of time for any losses, damages or delays sustained by reason of the acts of the CITY, or its agents or other causes he shall make a written statement of the nature of the loss, damage or delay sustained to the CITY under Section 21 of the General Conditions. At the time of delivery and as a part of the Application for Payment as hereinafter provided, the CONTRACTOR shall file with the CITY an itemized statement of the details and amount of loss, damage, or delay and unless these statements shall be made as thus required, the CONTRACTOR'S claim for compensation or extension of time shall be forfeited and invalidated, and he shall not be entitled to payment or extension of time on account of any such loss, damage, or delay. Any change resulting from any such claim shall be incorporated in a Change Order.
- 22.3 The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:
 - a) Where the Work involved is covered by unit prices contained in the Contract Documents, by

- application of unit prices to the quantities of the items involved.
- b) By mutual acceptance of a lump sum.
 - c) By cost and a mutually acceptable fixed amount for overhead and profit.
 - d) If none of the above methods is agreed upon, the value shall be determined on the basis of costs and a percentage for overhead and profit. Costs shall include only labor (payroll, payroll taxes, fringe benefits, workmen's compensation, etc.), materials, equipment and other incidentals directly related to the Work involved. The maximum percentage which shall be allowed for CONTRACTOR'S combined overhead and profit, shall be as follows:
 - e) For all such Work done by his own organization, the CONTRACTOR may add up to ten percent (10%) of his actual net increase in cost, and
 - f) For all such Work done by Subcontractors, each Subcontractor may add up to ten percent (10%) of his actual net increase in costs for combined overhead and profit and the CONTRACTOR may add up to five percent (5%) of the Subcontractor's total for his combined overhead and profit; provided that no overhead or profit shall be allowed on costs incurred in connection with premiums for public liability insurance or other special insurance directly related to such Work.
- 22.4 In such case and also under paragraph 21c the CONTRACTOR will submit in form prescribed by the CITY an itemized cost breakdown together with supporting data.
- 22.5 The amount of credit to be allowed by the CONTRACTOR to the CITY for any such change which results in a net decrease in cost will be the amount of the actual net decrease as determined by the CITY. When both additions and credits are involved in any one change, the combined overhead and profit shall be figured on the basis of the net increase, if any. The CITY reserves the right to decrease the contract quantities up to ten percent (10%) without penalty.

SECTION 23 - CASH ALLOWANCES

- 23.1 The CONTRACTOR shall include in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such suppliers or Subcontractors and for such sums as the CITY may approve. Upon final payment the Contract Price shall be increased or decreased, as required and an appropriate Change Order issued for changes in the Contract Price to cover the difference in cost between the work provided in the allowance and the actual work performed. The CONTRACTOR agrees that the original Contract Price includes such sums as he deems proper for overhead and profit on account of cash allowances. No demand for additional overhead or profit in connection therewith will be allowed.

SECTION 24 - CHANGE OF THE CONTRACT TIME

- 24.1 The Contract Time may only be changed by a Change Order. If the CONTRACTOR is entitled by the Contract Documents to make a claim for an extension in the Contract Time, his claim shall be in writing delivered to the CITY within ten (10) days of the occurrence of the event giving rise to the claim. All claims for adjustment in the Contract Time shall be determined by the CITY. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order.
- 24.2 The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of the CONTRACTOR if he makes a claim therefore as provided in Section 23. Such delays shall include, but not be restricted to acts of neglect by any separate contractor employed by the CITY, fires, floods, labor disputes, epidemics, abnormal weather conditions, or acts of God.

- 24.3 All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Section 23 shall not exclude recovery for damages (including compensation for additional professional services) for delay by either party.

SECTION 25 - NEGLECTED WORK

- 25.1 If the CONTRACTOR should neglect to prosecute the Work in accordance with the Contract Documents, including any requirements of the progress schedule, the CITY after three (3) days' written notice to the CONTRACTOR may, without prejudice to any other remedy he may have, make good such deficiencies and the cost thereof (including compensation for additional professional services) shall be charged against the CONTRACTOR, in which case a Change Order shall be issued incorporating the necessary revisions in the Contract Documents including an appropriate reduction in the Contract Price. If the payments then or thereafter due the CONTRACTOR are not sufficient to cover such amount, the CONTRACTOR will pay the difference to the CITY.

SECTION 26 - WARRANTY AND GUARANTEE: CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

- 26.1 The CONTRACTOR warrants and guarantees to the CITY that all materials and equipment will be new unless otherwise specified and that all work will be of good quality and free from faults or defects and in accordance with the requirements of the Contract Documents and of any inspections, tests or approvals referred to in Section 16. All unsatisfactory Work, all faulty or defective Work and all Work not conforming to the requirements of the Contract Documents or of such inspections, tests or approvals shall be considered defective. Prompt notice of all defects shall be given to the CONTRACTOR. All defective Work, whether or not in place, may be rejected.
- 26.2 If required by the CITY prior to approval of final payment, the CONTRACTOR will promptly, without cost to the CITY, either correct any defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by the CITY, remove it from the site and replace it with non-defective Work. If the CONTRACTOR does not correct such defective Work or remove and replace such rejected Work within a reasonable time, all as required by written notice from the CITY, the CITY may have the deficiency corrected or the rejected Work removed and replaced. All direct or indirect costs of such correction or removal and replacement, including compensation for additional professional services shall be paid by the CONTRACTOR, and an appropriate Change Order shall be issued deducting all such costs from the Contract Price.
- 26.3 The CONTRACTOR will also bear the expenses of making good all work of others destroyed or damaged by his correction, removal or replacement of his defective Work.
- 26.4 If, after the approval of final payment and prior to the expiration of one year after the date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, any Work is found to be defective the CONTRACTOR will, promptly without cost to the CITY and in accordance with the CITY'S written instructions, either correct such defective work, or, if it has been rejected by the CITY, remove it from the site and replace it with non-defective Work. If the CONTRACTOR does not promptly comply with the terms of such instructions, the CITY may have the defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, will be paid by the CONTRACTOR. If, instead of requiring correction or removal and replacement of defective Work, the CITY prefers to accept it, it may do so. In such case, if acceptance occurs prior to approval of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Price; or, if

the acceptance occurs after approval in the Contract Price; or, if the acceptance occurs after approval of final payment, an appropriate amount shall be paid by the CONTRACTOR.

SECTION 27 - APPLICATIONS FOR PROGRESS PAYMENTS

- 27.1 At least ten (10) days prior to submitting the first Application for Payment, the CONTRACTOR will submit a schedule of values of the Work including quantities and unit prices, aggregating the Contract Price. This schedule shall be satisfactory in form and substance to the CITY and shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Upon approval of the schedule of values by the CITY, it shall be incorporated into the form of Application for Payment furnished by the CITY.
- 27.2 At least ten (10) days before each progress payment will be requested (but not more often than once a month), the CONTRACTOR will submit to the CITY for review the Application for Payment and Certificate of the CONTRACTOR filled out and signed by the CONTRACTOR covering the Work performed as of the date of the Application and supported by any such data as the CITY may reasonably require. Ten percent (10%) of all Applications for Payment will be retained until final completion and acceptance of the Work. If Payment is requested on the basis of material and equipment not incorporated in the Work but delivered and suitably stored at the site or at the locations agreed to in writing, the Application for Payment shall also be accompanied by such supporting data satisfactory to the CITY as will establish the CITY'S title to the materials and equipment and protect its interest therein including applicable insurance.
- 27.3 The CONTRACTOR and CITY acknowledge that for certain public agency construction contracts Michigan Statutes (Act No. 524, Public Acts of 1980) require the payment of interest on retainage. The parties hereto agree however, to waive the requirements of Act No. 524 (MCLA 125.1561) if a contract is entered into between them to perform the construction improvements. In lieu of application of the Statute, the parties adopt the retainage terms and conditions contained in these contract General Conditions for their mutual convenience. The CITY agrees to pay and the CONTRACTOR agrees to accept the applicable sum as indicated in the following table as a stipulated interest on the retained amounts under the terms and conditions of this contract pursuant to the applicable Statute mentioned above. Such sums shall be paid at completion of the project and will be included in the last payment applicable to the project.

ORIGINAL CONTRACT AMOUNT	STIPULATED INTEREST ON RETAINAGE (\$)
\$ 0 to 99,999	50
100,000 to 249,999	100
250,000 to 499,999	150
500,000 to 749,999	250
750,000 to 999,999	400
1,000,000 and Over	Act No. 524 will apply

- 27.4 The CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by an Application for Payment, whether incorporated in the Project or not, will have passed to the CITY prior to the making of the Application for Payment, free and clear of all liens, claims, security interests and

encumbrances and that no Work, materials or equipment covered by an Application for Payment will have been acquired by the CONTRACTOR or by any other person performing the Work at the site or furnishing materials and equipment for the Project, subject to an agreement under which an interest therein or encumbrance thereon is retained by the seller or otherwise imposed by the CONTRACTOR or such other person.

- 27.5 The CITY will, within ten (10) days after receipt of each Application for Payment, either indicate in writing its recommendation for payment or return the Application to the CONTRACTOR indicating in writing its reasons for refusing to recommend payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the Application. The CITY will, within thirty (30) days of presentation to it of a CITY recommended Application for Payment, pay the CONTRACTOR the amount recommended.

SECTION 28 - RECOMMENDATION OF PAYMENTS

- 28.1 The CITY'S recommendation of any payment requested in an Application for Payment shall be based on the CITY'S on-site observations of the Work in Progress with an experienced and qualified design department and on its review of the Application for Payment and the supporting data, that the Work has progressed to the point indicated; that, to the best of its knowledge, information and belief, the equality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning Project upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents and any qualifications stated in its recommendation); and that the CONTRACTOR is entitled to payment of the amount approved. However, by recommending any such payment the CITY shall not thereby be deemed to have represented that it made exhaustive or continuous on-site inspections to check the quality or the quantity of the Work, or that it has reviewed the means, methods, techniques, sequences, and procedures of construction or that it has made any examination to ascertain how or for what purpose the CONTRACTOR has used the moneys paid or to be paid to him on account of the Contract Price.
- 28.2 The CITY'S recommendation of final payment shall constitute that the conditions precedent to the CONTRACTOR'S being entitled to final payment as set forth in Section 30 have been fulfilled.
- 28.3 The CITY may refuse the whole or any part of any payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in its opinion to protect the CITY from loss because:
- a) The Work is defective,
 - b) Claims have been filed or there is reasonable evidence indicating the probably filing thereof,
 - c) The Contract Price has been reduced because of Modifications.
 - d) The CITY has been required to correct defective Work or complete the Work in accordance with Section 24, or
 - e) Unsatisfactory prosecution of the Work, including failure to clean up as required by Section 37.

SECTION 29 - SUBSTANTIAL COMPLETION

- 29.1 Prior to final payment, the CONTRACTOR may, in writing to the CITY, certify that the entire Project is substantially complete and request that the CITY issue a Certificate of Substantial Completion. Within a reasonable time thereafter, the CITY and CONTRACTOR will make an inspection of the Project to determine the status of completion. If the CITY does not consider the Project substantially complete, it will notify the CONTRACTOR in writing, giving its reasons therefore. If the CITY considers the Project substantially complete, it will prepare a tentative Certificate of Substantial Completion which shall fix the date of Substantial Completion and the responsibilities between the CITY and the CONTRACTOR for

maintenance, heat and utilities. There shall be attached to the certificate a tentative list (PUNCH LIST) of items to be completed or corrected before final payment, and the certificate shall fix the time within which such items shall be completed or corrected, said time to be within the Contract Time.

- 29.2 The CITY shall have the right to exclude the CONTRACTOR from the Project after the date of Substantial Completion, but the CITY will allow the CONTRACTOR reasonable access to complete or correct items on the tentative list.

SECTION 30 - PARTIAL UTILIZATION

- 30.1 Prior to final payment, the CITY may request the CONTRACTOR in writing to permit it to use a specified part of the Project which it believes it may use without significant interference with construction of the other parts of the Project. If the CONTRACTOR agrees, he will certify to the CITY that said part of the Project is substantially complete and request the CITY to issue a certificate of Substantial Completion for that part of the Project. Within a reasonable time thereafter the CITY and the CONTRACTOR will make an inspection of that part of the Project to determine its status of completion. If the CITY does not consider that it is substantially complete, it will notify the CONTRACTOR in writing giving its reasons therefore. If the CITY considers that part of the Project to be substantially complete, it will execute and deliver to the CONTRACTOR a certificate to that effect, fixing the date of Substantial Completion as to that part of the Project, attaching thereto a tentative list (PUNCH LIST) of items to be completed or corrected before final payment and fixing the responsibility between the CITY and CONTRACTOR for maintenance, heat and utilities as to that part of the Project.
- 30.2 The CITY shall have the right to exclude the CONTRACTOR from any part of the Project which the CITY has so certified to be substantially complete, but the CITY will allow the CONTRACTOR reasonable access to complete or correct items on the tentative list.

SECTION 31 - FINAL PAYMENT

- 31.1 Upon written notice from the CONTRACTOR that the project is complete, the CITY will make a final inspection with the CONTRACTOR and will notify the CONTRACTOR in writing of any particulars in which this inspection reveals that the Work is defective. The CONTRACTOR shall immediately make such corrections as are necessary to remedy such defects.
- 31.2 After the CONTRACTOR has completed any such corrections to the satisfaction of the CITY and delivered all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection and other documents - all as required by the Contract Documents, he may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by such supporting data as the CITY may require, together with complete and legally effective releases or waivers (satisfactory to the CITY) of all claims arising out of the Contract Documents and the labor and services performed and the material and equipment furnished thereunder. In lieu thereof and as approved by the CITY, the CONTRACTOR may furnish receipts or releases in full; an affidavit of the CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a claim could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which the CITY or its property might in any way be responsible, have been paid or otherwise satisfied; and consent of the surety, if any, to final payment. If the Subcontractor or supplier fails to furnish a release or receipt in full, the CONTRACTOR may furnish a bond satisfactory to the CITY to indemnify it against claims.
- 31.3 If, on the basis of its observation and review of the Work during construction, its final inspection and its

review of the final Application for Payment - all as required by the Contract Documents, the CITY is satisfied that the Work has been completed and the CONTRACTOR has fulfilled all of his obligations under the Contract Documents, it will, within ten (10) days after receipt of the final Application for Payment, indicate in writing its recommendation of payment. Otherwise, it will return the Application to the CONTRACTOR, indicating in writing its reasons for refusing to recommend final payment, in which case the CONTRACTOR will make the necessary corrections and resubmit the Application. The CITY will, within thirty (30) days of presentation to it of a CITY recommended final Application for Payment, pay the CONTRACTOR the amount recommended.

- 31.4 If after Substantial Completion of the Work final completion thereof is materially delayed through no fault of the CONTRACTOR, and the CITY so confirms, the CITY shall, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for work not fully completed or corrected is less than the retainage stipulated, and if Bonds have been furnished as required in Section 33, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the CONTRACTOR to the CITY prior to certification of such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

SECTION 32 - WAIVERS OF CLAIMS AND CONTINUING OBLIGATIONS

- 32.1 The CONTRACTOR'S obligations to perform the Work and complete the Project in accordance with the Contract Documents shall be an absolute. Neither recommendation of any progress or final payment by the CITY, nor the issuance of a certificate of Substantial Completion, nor any payment by the CITY to the CONTRACTOR under the Contract Documents nor any use or occupancy of the Project or any part thereof by the CITY, nor any act of acceptance by the CITY nor any failure to do so, nor any correction of faulty or defective work by the CITY shall constitute an acceptance of Work not in accordance with the Contract Documents.
- 32.2 The making and acceptance of final payment shall constitute:
- a) A waiver of all claims by the CITY against the CONTRACTOR other than those arising from unsettled claims for labor or materials furnished in the Project, for faulty or defective work appearing after Final Payment or from failure to comply with the requirements of the Contract Documents or the terms of any special guarantees specified therein. Neither Final Payment or partial or entire occupancy of the premises by the CITY shall relieve the CONTRACTOR of negligence or faulty materials or workmanship and upon written notice he shall repair any defects or deficiencies due thereto and pay for any damages due to other work resulting therefrom which shall appear within one year after Substantial Completion and acceptance.
 - b) A waiver of all claims by the CONTRACTOR against the CITY other than those previously made in writing and still unsettled.

SECTION 33 - INDEMNIFICATION

- 33.1 The CONTRACTOR shall indemnify and hold harmless the CITY and its agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of the CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is

caused in part by a party indemnified hereunder.

- 33.2 If any and all claims against the CITY or any of its agents or employees by any employee of the CONTRACTOR, and Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Section 32 shall not be limited in any way by any limitation in the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any Subcontractor under workman's compensation acts, disability benefit acts or other employee benefit acts.

SECTION 34 - CONTRACT BONDS

- 34.1 The CONTRACTOR will furnish performance and payment Bonds as security for the faithful performance and payment of all his obligations under the Contract Documents. These Bonds shall be in amounts at least equal to the Contract Price and in such form and with such sureties as are acceptable to the CITY. Prior to execution of the Contract Documents the CITY may require the CONTRACTOR to furnish such other Bonds, in such form and with such sureties as it may require. If such Bonds are required by written instructions given prior to opening of Bids, the premiums shall be paid by the CONTRACTOR; if subsequent thereto, they shall be paid by the CITY. Bonds required as specified in the Information For Bidders will not be paid for as a contract item.

SECTION 35 - CONTRACTOR'S LIABILITY INSURANCE

- 35.1 The CONTRACTOR shall not commence work under this Contract until he has obtained all the insurance required under this Section and such insurance has been approved by the CITY, nor shall the CONTRACTOR allow any Subcontractor to commence work on his subcontract until all similar insurance required of the Subcontractor has been so obtained and approved.
- 35.2 The CONTRACTOR shall procure and shall maintain during the life of this Contract Workmen's compensation Insurance for all of his employees to be engaged in Work on the Project under this Contract. In case such work is sublet, the CONTRACTOR shall require the Subcontractor similarly to provide insurance for all of the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the CONTRACTOR'S Workman's Compensation Insurance. In case any class of employees engaged in hazardous work on the Project under this Contract is not protected under the Workmen's Compensation statute, the CONTRACTOR shall provide and shall cause each Subcontractor to provide adequate insurance for the protection of such of his employees not otherwise protected.
- 35.3 The CONTRACTOR shall procure and shall maintain during the life of this Contract, Insurance coverages as specified in Section I-1 of the Bid Documents.
- 35.4 The CONTRACTOR shall either (a) require each of his Subcontractors to procure and to maintain during the life of his Subcontract, Subcontractor's Public Liability Property Damage and Vehicle Liability Insurance of the type and amount specified in the above paragraphs of this Section hereof or, (b) insure the activities of his Subcontractors in his policy, specified in the above paragraphs of this Section hereof.
- 35.5 The insurance required under the above paragraphs of this section hereof shall provide adequate protection for the CITY against damage claims which may arise from operations under this Contract, whether such operations be by the insured or by anyone directly or indirectly employed by him. This paragraph is construed to require the procurement of CONTRACTOR'S protective insurance (or Contingent Public Liability and Property Damage Policies) by a CONTRACTOR, whose Subcontractor has employees

working on the Project, unless the General Public Liability and Property Damage Policy (or rider attached thereto) of the CONTRACTOR provides adequate protection against claims arising from operations by anyone indirectly employed by him.

SECTION 36 - CITY'S LIABILITY COVERAGE

- 36.1 The CONTRACTOR shall procure, as a rider on his liability insurances, additional coverage to protect the CITY against claims which may arise from operations under the Contract Documents.

SECTION 37 - PROPERTY INSURANCE

- 37.1 Unless otherwise provided, the CONTRACTOR will purchase and maintain property insurance upon the Project to the full insurable value thereof. The insurance shall include the interests of the CITY, the CONTRACTOR and Subcontractors, in the Work and shall insure against the perils of Fire, Extended Coverage, Vandalism and Malicious Mischief.
- 37.2 The CITY upon notification from the CONTRACTOR that such facilities are operative, purchase and maintain such steam boiler and machinery insurance as may be required by the Contract Documents or by law. This insurance shall include the interest of the CITY, the CONTRACTOR and Subcontractors in the Work.
- 37.3 Any insured loss under the policies of insurance required by Section 36, is to be adjusted with the CITY and made payable to the CITY as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clauses.
- 37.4 The CONTRACTOR will file a copy of all policies with the CITY before an exposure to loss may occur.
- 37.5 If the CITY requests in writing that other special insurance be included in the property insurance policy, the CONTRACTOR will, if possible, include such insurance, and the cost thereof shall be charged to the CITY by appropriate Change Order.
- 37.6 The CITY and CONTRACTOR waive all rights against each other for damages caused by fire or other perils to the extent covered by insurance provided under this Section 36, except such rights as they may have to the proceeds of such insurance held by the CITY as trustee. The CONTRACTOR shall require similar waivers by Subcontractors in accordance with Section 7.
- 37.7 The CITY as trustee will have power to adjust and settle any loss with the insurers.

SECTION 38 - CLEANING UP

- 38.1 The CONTRACTOR will keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work and at the completion of the Work he will remove all his materials, rubbish and debris from and about the premises as well as all tools, construction equipment and machinery, and surplus materials, and will leave the site clean and ready for occupancy by the CITY. The CONTRACTOR will restore to their original condition those portions of the site not designated for alteration by the Contract Documents.

SECTION 39 - CITY'S RIGHT TO STOP OR SUSPEND WORK

- 39.1 If the Work is defective, or the CONTRACTOR fails to supply sufficient skilled workmen, or suitable materials or equipment, or if the CONTRACTOR fails to make prompt payments to the Subcontractors, or

for labor, materials or equipment, the CITY may order the CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated.

- 39.2 The CITY may, at any time and without cause, suspend the work or any portion thereof for a period of not more than ninety (90) days by notice in writing to the CONTRACTOR which shall fix the date on which Work shall be resumed. The CONTRACTOR will resume the Work on the date so fixed. The CONTRACTOR may be allowed an increase in the Contract Price or an extension of the Contract Time directly attributable to any suspension making a claim therefore as provided in Section 21 and 23.

SECTION 40 - CITY'S RIGHT TO TERMINATE

- 40.1 If the CONTRACTOR is adjudged a bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the CONTRACTOR or for any of his property, or if he files a petition to take advantage of any debtors' act, or to reorganize under the bankruptcy or similar laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to Subcontractors, or for labor, materials, or equipment or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction, or if he disregards the authority of the CITY, or if he otherwise violates any provision of the Contract Documents, then the CITY may, without prejudice to any other right or remedy and after giving the CONTRACTOR and his surety seven (7) days' written notice, terminate the services of the CONTRACTOR and take possession of the Project and of all materials, equipment, tools, construction equipment and machinery thereon owned by the CONTRACTOR, and finish the Work by whatever method it may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Project, including compensation for additional professional services, such excess shall be paid to the CONTRACTOR. If such costs exceed such unpaid balance, the CONTRACTOR will pay the difference to the CITY. Such costs incurred by the CITY will be determined and incorporated into a Change Order.
- 40.2 Where the CONTRACTOR'S services have been so terminated by the CITY, said termination shall not affect any rights of the CITY against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys by the CITY due the CONTRACTOR will not release the CONTRACTOR from liability.
- 40.3 Upon seven (7) days' written notice to the CONTRACTOR the CITY may, without cause and without prejudice to any other right or remedy, elect to abandon the Project and terminate the Agreement. In such case, the CONTRACTOR shall be paid for all work executed and any expense sustained plus a reasonable profit.

SECTION 41 - CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE

- 41.1 If, through no act or fault of the CONTRACTOR, the Work is suspended for a period of more than ninety (90) days by the CITY or under an order of court or other public authority, or the CITY fails to pay the CONTRACTOR any sum approved or awarded by arbitrators within ninety (90) days of its approval and presentation, then the CONTRACTOR may, upon seven (7) days' written notice to the CITY, terminate the Agreement and recover from the CITY payment for all Work executed and any expense sustained plus a reasonable profit.

SECTION 42 - (NOT APPLICABLE TO THIS CONTRACT)

SECTION 43 - ARBITRATION

- 43.1 All claims, disputes and other matters in question arising out of or relating to this Agreement except claims which have been waived by the making or acceptance of final payment as provided in Section 31 shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association. Any award rendered hereunder shall be final and judgment may be entered based upon said award in accordance with the Michigan Statutes and General Court Rules pertaining thereto. Any award rendered hereunder may be vacated solely upon the grounds specified in said statute and court rules and in addition on the basis that the award is contrary to law.
- 43.2 Notice of the request for arbitration shall be filed in writing with the CITY (and any other party to the Agreement) and with the American Arbitration Association. The request for arbitration shall be made within the thirty (30) day period specified in Paragraph 14.3 where applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall it be made after six (6) months from that date. The location for any such mediation or arbitration shall be the City of Sault Ste. Marie.
- 43.3 CONTRACTOR shall continue to perform the Work and maintain the progress schedule during the pendency of any claim or dispute which may be subject to arbitration and during the pendency of any arbitration proceedings, unless otherwise agreed between the CITY and CONTRACTOR in writing, which agreement shall not extend the delay beyond the time when the arbitrator shall have an opportunity to determine whether the Work shall continue to be suspended.
- 43.4 The CITY may also include the CITY'S consultant(s) involved with the design and/or construction engineering of the project, as a third party defendant in any mediation or arbitration process regarding any claims, disputes or other matters in question related to this project.

SECTION 44 - MISCELLANEOUS

- 44.1 Whenever any provision of the Contract Documents requires the giving of written notice it shall be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an office of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to him who gives the notice.
- 44.2 The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder, and, in particular, but without limitation, the warranties, guarantees and obligations imposed upon the CONTRACTOR by Sections 25 and 32 and the rights and remedies available to the CITY thereunder, shall be in addition to and not a limitation of any otherwise imposed or available by law, by special guarantee or other provisions of the Contract Documents.
- 44.3 Should the CITY or the CONTRACTOR suffer injury or damage to its persons or property because of any error, omission or act of the other or of any of his employees or agents or others for whose acts he is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage.
- 44.4 The Contract Documents shall be governed by the law of the place of the Project.
- 44.5 The CONTRACTOR shall not assign the whole or any part of this Contract or any moneys due or to

become due hereunder without written consent of the CITY. In case the CONTRACTOR assigns all or any part of any moneys due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any moneys due or to become due to the CONTRACTOR shall be subject to prior liens of all persons, firms and corporations for services rendered or materials supplied for the performance of the Work called for in this Contract.

CITY OF SAULT STE. MARIE, MICHIGAN

SUPPLEMENTAL CONDITIONS

City of Sault Ste. Marie

General

The CONTRACTOR shall furnish all labor, materials, equipment, tools, transportation and necessary supplies, and shall perform all operations required to complete the work included in this project in accordance with the project plans, contract provisions and the following SPECIAL PROVISIONS, SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS, as applicable.

The CONTRACTOR shall be responsible for obtaining all necessary permits for this construction project including the applicable permit and plan review fees.

Conditional Requirements

1. Before bid opening, the Bidder must have paid all current water, sewer, personal property taxes, and other charges owed to the City of Sault Ste. Marie on any account no matter how arising. Any Bidder who at the time of opening the bid is not current on all such charges may be rejected by the City as ineligible to bid. In the alternative, if the City of Sault Ste. Marie chooses to award the bid notwithstanding such delinquency, the Contract payments shall be set off in an amount sufficient to pay all such accounts. The method and time of such set off shall be at the discretion of the City Manager.

NOTICE OF AWARD

To: _____

PROJECT NAME: B-24-23 Pullar Kitchen Exhaust Hood

The OWNER has considered your BID dated _____ for the above referenced project. You are hereby notified that your bid has been accepted for the WORK described as: Pullar Kitchen Exhaust Hood, in the total sum of \$_____.

You are required to execute the Agreement and furnish the required CONTRACTOR'S certificates of Insurance coverage, Payment Bond, and Performance Bond in the amount specified in the contract documents within ten (10) calendar days from the date of this Notice. Three (3) unsigned copies of the Agreement, prepared for your signature, will be sent to you within 3 business days of this Notice of Award. The NOTICE TO PROCEED will not be issued until the CITY receives the required Bonds, Insurance and executed Agreement from the CONTRACTOR and until such documents are in accordance with the contract requirements and are approved by the CITY.

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

Dated this _____ day of _____, 2023

Owner: City of Sault Ste. Marie

BY: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

this _____ day of _____, 2023

By: _____
(SIGNATURE)

(PRINT)

Title: _____

NOTICE TO PROCEED

TO: _____ DATE: _____

PROJECT: B-24-23 Pullar Kitchen Exhaust Hood

You are hereby notified to commence WORK in accordance with the Agreement _____, on or before _____, and you are to complete the WORK in accordance with the Agreement to ensure that the project is completed by **September 1, 2024**.

You are required to return an acknowledged copy of this NOTICE TO PROCEED to the OWNER.

CITY OF SAULT STE. MARIE, MICHIGAN

Owner

BY:

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by

(CONTRACTORS COMPANY NAME)

this the _____ day of _____, **2023**

BY: _____

(SIGNATURE)

(PRINT)

TITLE: _____

(PRINT)

SECTION 092116 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Gypsum board and joint treatment.
 2. Gypsum sheathing.
 3. Acoustic insulation.

1.2 REFERENCE STANDARDS

- A. ASTM International:
1. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 2. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board.
 3. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
 4. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.
 5. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 6. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
 7. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.
 8. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
 9. ASTM C1002 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases.
 10. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
 11. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel.
 12. ASTM C1280 - Standard Specification for Application of Gypsum Sheathing.
 13. ASTM C1288 - Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets.
 14. ASTM C1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cement Substrate Sheets.
 15. ASTM C1396/C1396M - Standard Specification for Gypsum Board.
 16. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 17. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
 18. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
 19. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

- B. American Society of Civil Engineers:
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- C. Gypsum Association:
 - 1. GA 214 - Recommended Levels of Gypsum Board Finish.
 - 2. GA 216 - Application and Finishing of Gypsum Board.
 - 3. GA 600 - Fire Resistance Design Manual Sound Control.
- D. Intertek Testing Services (Warnock Hersey Listed):
 - 1. WH - Certification Listings.
- E. National Fire Protection Association:
 - 1. NFPA 265 - Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Coverings on Full Height Panels and Walls, Method B.
 - 2. NFPA 286 - Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Wall and Ceiling Interior Finish.
- F. Underwriters Laboratories Inc.:
 - 1. UL - Fire Resistance Directory.

1.3 SUBMITTALS

- A. General Conditions: Section 15 – Shop Drawings and Samples.
- B. Product Data: Submit data on wood framing, gypsum board, joint tape and acoustic accessories.
- C. Shop Drawings:
 - 1. Indicate special details associated with acoustic seals.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

PART 2 - PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

- A. Manufacturers:
 - 1. Certain Teed Gypsum, Inc.
 - 2. G-P Gypsum Corp.
 - 3. National Gypsum Co.
 - 4. United States Gypsum Co.
 - 5. Substitutions: General Conditions: Section 8 – Materials, Equipment and Labor: Substitute Material or Equipment.

2.2 COMPONENTS

- A. Framing Materials:
 - 1. Attached to existing framing.
 - B. Gypsum Board Materials: ASTM C1396/C1396M.
 - 1. Standard Gypsum Board: 5/8 inch thick, maximum available length in place; ends square cut, tapered and beveled edges.
 - 2. Moisture-resistant Gypsum Board:
 - a. Thickness: 1/2 inch
 - b. Length: available in place.
 - c. Ends: Square cut.
 - d. Edges: Tapered.
- Mold/Mildew Resistance: 10 in scale of one to 10; ASTM D3273.

2.3 ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced, thickness required for sound rating.
- B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.
- C. Gypsum Board Accessories: ASTM C1047; metal; corner beads, edge trim, and expansion joints.
 - 1. Metal Accessories: Zinc.
 - 2. Edge Trim: Type L bead.
- D. Joint Materials: ASTM C475/C475M; GA-216; reinforcing tape, joint compound, and water.
- E. Gypsum Board Screws: ASTM C954 ASTM C1002; length to suit application.
 - 1. Screws for Steel Framing: Type S.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify site conditions are ready to receive work and opening dimensions are as indicated on shop drawings.

3.2 INSTALLATION

- A. Gypsum Board Installation:
 - 1. Install gypsum board in accordance with ASTM C840.
 - 2. Erect single layer standard gypsum board, with ends and edges occurring over firm bearing.
 - 3. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.

4. Erect exterior gypsum sheathing in accordance with ASTM C1280, horizontally, with edges butted and ends occurring over firm bearing.
5. Use screws when fastening gypsum board to metal furring or framing.
6. At acoustical wall: Fasten second layer of gypsum board to first with acoustic adhesive at manufacturer's recommended rate of coverage.
7. Place second layer perpendicular parallel to first layer. Offset joints of second layer from joints of first layer.
8. Erect exterior gypsum soffit board perpendicular to supports, with staggered end joints over supports.
9. Treat cut edges and holes in moisture resistant gypsum board and exterior gypsum soffit board with sealant.
10. Place control joints consistent with lines of building spaces. Review layout with Architect prior to placement.
11. Place corner beads at external corners at exterior corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials

B. Joint Treatment:

1. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
2. Feather coats on to adjoining surfaces so that camber is maximum 1/32 inch.
3. Fill and finish joints and corners of cementitious backing board.

3.3 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from Flat Surface: 1/8 inch in 10 feet.

END OF SECTION 092116

SECTION 099000 - PAINTING AND COATING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Surface preparation and field application of paints, stains, varnishes, and other coatings.

1.2 DEFINITIONS

- A. Refer to ASTM D16 for definitions of terms used in this Section.

1.3 REFERENCE STANDARDS

- A. ASTM International:
 - 1. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.
 - 2. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials.
 - 3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. Green Seal:
 - 1. GS-03 - Anti-Corrosive Paints.
 - 2. GS-11 - Paints and Coatings.
- C. Master Painters Institute:
 - 1. MPI - Approved Products List.
 - 2. MPI - Architectural Painting Manual.

1.4 SUBMITTALS

- A. General Conditions: Section 15 – Shop Drawings and Samples.
- B. Product Data:
 - 1. Submit manufacturer data on finishing products and special coatings.
 - 2. Include MPI - Approved Products Lists with proposed products highlighted.
- C. Samples:
 - 1. Submit two paper chip samples, 4 by 4 inches in size, illustrating range of colors and textures available for each surface finishing product as scheduled.

1.5 CLOSEOUT SUBMITTALS

- A. General Conditions: Section 38 – Cleaning Up.
- B. Operation and Maintenance Data: Submit information on cleaning, touchup, and repair of painted and coated surfaces.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Extra Stock Materials:
 - 1. Furnish one gallon of each color, type, and surface texture as provided for Project.
 - 2. Label each container with manufacturer's label, color, type, texture, room number, and Site location.
 - 3. Store where directed by Owner.

1.7 QUALITY ASSURANCE

- A. MPI Standards:
 - 1. Comply with indicated MPI standards.
 - 2. Products: Listed in MPI - Approved Products List.
- B. Surface Burning Characteristics:
 - 1. Fire-Retardant Finishes: Maximum 25/450 flame-spread/smoke-developed index when tested according to ASTM E84.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.
- B. Applicator: Company specializing in performing Work of this Section with minimum three years' documented experience.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. General Conditions: Section 8 – Materials, Equipment and Labor: Substitute Material or Equipment.
- B. Container Labeling: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Inspection:
 - 1. Accept materials on Site in manufacturer's sealed and labeled containers.
 - 2. Inspect for damage and to verify acceptability.
- D. Store materials in ventilated area and otherwise according to manufacturer instructions.

- E. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Provide additional protection according to manufacturer instructions.

1.10 AMBIENT CONDITIONS

- A. General Conditions: Section 8 – Materials, Equipment and Labor: Substitute Material or Equipment.
- B. Storage Conditions:
 - 1. Minimum Ambient Temperature: 45 degrees F.
 - 2. Maximum Ambient Temperature: 90 degrees F
- C. Application Conditions:
 - 1. Do not apply materials when surface and ambient temperatures are outside temperature ranges required by paint manufacturer.
 - 2. Do not apply exterior coatings during rain or snow, when relative humidity is outside humidity ranges, or when moisture content of surfaces exceeds those required by paint manufacturer.
 - 3. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors and 50 degrees F for exteriors, unless otherwise indicated by manufacturer instructions.
 - 4. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interiors and exteriors, unless otherwise indicated by manufacturer instructions.
 - 5. Lighting Level: 80 fc measured mid-height at substrate surface.

1.11 WARRANTY

- A. General Conditions: Section 26 – Warranty and Guarantee: Correction, Removal or Acceptance of Defective Work.
- B. Furnish five-year manufacturer's warranty for paint and coatings.

PART 2 - PRODUCTS

2.1 PAINTS AND COATINGS

- A. Manufacturers:
 - 1. Sherwin Williams (basis for design)
 - 2. Benjamin Moore
 - 3. Pittsburgh Paint.
 - 4. Minwax.
 - 5. Substitutions: As specified in General Conditions: Section 8 – Materials, Equipment and Labor: Substitute Material or Equipment.
- B. Materials:
 - 1. Coatings:

- a. Ready mixed, except field-catalyzed coatings.
 - b. Capable of drying or curing free of streaks or sags.
2. Patching Materials: Latex filler.
3. Fastener Head Cover Materials: Latex filler.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and substrate conditions are ready to receive Work as recommended by product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of Work, and report conditions capable of affecting proper application to Architect/Engineer.
- C. Test shop-applied primer for compatibility with subsequent cover materials.
- D. Moisture Content:
 1. Measure moisture content of surfaces using electronic moisture meter.
 2. Do not apply finishes unless moisture content of surfaces are below following maximums:
 - a. Plaster and Gypsum Wallboard: 12 percent.
 - b. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
 - c. Interior Wood: 15 percent, measured according to ASTM D4442.
 - d. Exterior Wood: 15 percent, measured according to ASTM D4442.
 - e. Concrete Floors: 8 percent.

3.2 PREPARATION

- A. Prepare coatings as follows:
 1. To soft paste consistency, capable of being readily and uniformly dispersed to homogeneous coating.
 2. For smooth flow and brushing properties.
- B. Surface Appurtenances: Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
- C. Defects:
 1. Correct defects and clean surfaces capable of affecting Work of this Section.
 2. Remove or repair existing coatings exhibiting surface defects.
 3. Remove existing coatings, on concrete masonry units where stone veneer is being installed. Sand blast coating to porous concrete surface for best adhesion.
 4. Scuff epoxy coating on concrete floor to receive new resilient flooring.
- D. Marks: Seal marks that may bleed through surface finishes with shellac.
- E. Gypsum Board Surfaces:
 1. Fill minor defects with filler compound.

2. Spot-prime defects after repair.

3.3 APPLICATION

- A. Comply with MPI - Architectural Painting Manual.
- B. Do not apply finishes to surfaces that are not dry.
- C. Apply each coat to uniform appearance.
- D. Apply each coat of paint slightly darker than preceding coat, unless specified otherwise.
- E. Sand wood and metal surfaces lightly between coats to achieve required finish.
- F. Cleaning:
 1. Vacuum surfaces to remove loose particles.
 2. Use tack cloth to remove dust and particles just prior to applying next coat.
- G. Fillers:
 1. If clear finishes are required, tint fillers to match wood.
 2. Work fillers into grain before set, and wipe excess from surface.
- H. Concealed Surfaces:
 1. Prime concealed surfaces of interior and exterior woodwork with primer paint.
 2. Prime concealed surfaces of interior wood surfaces scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with thinner.
- I. Finishing Mechanical and Electrical Equipment:
 1. Schedule of Color-Coding and Identification Banding of Equipment, Ductwork, Piping, and Conduit: As specified in Section 230553 - Identification for HVAC Piping and Equipment.
 2. Paint shop-primed equipment.
 3. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components, and paint separately.
 4. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where these items are shop finished.
 5. Paint interior surfaces of air ducts and convector and baseboard heating cabinets visible through grilles and louvers with one coat of flat black paint to visible surfaces.
 6. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.
 7. Paint exposed conduit and electrical equipment installed in finished areas.
 8. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.
 9. Color-Coding:
 - a. Color-code equipment, piping, conduit, and exposed duct work according to indicated requirements.
 - b. Color band and identify with flow arrows, names, and numbering.
 10. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings that were removed prior to finishing.

3.4 FIELD QUALITY CONTROL

- A. Inspecting and Testing: Comply with MPI - Architectural Painting Manual.

3.5 CLEANING

- A. General Conditions: Section 38 – Cleaning Up.
- B. Collect waste material that may constitute fire hazards, place in closed metal containers, and remove daily from Site.

3.6 ATTACHMENTS

- A. Schedule - Interior Surfaces:
 - 1. Gypsum Board Soffit:
 - a. One coat of latex primer sealer. S-W ProMar 200 Latex Primer.
 - b. Two coats of latex enamel, flat finish, S-W ProMar 200, color to match existing, flat (4 mils wet, 1.4 mils dry per coat).

END OF SECTION 099000

SECTION 23 05 29

HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe hangers and supports.
 - 2. Hanger rods.
 - 3. Inserts.
 - 4. Flashing.
 - 5. Equipment curbs.
 - 6. Sleeves.
 - 7. Mechanical sleeve seals.
 - 8. Formed steel channel.
 - 9. Equipment bases and supports.
- B. Related Sections:
 - 1. Section 23 11 23 - Facility Natural-Gas Piping: Execution requirements for placement of hangers and supports specified by this section.

1.2 REFERENCES

- A. American Society of Mechanical Engineers:
 - 1. ASME B31.1 - Power Piping.
- B. ASTM International:
 - 1. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
 - 2. ASTM E814 - Standard Test Method for Fire Tests of Through Penetration Fire Stops.
 - 3. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.
- C. American Welding Society:
 - 1. AWS D1.1 - Structural Welding Code - Steel.
- D. FM Global:
 - 1. FM - Approval Guide, A Guide to Equipment, Materials & Services Approved By Factory Mutual Research For Property Conservation.
- E. Manufacturers Standardization Society of the Valve and Fittings Industry:
 - 1. MSS SP 58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.
- F. Underwriters Laboratories Inc.:
 - 1. UL 263 - Fire Tests of Building Construction and Materials.
 - 2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
 - 3. UL 1479 - Fire Tests of Through-Penetration Firestops.
 - 4. UL 2079 - Tests for Fire Resistance of Building Joint Systems.

5. UL - Fire Resistance Directory.

G. Intertek Testing Services (Warnock Hersey Listed):

1. WH - Certification Listings.

1.3 DEFINITIONS

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Product Data:

1. Hangers and Supports: Submit manufacturers catalog data including load capacity.
2. Firestopping: Submit data on product characteristics, performance and limitation criteria.

C. Manufacturer's Installation Instructions:

1. Hangers and Supports: Submit special procedures and assembly of components.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

E. Maintain one copy of each document on site.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years experience.

B. Installer: Company specializing in performing Work of this section with minimum 3 years experience.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.

C. Protect from weather and construction traffic, dirt, water, chemical, and damage, by storing in original packaging.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.

B. Provide ventilation in areas to receive solvent cured materials.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.9 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer warranty for pipe hangers and supports.

PART 2 PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

- A. Manufacturers:
 - 1. ERICO International Corporation.
 - 2. Hilti, Inc.
 - 3. NIBCO INC.
 - 4. Substitutions: Section 01 60 00 - Product Requirements.

2.2 ACCESSORIES

- A. Hanger Rods: Mild steel threaded both ends, threaded on one end, or continuous threaded.

2.3 INSERTS

- A. Manufacturers:
 - 1. ERICO International Corporation.
 - 2. Hilti, Inc.
 - 3. Substitutions: Section 01 60 00 - Product Requirements.
- B. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

2.4 FLASHING

- A. Metal Flashing: 26 gage thick galvanized steel.
- B. Metal Counterflashing: 22 gage thick galvanized steel.
- C. Lead Flashing:
 - 1. Waterproofing: 5 lb./sq. ft sheet lead.
 - 2. Soundproofing: 1 lb./sq. ft sheet lead.
- D. Flexible Flashing: 47 mil thick sheet butyl; compatible with roofing.
- E. Caps: Steel, 22 gage minimum; 16 gage at fire resistant elements.

2.5 EQUIPMENT CURBS

- A. Manufacturers:

1. Greenheck Fan Corp.
2. Lloyd Industries, Inc.
3. Substitutions: Section 01 60 00 - Product Requirements.

- B. Fabrication: Welded 18 gage galvanized steel shell and base, 24" min height, mitered 3 inch cant, 1-1/2 inch thick insulation, factory installed wood nailer.

2.6 SLEEVES

- A. Sleeves for Pipes Through Non-fire Rated Floors: 18 gage thick galvanized steel.
- B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.
- C. Sleeves for Round Ductwork: Galvanized steel.
- D. Sleeves for Rectangular Ductwork: Galvanized steel or wood.
- E. Sealant: Acrylic.

2.7 MECHANICAL SLEEVE SEALS

- A. Manufacturers:
 1. Linkseal-EnPro Industries.
 2. Metraflex Company.
 3. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

PART 3 EXECUTION

3.1 INSTALLATION - INSERTS

- A. Install inserts for placement in concrete forms.
- B. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe 4 inches and larger.
- D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
- E. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.

3.2 INSTALLATION - PIPE HANGERS AND SUPPORTS

- A. Install in accordance with ASME B31.1.
- B. Support horizontal piping as scheduled.
- C. Install hangers with minimum 1/2 inch space between finished covering and adjacent work.
- D. Place hangers within 12 inches of each horizontal elbow.
- E. Use hangers with 1-1/2 inch minimum vertical adjustment.
- F. Support vertical piping at every floor.
- G. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.
- H. Support riser piping independently of connected horizontal piping.
- I. Provide copper plated hangers and supports for copper piping.
- J. Design hangers for pipe movement without disengagement of supported pipe.
- K. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
- L. Provide clearance in hangers and from structure and other equipment for installation of insulation. Refer to Section 22 07 00.

3.3 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

- A. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.
- B. Construct supports of steel members. Brace and fasten with flanges bolted to structure.

3.4 INSTALLATION - FLASHING

- A. Provide flexible flashing and metal Counterflashing where piping and ductwork penetrate weather or waterproofed walls, floors, and roofs.
- B. Provide acoustical lead flashing around ducts and pipes penetrating equipment rooms for sound control.
- C. Provide curbs for roof installations 14 inches minimum high above roofing surface. Flash and counter-flash with sheet metal; seal watertight. Attach Counterflashing to equipment and lap base flashing on roof curbs. Flatten and solder joints.

- D. Adjust storm collars tight to pipe with bolts; caulk around top edge. Use storm collars above roof jacks. Screw vertical flange section to face of curb.

3.5 INSTALLATION - SLEEVES

- A. Exterior watertight entries: Seal with mechanical sleeve seals.
- B. Set sleeves in position in forms. Provide reinforcing around sleeves.
- C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- D. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.
- E. Install chrome plated steel escutcheons at finished surfaces.

3.6 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for inspecting, testing.

3.7 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Protect adjacent surfaces from damage by material installation.

3.8 SCHEDULES

- A. Copper and Steel Pipe Hanger Spacing: per applicable code.

END OF SECTION

SECTION 23 05 53

IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Nameplates.
 - 2. Pipe markers.
 - 3. Labels.

1.2 REFERENCES

- A. American Society of Mechanical Engineers:
 - 1. ASME A13.1 - Scheme for the Identification of Piping Systems.

1.3 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years experience.

PART 2 PRODUCTS

2.1 NAMEPLATES

- A. Manufacturers; Name Plates:
 - 1. Seton Identification Products
 - 2. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description: Laminated three-layer plastic with engraved black letters on light contrasting background color.

2.2 PIPE MARKERS

- A. Color and Lettering: Conform to ASME A13.1.
- B. Manufacturers; Pipe Marker:
 - 1. Seton Identification Products

2. Substitutions: Section 01 60 00 - Product Requirements.
 3. Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener.
- C. Manufacturers; Plastic Tape Pipe Marker:
1. Seton Identification Products
 2. Substitutions: Section 01 60 00 - Product Requirements.
 3. Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

PART 3 EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

3.2 INSTALLATION

- A. Install identifying devices after completion of coverings and painting.
- B. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive.
- C. Install labels with sufficient adhesive for permanent adhesion and seal with clear lacquer. For unfinished canvas covering, apply paint primer before applying labels.
- D. Identify air handling units, pumps, heat transfer equipment, tanks, and water treatment devices with plastic nameplates. Identify in-line pumps and other small devices with tags.
- E. Identify control panels and major control components outside panels with plastic nameplates.
- F. Tag automatic controls, instruments, and relays. Key to control schematic.
- G. Identify piping, concealed or exposed, with plastic pipe markers. Use tags on piping 3/4 inch diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.
- H. For exposed natural gas lines other than steel pipe, attach yellow pipe labels with "GAS" in black lettering, at maximum 5 foot spacing.

END OF SECTION

SECTION 23 05 93

TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Testing, adjusting, and balancing of air systems.
 - 2. Measurement of final operating condition of HVAC systems.

1.2 REFERENCES

- A. Testing Adjusting and Balancing Bureau:
 - 1. TABB - International Standards for Environmental Systems Balance.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Prior to commencing Work, submit proof of latest calibration date of each instrument.
- C. Test Reports: Indicate data on forms prepared following ASHRAE 111. Submit data in S.I. units.
- D. Field Reports: Indicate deficiencies preventing proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
- E. Submit draft copies of report for review prior to final acceptance of Project.
- F. Furnish reports in soft cover, letter size, 3-ring binder manuals, complete with table of contents page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Furnish final copy of testing, adjusting, and balancing report inclusion in operating and maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with ASHRAE 111.
- B. Maintain one copy of each document on site.

- C. Prior to commencing Work, calibrate each instrument to be used.

1.6 QUALIFICATIONS

- A. Agency: Company specializing in testing, adjusting, and balancing of systems specified in this section with minimum three years experience certified by TABB.

1.7 SEQUENCING

- A. Section 01 10 00 - Summary: Work sequence.
- B. Sequence balancing between completion of systems tested and Date of Substantial Completion.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify systems are complete and operable before commencing work. Verify the following:
 - 1. Systems are started and operating in safe and normal condition.
 - 2. HVAC control systems are installed complete and operable.
 - 3. Proper thermal overload protection is in place for electrical equipment.
 - 4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
 - 5. Duct systems are clean of debris.
 - 6. Fans are rotating correctly.
 - 7. Air coil fins are cleaned and combed.
 - 8. Access doors are closed and duct end caps are in place.
 - 9. Air outlets are installed and connected.
 - 10. Duct system leakage is minimized.
 - 11. Proper strainer baskets are clean and in place or in normal position.

3.2 PREPARATION

- A. Furnish instruments required for testing, adjusting, and balancing operations.
- B. Make instruments available to Architect/Engineer to facilitate spot checks during testing.

3.3 INSTALLATION TOLERANCES

- A. Air Handling Systems: Adjust to within plus or minus 10 percent of design.

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

3.4 ADJUSTING

- A. Section 01 70 00 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Verify recorded data represents actual measured or observed conditions.
- C. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
- D. After adjustment, take measurements to verify balance has not been disrupted. If disrupted, verify correcting adjustments have been made.
- E. Report defects and deficiencies noted during performance of services, preventing system balance.
- F. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

3.5 AIR SYSTEM PROCEDURE

- A. Adjust air handling and distribution systems to obtain required or design supply, return, and exhaust air quantities.
- B. Make air flow rate measurements in main ducts by Pitot tube traverse of entire cross sectional area of duct.
- C. Measure air quantities at air inlets and outlets.
- D. Adjust distribution system to obtain:
 - 1. Space temperatures within 2 degrees F.
 - 2. Minimal objectionable drafts.
- E. Use volume control devices to regulate air quantities only to extent adjustments do not create objectionable air motion or sound levels. Effect volume control by using volume dampers located in ducts.
- F. Vary total system air quantities by adjustment of fan speeds. Provide sheave drive changes to vary fan speed. Vary branch air quantities by damper regulation.
- G. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.
- H. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across fan. Make allowances for 50 percent loading of filters.
- I. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.

3.6 SCHEDULES

- A. Partial list of Equipment Requiring Testing, Adjusting, and Balancing:
 - 1. Air Handling Units.
 - 2. Fans.
 - 3. Air Filters.
 - 4. Air Inlets and Outlets.
- B. Report Forms
 - 1. Title Page:
 - a. Name of Testing, Adjusting, and Balancing Agency
 - b. Address of Testing, Adjusting, and Balancing Agency
 - c. Telephone and facsimile numbers of Testing, Adjusting, and Balancing Agency
 - d. Project name
 - e. Project location
 - f. Project Architect
 - g. Project Engineer
 - h. Project Contractor
 - i. Project altitude
 - j. Report date
 - 2. Summary Comments:
 - a. Design versus final performance
 - b. Notable characteristics of system
 - c. Description of systems operation sequence
 - d. Summary of outdoor and exhaust flows to indicate building pressurization
 - e. Nomenclature used throughout report
 - f. Test conditions
 - 3. Instrument List:
 - a. Instrument
 - b. Manufacturer
 - c. Model number
 - d. Serial number
 - e. Range
 - f. Calibration date
 - 4. Electric Motors:
 - a. Manufacturer
 - b. Model/Frame
 - c. HP/BHP and kW
 - d. Phase, voltage, amperage; nameplate, actual, no load
 - e. RPM
 - f. Service factor
 - g. Starter size, rating, heater elements
 - h. Sheave Make/Size/Bore
 - 5. V-Belt Drive:
 - a. Identification/location
 - b. Required driven RPM
 - c. Driven sheave, diameter and RPM
 - d. Belt, size and quantity
 - e. Motor sheave diameter and RPM

- f. Center to center distance, maximum, minimum, and actual
- 6. Air Moving Equipment:
 - a. Location
 - b. Manufacturer
 - c. Model number
 - d. Serial number
 - e. Arrangement/Class/Discharge
 - f. Air flow, specified and actual
 - g. Return air flow, specified and actual
 - h. Outside air flow, specified and actual
 - i. Total static pressure (total external), specified and actual
 - j. Inlet pressure
 - k. Discharge pressure
 - l. Sheave Make/Size/Bore
 - m. Number of Belts/Make/Size
 - n. Fan RPM
- 7. Exhaust Fan Data:
 - a. Location
 - b. Manufacturer
 - c. Model number
 - d. Serial number
 - e. Air flow, specified and actual
 - f. Total static pressure (total external), specified and actual
 - g. Inlet pressure
 - h. Discharge pressure
 - i. Sheave Make/Size/Bore
 - j. Number of Belts/Make/Size
 - k. Fan RPM
- 8. Duct Traverse:
 - a. System zone/branch
 - b. Duct size
 - c. Area
 - d. Design velocity
 - e. Design air flow
 - f. Test velocity
 - g. Test air flow
 - h. Duct static pressure
 - i. Air temperature
 - j. Air correction factor
- 9. Duct Leak Test:
 - a. Description of ductwork under test
 - b. Duct design operating pressure
 - c. Duct design test static pressure
 - d. Duct capacity, air flow
 - e. Maximum allowable leakage duct capacity times leak factor
 - f. Test apparatus
 - 1) Blower
 - 2) Orifice, tube size

- 3) Orifice size
 - 4) Calibrated
 - g. Test static pressure
 - h. Test orifice differential pressure
 - i. Leakage
10. Air Distribution Test Sheet:
- a. Air terminal number
 - b. Room number/location
 - c. Terminal type
 - d. Terminal size
 - e. Area factor
 - f. Design velocity
 - g. Design air flow
 - h. Test (final) velocity
 - i. Test (final) air flow
 - j. Percent of design air flow

END OF SECTION

SECTION 23 07 00

HVAC INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. HVAC ductwork insulation, jackets, and accessories.

1.2 REFERENCES

A. ASTM International:

1. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
2. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
3. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
4. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement.
5. ASTM C449/C449M - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement.
6. ASTM C450 - Standard Practice for Fabrication of Thermal Insulating Fitting Covers for NPS Piping, and Vessel Lagging.
7. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation.
8. ASTM C534 - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.
9. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation.
10. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
11. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
12. ASTM C585 - Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System).
13. ASTM C591 - Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation.
14. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
15. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.
16. ASTM C921 - Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation.
17. ASTM C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
18. ASTM C1290 - Standard Specification for Flexible Fibrous Glass Blanket Insulation Used to Externally Insulate HVAC Ducts.
19. ASTM D1785 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.

- 20. ASTM D4637 - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane.
- 21. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
- 22. ASTM E162 - Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source.

B. Sheet Metal and Air Conditioning Contractors:

- 1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.

C. Underwriters Laboratories Inc.:

- 1. UL 1978 - Standard for Safety for Grease Ducts.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service, and location.
- C. Manufacturer's Installation Instructions: Submit manufacturers published literature indicating proper installation procedures.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding 450 in accordance with ASTM E84.
- B. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.
- C. Factory fabricated fitting covers manufactured in accordance with ASTM C450.
- D. Duct insulation, Coverings, and Linings: Maximum 25/50 flame spread/smoke developed index, when tested in accordance with ASTM E84, using specimen procedures and mounting procedures of ASTM E 2231.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.
- B. Applicator: Company specializing in performing Work of this section with minimum three years experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

- B. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- C. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.
- C. Maintain temperature before, during, and after installation for minimum period of 24 hours.

1.8 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.9 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer warranty for man made fiber.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Manufacturers for Glass Fiber and Mineral Fiber Insulation Products:
 - 1. CertainTeed.
 - 2. Knauf.
 - 3. Johns Manville.
 - 4. Owens-Corning.
 - 5. Substitutions: Section 01 60 00 - Product Requirements.
- B. Manufacturers for Closed Cell Elastomeric Insulation Products:
 - 1. Aeroflex. Aerocell.
 - 2. Armacell, LLC. Armaflex.
 - 3. Nomaco. K-flex.
 - 4. Substitutions: Section 01 60 00 - Product Requirements.

2.2 DUCTWORK INSULATION

- A. See Drawing for insulation schedule.

2.3 DUCTWORK INSULATION JACKETS

- A. Aluminum Duct Jacket:
 - 1. ASTM B209.
 - 2. Thickness: 0.016 inch thick sheet.
 - 3. Finish: Smooth <_____>.
 - 4. Joining: Longitudinal slip joints and 2 inch laps.
 - 5. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.
 - 6. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.
- B. Vapor Retarder Jacket:
 - 1. Kraft paper with glass fiber yarn and bonded to aluminized film 0.0032 inch vinyl.
 - 2. Water Vapor Permeance: ASTM E96/E96M; 0.02 perms.
 - 3. Secure with pressure sensitive tape.
- C. Canvas Duct Jacket: UL listed, 6 oz/sq yd, plain weave cotton fabric with fire retardant lagging adhesive compatible with insulation.

2.4 DUCTWORK INSULATION ACCESSORIES

- A. Vapor Retarder Tape:
 - 1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.
- B. Vapor Retarder Lap Adhesive: Compatible with insulation.
- C. Adhesive: Waterproof, ASTM E162 fire-retardant type.
- D. Lagging Adhesive: Fire retardant type with maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
- E. Impale Anchors: Galvanized steel, 12 gage self-adhesive pad.
- F. Adhesives: Compatible with insulation.
- G. Membrane Adhesives: As recommended by membrane manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify ductwork has been tested before applying insulation materials.
- C. Verify surfaces are clean and dry, with foreign material removed.

3.2 INSTALLATION - DUCTWORK SYSTEMS

- A. Duct dimensions indicated on Drawings are finished inside dimensions.
- B. Insulated ductwork conveying air below ambient temperature:
 - 1. Provide insulation with vapor retarder jackets.
 - 2. Finish with tape and vapor retarder jacket.
 - 3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
 - 4. Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.
- C. Insulated ductwork conveying air above ambient temperature:
 - 1. Provide with or without standard vapor retarder jacket.
 - 2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.
- D. External Glass Fiber Duct Insulation:
 - 1. Secure insulation with vapor retarder with wires and seal jacket joints with vapor retarder adhesive or tape to match jacket.
 - 2. Secure insulation without vapor retarder with staples, tape, or wires.
 - 3. Install without sag on underside of ductwork. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift ductwork off trapeze hangers and insert spacers.
 - 4. Seal vapor retarder penetrations by mechanical fasteners with vapor retarder adhesive.
 - 5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.
- E. External Elastomeric Duct Insulation:
 - 1. Adhere to clean oil-free surfaces with full coverage of adhesive.
 - 2. Seal seams and butt joints with manufacturer's recommended adhesive.
 - 3. When application requires multiple layers, apply with joints staggered.
 - 4. Insulate standing metal duct seams with insulation of like material and thickness as adjacent duct surface. Apply adhesive at joints with flat duct surfaces.
 - 5. Lift ductwork off trapeze hangers and insert spacers.
- F. Kitchen Exhaust Ductwork:
 - 1. Cover duct by wrapping with insulation using overlap method, checkerboard overlap method, or butt joint with collar method.
 - 2. Overlap seams of each method by 3 inches.
 - 3. Attach insulation using steel banding or by welded pins and clips.
 - 4. Install insulation without sag on underside of ductwork. Use additional fasteners to prevent sagging.
- G. Ducts Exterior to Building:
 - 1. Install insulation according to external duct insulation paragraph above.
 - 2. Provide external insulation with vapor retarder jacket. Cover with outdoor jacket.
 - 3. Finish with aluminum duct jacket.
 - 4. Calk seams at flanges and joints. Located major longitudinal seams on bottom side of horizontal duct sections.

H. Prepare duct insulation for finish painting. Refer to Section 09 90 00.

END OF SECTION

SECTION 23 11 23

FACILITY NATURAL-GAS PIPING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Natural gas piping above grade.
 - 2. Unions and flanges.
 - 3. Valves.
 - 4. Pipe hangers and supports.
 - 5. Strainers.
 - 6. Natural gas pressure regulators.
 - 7. Natural gas pressure relief valves.
- B. Related Sections:
 - 1. Section 23 05 29 - Hangers and Supports for HVAC Piping and Equipment: Product requirements for pipe hangers and supports [and firestopping] for placement by this section.
 - 2. Section 23 05 53 - Identification for HVAC Piping and Equipment: Product requirements for valve and pipe identification for placement by this section.

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI Z21.15 - Manually Operated Gas Valves for Appliances, Appliance Connector Valves and Hose End Valves.
- B. American Society of Mechanical Engineers:
 - 1. ASME B16.3 - Malleable Iron Threaded Fittings.
 - 2. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes.
 - 3. ASME B16.33 - Manually Operated Metallic Gas Valves for Use in Gas Piping Systems Up to 125 psig (sizes 1/2 - 2).
 - 4. ASME B31.9 - Building Services Piping.
- C. ASTM International:
 - 1. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - 2. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
 - 3. ASTM B749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.
 - 4. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.
- D. American Water Works Association:
 - 1. AWWA C105 - American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems.

- E. Manufacturers Standardization Society of the Valve and Fittings Industry:
 - 1. MSS SP 58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.
 - 2. MSS SP 67 - Butterfly Valves.
 - 3. MSS SP 69 - Pipe Hangers and Supports - Selection and Application.
 - 4. MSS SP 78 - Cast Iron Plug Valves, Flanged and Threaded Ends.
 - 5. MSS SP 89 - Pipe Hangers and Supports - Fabrication and Installation Practices.
 - 6. MSS SP 110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.
- F. National Fire Protection Association:
 - 1. NFPA 54 - National Fuel Gas Code.
- G. Underwriters Laboratories Inc.:
 - 1. UL 842 - Valves for Flammable Fluids.

1.3 SYSTEM DESCRIPTION

- A. Where more than one piping system material is specified, provide compatible system components and joints. Use non-conducting dielectric connections when joining dissimilar metals in systems.
- B. Provide flanges, unions, or couplings at locations requiring servicing. Use unions, flanges, or couplings downstream of valves and at equipment connections. Do not use direct welded or threaded connections to valves, equipment.
- C. Provide pipe hangers and supports in accordance with ASME B31.9.
- D. Use plug, or ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data:
 - 1. Piping: Submit data on pipe materials, fittings, and accessories. Submit manufacturers catalog information.
 - 2. Piping Specialties: Submit manufacturers catalog information including capacity, rough-in requirements, and service sizes for the following:
 - a. Strainers.
 - b. Natural gas pressure regulators.
 - c. Natural gas pressure relief valves.
- C. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.

- B. Project Record Documents: Record actual locations of valves, piping system, and system components.
- C. Operation and Maintenance Data: Submit for gas pressure regulators installation instructions, spare parts lists, and exploded assembly views.

1.6 QUALITY ASSURANCE

- A. Perform natural gas Work in accordance with NFPA 54.
- B. Perform Work in accordance with ASME B31.9 code for installation of piping systems and ASME Section IX for welding materials and procedures.
- C. Furnish shutoff valves complying with ASME B16.33 or ANSI Z21.15.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years experience.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- C. Protect piping and fittings from soil and debris with temporary end caps and closures. Maintain in place until installation. Furnish temporary protective coating on cast iron and steel valves.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements.
- B. Do not install underground piping when bedding is wet or frozen.

1.10 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.11 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.

PART 2 PRODUCTS

2.1 NATURAL GAS PIPING, ABOVE GRADE

- A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
 - 1. Fittings: ASME B16.3, malleable iron, or ASTM A234/A234M forged steel welding type.
 - 2. Joints: Threaded for pipe 2 inch and smaller; welded for pipe 2-1/2 inches and larger.

2.2 REGULATOR VENT PIPING, ABOVE GRADE

- A. Indoors: Same as natural gas piping, above grade.
- B. Outdoors: PVC pipe, tubing, and fittings, UL 651.

2.3 UNIONS AND FLANGES

- A. Unions for Pipe 2 inches and Smaller:
 - 1. Ferrous Piping: Class 150, malleable iron, threaded.
 - 2. Copper Piping: Class 150, bronze unions with soldered.
 - 3. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.
- B. Flanges for Pipe 2-1/2 inches and Larger:
 - 1. Ferrous Piping: Class 150, forged steel, slip-on flanges.
 - 2. Copper Piping: Class 150, slip-on bronze flanges.
 - 3. Gaskets: 1/16 inch thick preformed neoprene gaskets.

2.4 BALL VALVES

- A. Manufacturers:
 - 1. Milwaukee Valve Company Model.
 - 2. NIBCO, Inc. Model.
 - 3. Substitutions: Section 01 60 00 - Product Requirements.
- B. 1/4 inch to 1 inch: MSS SP 110, Class 125, two piece, threaded ends, bronze body, chrome plated bronze ball, reinforced teflon seats, blow-out proof stem, lever handle, UL 842 listed for flammable liquids and LPG, full port.
- C. 1-1/4 inch to 3 inch: MSS SP 110, Class 125, two piece, threaded ends, bronze body, chrome plated bronze ball, reinforced teflon seats, blow-out proof stem, lever handle, UL 842 listed for flammable liquids and LPG, conventional port.

2.5 PLUG VALVES

- A. Manufacturers:
 - 1. DeZURIK, Unit of SPX Corp. Model.
 - 2. Homestead Valve Model.
 - 3. Substitutions: Section 01 60 00 - Product Requirements

- B. 2 inches and Smaller: MSS SP 78, Class 150, semi-steel construction, round port, regular opening, pressure lubricated, teflon packing, threaded ends. Furnish one plug valve wrench for every ten plug-valves with minimum of one wrench.
- C. 2-1/2 inches and Larger: MSS SP 78, Class 150, semi-steel construction, round port, regular opening, pressure lubricated, teflon packing, flanged ends. Furnish wrench-operated.

2.6 PIPE HANGERS AND SUPPORTS

- A. Manufacturers:
 - 1. Glope Pipe Hanger Products Inc. Model.
 - 2. Michigan Hanger Co. Model.
 - 3. Superior Valve Co. Model.
 - 4. Substitutions: Section 01 60 00 - Product Requirements.
- B. Conform to NFPA 54,.
- C. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.
- D. Hangers for Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.
- E. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
- F. Wall Support for Pipe 3 inches and Smaller: Cast iron hook.
- G. Vertical Support: Steel riser clamp.
- H. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
- I. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- J. Sheet Lead: ASTM B749, 2.5 lb/sq ft inch thick.

2.7 STRAINERS

- A. Manufacturers:
 - 1. Spirax Sarco, Inc. Model.
 - 2. Substitutions: Section 01 60 00 - Product Requirements.
- B. 2 inch and Smaller: Screwed brass or iron body for 175 psig working pressure, Y pattern with 1/32 inch stainless steel perforated screen.
- C. 2-1/2 inch to 4 inch: Flanged iron body for 175 psig working pressure, Y pattern with 3/64 inch stainless steel perforated screen.

- D. 5 inch and Larger: Flanged iron body for 175 psig working pressure, basket pattern with 1/8 inch stainless steel perforated screen.

PART 3 EXECUTION

3.1 EXAMINATION

- A. 01300 - Administrative Requirements: Coordination and project conditions.
- B. Verify excavations are to required grade, dry, and not over-excavated.

3.2 PREPARATION

- A. Ream pipe and tube ends. Remove burrs.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.3 INSTALLATION - INSERTS

- A. Provide inserts for placement in concrete forms.
- B. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe 4 inches and larger.
- D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
- E. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut flush with top of slab.

3.4 INSTALLATION - PIPE HANGERS AND SUPPORTS

- A. Install hangers and supports in accordance with ASME B31.9.
- B. Support horizontal piping hangers as scheduled.
- C. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
- D. Place hangers within 12 inches of each horizontal elbow.
- E. Install hangers to allow 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.

- F. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
- G. Where installing several pipes in parallel and at same elevation, provide multiple pipe hangers or trapeze hangers.
- H. Install pipe hangers and supports in accordance with Section 23 05 29.

3.5 INSTALLATION - ABOVE GROUND PIPING SYSTEMS

- A. Install natural gas piping in accordance with NFPA 54.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient.
- D. Where required, bend pipe with pipe bending tools in accordance with procedures intended for that purpose.
- E. Install piping to conserve building space and not interfere with use of space.
- F. Size and install gas piping to provide sufficient gas to supply maximum appliance demand at pressure higher than appliance minimum inlet pressure.
- G. Group piping whenever practical at common elevations.
- H. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- I. Sleeve pipe passing through partitions, walls and floors. Refer to Section 23 05 29.
- J. Provide clearance for installation of insulation and access to valves and fittings.
- K. Provide access where valves and fittings are not exposed.
- L. Provide support for utility meters in accordance with requirements of utility company.
- M. Install vent piping from gas pressure reducing valves to outdoors and terminate in weatherproof hood. Protect vent against entry of insects and foreign material.
 - 1. Minimum Vent Size: Connection size at regulator vent connection.
 - 2. Run individual vent line from each relief device, independent of breather vents.
- N. Breather vents may be manifolded together with piping sized for combined appliance vent requirements.
- O. Install identification on piping systems including underground piping. Refer to Section 23 05 53.
- P. Install valves with stems upright or horizontal, not inverted.

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

3.6 FIELD QUALITY CONTROL

- A. Section 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Where gas appliance will be damaged by test pressure, disconnect appliance and cap piping during pressure test. Reconnect appliance after pressure test and leak test connection.
- C. Where gas appliance is designed for operating pressures equal to or greater than piping test pressure, provide gas valve to isolate appliance or equipment from gas test pressure.
- D. Pressure test natural gas piping in accordance with NFPA 54.
- E. Where new branch piping is extended from existing system, pressure test new branch piping only. Leak test joint between new and existing piping with noncorrosive leak detection fluid or other approved method.
- F. When pressure tests do not meet specified requirements, remove defective work, replace and retest.
- G. Immediately after gas is applied to a new system, or a system has been restored after gas service interruption, check pipe for leakage.
 - 1. Where leakage is detected, shut off gas supply until necessary repairs are complete.
- H. Do not place appliances in service until leak testing and repairs are complete.

3.7 SCHEDULES

- A. Pipe Hanger Spacing:

PIPE SIZE Inches	STEEL PIPE MAXIMUM HANGER SPACING Feet	STEEL PIPE MINIMUM HANGER ROD DIAMETER Inches
1/2	6	3/8
3/4	7	3/8
1	7	3/8
1-1/4	7	3/8
1-1/2	9	3/8
2	10	3/8
2-1/2	10	1/2
3	10	1/2

END OF SECTION

SECTION 23 31 00

HVAC DUCTS AND CASINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Duct Materials.
 - 2. Casings.
 - 3. Ductwork fabrication.
 - 4. Kitchen hood exhaust ductwork fabrication.
 - 5. Duct cleaning.
- B. Related Sections:
 - 1. Section 23 05 29 - Hangers and Supports for HVAC Piping and Equipment: Product requirements for hangers, supports and sleeves for placement by this section.
 - 2. Section 23 33 00 - Air Duct Accessories: Product requirements for duct accessories for placement by this section.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
 - 2. ASTM A90/A90M - Standard Test Method for Weight Mass of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
 - 3. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 - 4. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
 - 5. ASTM A568/A568M - Standard Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
 - 6. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 7. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
 - 8. A1011/A1011M-07 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
 - 9. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 10. ASTM C14 - Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe.
 - 11. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
 - 12. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

- B. National Fire Protection Association:
 - 1. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems.
 - 2. NFPA 90B - Standard for the Installation of Warm Air Heating and Air Conditioning Systems.
 - 3. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.
- C. Sheet Metal and Air Conditioning Contractors:
 - 1. SMACNA - Fibrous Glass Duct Construction Standards.
 - 2. SMACNA - HVAC Air Duct Leakage Test Manual.
 - 3. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.
- D. Underwriters Laboratories Inc.:
 - 1. UL 181 - Factory-Made Air Ducts and Connectors.

1.3 PERFORMANCE REQUIREMENTS

- A. Variation of duct configuration or sizes other than those of equivalent or lower loss coefficient is not permitted except by written permission. Size round ducts installed in place of rectangular ducts in accordance with ASHRAE table of equivalent rectangular and round ducts.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data for duct materials duct liner.
- C. Test Reports: Indicate pressure tests performed. Include date, section tested, test pressure, and leakage rate, following SMACNA HVAC Air Duct Leakage Test Manual.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with SMACNA - HVAC Duct Construction Standards - Metal and flexible.
- B. Construct ductwork to NFPA 90A and NFPA 90B and NFPA 96 standards.
- C. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years of experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years of experience.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements.
- B. Do not install duct sealant when temperatures are less than those recommended by sealant manufacturers.
- C. Maintain temperatures during and after installation of duct sealant.

1.9 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.10 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer warranty for ducts.

PART 2 PRODUCTS

2.1 DUCT MATERIALS

- A. Galvanized Steel Ducts: ASTM A653/A653M galvanized steel sheet, lock-forming quality, having G60 (zinc coating of in conformance with ASTM A90/A90M).
- B. Aluminum Ducts: ASTM B209; aluminum sheet, alloy 3003-H14. Aluminum Connectors and Bar Stock: Alloy 6061-T6 or of equivalent strength.
- C. Stainless Steel Ducts: ASTM A240/A240M or ASTM A666, Type 304.
- D. Fasteners: Rivets, bolts, or sheet metal screws.
- E. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

2.2 CASINGS

- A. Fabricate casings in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and construct for operating pressures indicated.

- B. Reinforce access door frames with steel angles tied to horizontal and vertical plenum supporting angles. Furnish hinged access doors where indicated or required for access to equipment for cleaning and inspection. Furnish clear wire glass observation ports, minimum 6 x 6 inch size.
- C. Fabricate acoustic casings with reinforcing turned inward. Furnish 16 gage back facing and 22 gage perforated front facing with 3/32 inch diameter holes on 5/32 inch centers. Construct panels 3 inches thick packed with 4.5 lb./cu ft minimum glass fiber media, on inverted channels of 16 gage.

2.3 DUCTWORK FABRICATION

- A. Fabricate and support rectangular ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- B. Construct T's, bends, and elbows with minimum radius 1-1/2 times centerline duct width. Where not possible and where rectangular elbows are used, provide airfoil turning vanes. Where acoustical lining is indicated, furnish turning vanes of perforated metal with glass fiber insulation.
- C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- D. Fabricate continuously welded round and oval duct fittings two gages heavier than duct gages indicated in SMACNA Standard. Minimum 4 inch cemented slip joint, brazed or electric welded. Prime coat welded joints.
- E. Provide standard 45-degree lateral wye takeoffs. When space does not allow 45-degree lateral wye takeoff, use 90-degree conical tee connections.
- F. Seal joints between duct sections and duct seams with welds, gaskets, mastic adhesives, mastic plus embedded fabric systems, or tape.
 - 1. Sealants, Mastics and Tapes: Conform to UL 181A. Provide products bearing appropriate UL 181A markings.
 - 2. Do not provide sealing products not bearing UL approval markings.

2.4 KITCHEN HOOD EXHAUST DUCTWORK FABRICATION

- A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and NFPA 96.
- B. Exposed Kitchen Hood Exhaust Ducts: Construct of stainless steel ASTM A240/A240M OR ASTM 666, type 304 using continuous external welded joints.
- C. Concealed Kitchen Hood Exhaust Ducts: Construct of 16 gage carbon steel or 18 gage stainless steel ASTM A240/A240M OR ASTM 666, type 304 using continuous external welded joints.
- D. Grease Duct: Provide factory built commercial grease ducts labeled and listed in accordance with UL 1978.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify sizes of equipment connections before fabricating transitions.

3.2 INSTALLATION

- A. Install and seal ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
- B. During construction, install temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- C. Use crimp joints with or without bead or beaded sleeve couplings for joining round duct sizes 8 inch and smaller.
- D. Install duct hangers and supports in accordance with Section 23 05 29.
- E. Use double nuts and lock washers on threaded rod supports.
- F. Connect flexible ducts to metal ducts with draw bands.
- G. Set plenum doors 6 to 12 inches above floor. Arrange door swing so fan static pressure holds door in closed position.
- H. Casings: Install floor mounted casings on 4 inch high concrete curbs. At floor, rivet panels on 8 inch centers to angles. Where floors are acoustically insulated, furnish liner of 18 gage galvanized expanded metal mesh supported at 12 inch centers, turned up 12 inches at sides with sheet metal shields.
- I. Install kitchen range hoods in accordance with NFPA 96.
- J. Install residue traps in kitchen hood exhaust ducts at base of vertical risers with provisions for clean out.
- K. Kitchen hood exhaust ducts: Use stainless steel for ductwork exposed to view and stainless steel or carbon steel where ducts are concealed.
- L. For outdoor ductwork, protect ductwork, ductwork supports, linings and coverings from weather.
- M. Exhaust Outlet Locations:
 - 1. Minimum Distance from Property Lines: 3 feet.
 - 2. Minimum Distance from Building Openings: 3 feet.
 - 3. Minimum Distance from Outside Air Intakes: 10 feet.

3.3 INTERFACE WITH OTHER PRODUCTS

- A. Connect air outlets and inlets to supply ducts directly or with five foot maximum length of flexible duct. Do not use flexible duct to change direction.

3.4 CONCEALED GREASE DUCT TESTING

- A. Prior to concealing, wrapping, or insulating grease ductwork, or placing grease duct in service, perform leakage test in accordance with ICC IMC, in presence of authority having jurisdiction.
- B. Perform light test by pulling minimum 100 W light through duct and observing for light leaks at duct joints.
- C. Test complete extent of duct installed, including joint at which duct connects to exhaust hood.

3.5 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Clean duct system and force air at high velocity through duct to remove accumulated dust. To obtain sufficient air flow, clean one half of system completely before proceeding to other half. Protect equipment with potential to be harmed by excessive dirt with temporary filters, or bypass during cleaning.

3.6 TESTING

- A. For ductwork designed for 3 inches w.c. above ambient, pressure test minimum 25 percent of ductwork after duct cleaning, but before duct insulation is applied or ductwork is concealed.
 - 1. Test in accordance with SMACNA HVAC Air Duct Leakage Test Manual.
 - 2. Maximum Allowable Leakage: In accordance with ICC IECC.

END OF SECTION

SECTION 23 38 13

COMMERCIAL KITCHEN HOODS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Type-1 Grease Hoods, Wall Canopy

1.2 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate size and configuration of hood assembly, mountings, weights, ductwork and accessory connections.
- C. Product Data: Submit data on each type of hood and include accessories, fan curves with specified operating point plotted, power, RPM, sound power levels for both fan inlet and outlet at rated capacity, electrical characteristics and connection requirements.
- D. Manufacturer's Installation Instructions: Submit fan manufacturer's instructions.
- E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Submit instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Protect motors, shafts, and bearings from weather and construction dust.

1.6 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.7 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer's warranty for hoods.

PART 2 PRODUCTS

2.1 EXHAUST HOODS

- A. Manufacturers
 - 1. Greenheck Fan Corp.
 - 2. Captivaire
 - 3. Substitutions: Section 01 60 00 - Product Requirements.
- B. Performance:
 - 1. Performance Base: See Schedule on Plans
 - 2. Hood performance and design shall be UL listed and labeled with UL 710.
- C. Hood Construction:
 - 1. The hood shall be constructed of a minimum of 18 gauge, (type 304) stainless steel with a #3 finish. Hood shall be constructed using the standing seam method for optimum strength. The seams on the canopy shall be welded liquid-tight, and all exposed external welds shall be ground and polished to match the original finish of the metal. Lighter material gauges, alternate material types and finishes (400 series stainless steel, cold rolled steel, etc.) and non-liquidtight welding (tack weld, spot weld, etc.) is not acceptable. Construction shall include corrosion-resistant steel framing members for strength. Short circuit style hoods are not allowed.
 - 2. Hood shall include UL listed and NSF certified grease extractor type, high efficiency cartridge style baffle filters of adequate number and sizes to ensure optimum performance in accordance with manufacturer's published information. The filter housing shall terminate in a pitched, full length grease trough, which shall drain into a removable grease container. Hood shall be provided with one (1) filter removal tool.
 - 3. Vapor-proof UL Listed, recessed LED light fixtures shall be prewired to a junction box situated at the top of the hood for field connection. Wiring shall conform to the requirements of the National Electrical Code.
 - 4. Demand ventilator control system shall be installed in the hood. The demand system shall sense the heat/smoke/vapor and shall vary the speed of the exhaust fan according to the need. The demand system shall utilize various types of sensors to accomplish this, such as exhaust temperature sensor, optic sensor, carbon dioxide sensor and other state of the art sensing devices.
 - 5. Fire protection systems: Wet chemical with hood-mounted stainless-steel cabinet.
 - 6. Fire protection system to provide duct, plenum, and surface protection for ventilator and equipment located below ventilator.

7. System interwired with shunt trip breaker and gas solenoid valve of equipment located below ventilator for power and fuel shutoff during system actuation.

D. Accessories:

1. Enclosure Panels: 1.3 mm (0.05 inch) thick stainless steel shall be installed; locate between ventilator top and ceiling on all exposed sides.
2. Provide with UL listed zero clearance insulated top.
3. Stainless steel wall flashing shall be installed on wall behind the ventilator from wall curb to bottom of ventilator.
4. Remote monitoring of the demand ventilation control showing what is transpiring during the course of a day.
5. Provide factory installed fresh air makeup plenum incorporated into the face of the hood.

E. Capacity:

1. See Schedule on Plans.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install ventilators level and plumb with access clearances required for operation, maintenance and cleaning and in accordance with the manufacturer's published documentation.
- B. Coordinate installation of ventilators with overhead supports.
- C. Interconnect ventilators to service utilities.

3.2 FIELD TESTING

- A. Field Testing, General: Following installation, test ventilators for compliance with specified requirements and those of authorities having jurisdiction. Perform testing after air-handling systems have been balanced and adjusted.
- B. Smoke Test:
 1. Test Conditions:
 - a. Perform tests with cooking equipment served by ventilator turned off.
 - b. Perform tests with supply and exhaust fans serving the food service kitchen area turned on.
 2. Test Procedure: Move a smoke bomb around the perimeter of cooking equipment at the top surface.
 3. Test-Performance Requirements: No visible smoke shall escape from the ventilator canopy into the room.
- C. Demand Ventilator Control Test:
 1. Test Conditions:

- a. Perform tests with cooking equipment served by exhaust ventilator turned off.
 - b. Perform tests with air-handling units serving food service kitchen turned on.
- 2. Test Procedure: Turn on equipment and measure speed of exhaust fan(s) as equipment heats up. Move a smoke bomb around the perimeter of the cooking equipment at the top surface and continue to measure speed of exhaust fan(s).
- 3. Test-Performance Requirements: Speed of fan(s) should increase/decrease with the severity of the heat or smoke .
- D. Wet Fire Extinguishing System: Test system to verify that equipment operation complies with NFPA 96 and NFPA 17A

3.3 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.

3.4 DEMONSTRATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for demonstration and training.
- B. Demonstrate hood operation and maintenance procedures.

END OF SECTION

SECTION 23 74 13

DIRECT-FIRED GAS HEATING AND VENTILATING UNITS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes modular factory fabricated air-handling units and accessories.
- B. Related Sections:
 - 1. Section 23 07 00 - HVAC Insulation: Product requirements for insulation for placement by this section.

1.2 REFERENCES

- A. Sheet Metal and Air Conditioning Contractors:
 - 1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.
- B. Underwriters Laboratories Inc.:
 - 1. UL 900 - Air Filter Units.
 - 2. UL - Fire Resistance Directory.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements.
- C. Product Data, Submit the following:
 - 1. Published Literature: Indicate capacities, ratings, gages and finishes of materials, and electrical characteristics and connection requirements.
 - 2. Filters: Data for filter media, filter performance data, filter assembly, and filter frames.
 - 3. Fans: Performance and fan curves with specified operating point plotted, power, RPM.
 - 4. Sound Power Level Data: Fan outlet and casing radiation at rated capacity.
 - 5. Dampers: Include leakage, pressure drop, and sample calibration curves. Indicate materials, construction, dimensions, and installation details.
 - 6. Electrical Requirements: Power supply wiring including wiring diagrams for interlock and control wiring. Indicate factory installed and field installed wiring.
- D. Manufacturer's Installation Instructions: Submit.
- E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Submit instructions for lubrication, filter replacement, motor and drive replacement, spare parts lists, and wiring diagrams.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Accept units and components on site in factory protective containers, with factory shipping skids and lifting lugs. Inspect for damage.
- C. Protect units from weather and construction traffic by storing in dry, roofed location.

1.7 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer warranty for makeup air units.

1.8 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Furnish one set of filters for each unit.

PART 2 PRODUCTS

2.1 DIRECT-FIRED GAS HEATING AND VENTILATING UNITS

- A. Manufacturers:
 - 1. CaptiveAire
 - 2. Greenheck Fan Corp
 - 3. Substitutions: Section 01 60 00 - Product Requirements.
- B. Configuration: Fan section plus accessories, including:
 - 1. Gas Burner.
 - 2. Centrifugal Blower.

3. Motor starter with thermal overload protection.
4. Motor and drive assembly
5. Fuel burning and safety equipment
6. Temperature Control system
7. Filter section.
8. Gas Piping.

C. Roof Curb:

1. Factory assembled galvanized steel mounting curb designed and manufactured by unit manufacturer.
2. Perimeter type with support of air handling sections.
3. Furnish supply and return opening duct frames as part of curb structure allowing duct connections to be made directly to curb.
4. Minimum of 24 inches high and include wood nailer strip.
5. Furnish gaskets for field mounting.

2.2 HOUSING

- A. Unit housing shall be constructed of 20 Gauge G-90 galvanized steel. The wall panels and roof panels shall be fabricated by forming double-standing, self-locking seams that require no additional support. The floor and wall panels shall be caulked air tight with a silicone caulk. All casing panels shall be attached with sheet metal screws or rivets, which can be removed to field service large components. The unit base shall be suitable for curb or flat mount. Housing construction should be suitable for outdoor or indoor installation.
- B. An observation port shall be located on the exterior of the unit for observation of the main flame and pilot flame. All controls, gas valves, modulating controls and electrical components shall be mounted within the burner vestibule. The burner vestibule shall be an integral part of the unit and not extend outside the exterior casing of the unit and not exposed to the main air stream.
- C. The vestibule full-size door shall provide easy access to controls and gas-train components. Blower door shall provide easy access to blower, motor and drives. Access doors shall be provided on both front and backside of unit providing full access to every part of the unit.
- D. Internal ridged board 1" x 1.5" foil face insulation shall be installed on roof, walls and base of casing.
- E. The base shall be constructed of galvanized steel for improved rigidity. Base shall be structurally reinforced to accommodate the blower assembly and burner.

2.3 BLOWER

- A. Type: Forward curved, double width, double inlet, centrifugal type fan.
- B. Performance Ratings: Conform to AMCA 210 and label with AMCA Certified Rating Seal.
- C. Direct Drive blower assembly shall consist of a centrifugal backward inclined, non-overloading wheel secured directly to a heavy duty, ball bearing type motor via two set screws. The motor and wheel assembly shall be mounted to a heavy gauge galvanized steel frame. The motor shall be

controlled by a variable frequency drive, allowing for variable airflow without the need of belts and pulleys.

- D. Shafts shall be precision ground and polished. Heavy duty, pre-lubricated bearings shall be selected for a minimum (L50) life in excess of 200,000 hours of operation at maximum cataloged operating speed. They shall be designed for, and individually tested, specifically for use in air handling applications.
- E. Sound Ratings: AMCA 301, tested to AMCA 300.
- F. Fan Modulation: Variable Frequency Drive. Refer to Section 26 29 23.
- G. Flexible Connection: Separate unit from connecting ductwork.

2.4 BURNER

- A. The gas burner shall be direct-fired, draw-through type, sized to provide the scheduled output using natural gas at an inlet-supply pressure to the unit of 7 inches water column (7" w.c. minimum).
- B. The burner shall be capable of heating the entire air supply from -20F° to 70F° (90 degrees F temperature rise). The burner shall burn over its entire length at all times when the system is in operation.
- C. The burner shall have non-clogging, 4302B stainless-steel combustion baffles attached to a ductile aluminum gas-supply section with no moving parts to wear out or fail. The burner shall be capable of 92% combustion efficiency with a maximum turndown ratio of up to 30 to 1.
- D. The gas burner shall be furnished with a pilot package arranged so that the pilot flame lights the burner with instantaneous ignition. Pilot assembly includes a flame rod, spark rod and pilot, which is automatically ignited by ignition transformer. A flame-rod rectification system shall be used to prove pilot and main flame.
- A. Rear access doors will provide complete access to burner and pilot assembly. Burner profile plates shall be self-adjusting to operate across the complete CFM range of each model heater. Every unit shall be designed for Variable Air Volume capabilities.

2.5 GAS EQUIPMENT

- A. All gas equipment should conform to local code requirements. All gas manifold components shall be piped and wired at the factory.
- B. Components shall Include:
 - a. Pilot-gas shut-off valve
 - b. Pilot-gas regulator
 - c. Pilot-gas valve
 - d. Main-gas shut off valve
 - e. Main-gas regulator
 - f. Two Solenoid valves

- g. Modulating Gas burner
- h. Burner

2.6 SAFETY CONTROLS

- A. Motor starter with adjustable overloads
- B. Airflow safety Switch
- C. Electronic flame-safety relay
- D. High-temperature limit switch
- E. Main-gas regulator
- F. Two safety shutoff valves
- G. Modulating-gas valve
- H. Burner
- I. Adjustable burner ON/OFF inlet air duct-stat to shut off burner when inlet air is sufficiently warm to maintain space temperature.
- J. Non-Fused Disconnect.
- K. Adjustable low temperature blower-safety control with bypass timer to shut down unit, if discharge temperature drops below setting FILTERS

2.7 DEMAND CONTROLLED VENTILATION

- A. The Demand Control Ventilation System (DCV) is designed to automatically reduce exhaust and supply airflow quantities, while ensuring hood performance is maintained. The DCV uses Variable Frequency Drives (VFD) and temperature sensors in the exhaust ducts to modulate the fans speed during cooking operation and maximize energy savings. The LCD screen interface provides fan(s) control, system configuration, and diagnostic information.
- B. The DCV shall include; Smart Controller, LCD screen interface, Duct temperature Sensors and Variable Frequency Drives.
- C. Controls shall be listed by ETL (UL 508A)
- D. The system includes a LCD screen interface for fan(s) and hood lights control, wash control (if applicable), gas valve reset, programmable schedule, Max Air Override function, Preparation Time mode, Cool Down mode, and diagnostics including VFD status. The LCD screen shows descriptive plain text explaining the functions or values. The LCD screen interface will be installed on the face of the hood, on the face of the utility cabinet or on the face of a wall mounted control enclosure.

- E. Control enclosure will be NEMA 1 rated and listed for installation inside of the exhaust hood utility cabinet. Control enclosure may be constructed of stainless steel or painted steel.
- F. The smart controller will constantly monitor the exhaust air temperature through the riser mounted temperature sensor and modulate the fan speeds accordingly.
- G. A room temperature sensor will also be provided for field installation in the kitchen space in order to start the fan(s) based on the fixed temperature differential between the room and the exhaust air in the duct rather than fixed set-points.
- H. A Preparation Time Mode is available for morning operation: dedicated make-up air will be locked out only allowing the use of transfer air during this mode. Exhaust fan(s) will run at low CFM while maintaining a balanced kitchen pressure.
- I. A Cool Down Mode is designed for equipment cool-down period at the end of the daily cooking operations: similarly to Preparation Time mode, dedicated make-up air will be locked out only allowing the use of transfer air during this mode. Exhaust fan(s) will run at low CFM while maintaining a balanced kitchen pressure.
- J. Fan maximum/ minimum speeds will be adjustable for proper kitchen balance. Fan direction change is also available from the smart controller configuration menu without need for rewiring.
- K. Duct Temperature Sensor(s) will be mounted in the exhaust hood riser(s). Temperature probe will be constructed of Stainless Steel. System will be factory pre-set to modulate fan speed within a range of 45°F for 600°F and 700°F cooking applications and a range of 5°F for 400°F cooking applications. Set-points are fully adjustable through the touch screen interface based on application needs.
- L. The Max Air Override will have an adjustable timeout value.
- M. The panels include color coded wiring with as-built wiring diagrams and spare terminals controlled by the fire system micro switch. The panel is factory pre-wired to shut supply fans down in a fire condition. Options to turn ON the exhaust fans or turn off the hood lights in a fire condition will be configurable through the smart controller, but only through a password protected menu to prevent any changes after a fire inspection has been performed.

2.8 ACCESSORIES

- A. **Inlet Dampers:** Manufacturer shall provide and install on unit, when possible, a two-position, motor-operated damper with internal end switch to energize the blower-starter circuit, when damper is 80% open. Blades shall be a maximum of 6" wide 16-gauge G-90 galvanized steel and shall be made to guarantee the absence of noticeable vibration at design air velocities. Damper blades are to be mounted on friction-free synthetic bearings. Damper edges shall have PVC coated polyester fabric mechanically locked into blade edge. Jamb seals used are flexible metal, compression type.
- B. **Filters:** The filters shall be (2") thick, aluminum mesh coated with super-filter adhesive, aluminum mesh with polyester foam or pleated throw away. Frame shall be constructed of heavy-duty beverage board. Filter media is supported on the air leaving side by a metal grid.

- C. Filter Section: Shall be either insulated or non-insulated constructed of G-90 galvanized steel with filters supported by internal slides and with removable access panels.
- D. Fresh Air Inlet Hood: Shall be constructed of G-90 galvanized steel with bird screen.

2.9 TEMPERATURE CONTROL SYSTEMS

- A. Discharge Temperature Control: Use for building exhaust-air replacement to maintain a constant discharge temperature of supply air. The burner flame modulates to compensate for outdoor temperatures. The optional manual SUMMER-OFF/WINTER selector switch and exhaust system interlock controls the heater-blower operation. Supplied with optional remote-control panel with temperature selector dial and SUMMER-OFF/WINTER selector.
- B. Performance Data:
 - 1. Per schedule on plans

2.10 ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. A single point electrical connection shall be supplied. The control circuit voltage shall be 115 volts. A control transformer shall be provided, when required. Wiring in control enclosures shall be in accordance with the National Electrical Code and the local code, as it may affect the installation. Motor starter shall be provided. Starter shall be line voltage, definite purpose type
- B. Unit shall be complete with all items such as relays, starters, switches, safety controls, conduit and wire as previously mentioned, and as required for proper operation. All factory-mounted controls shall be factory pre-wired to the unit control panel. A safety disconnect switch shall be standard on all units and shall be sized according to the unit.
- C. Disconnect Switch: Factory mount in control panel.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify roof curbs are installed and dimensions are as shown on shop drawings.

3.2 INSTALLATION

- A. Roof Curb:
 - 1. Assemble roof curb.
 - 2. Install roof curb level.
 - 3. Install units on roof curb providing watertight enclosure to protect ductwork and utility services.
 - 4. Install gasket material between unit base and roof curb.

3.3 DEMONSTRATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for demonstration and training.
- B. Demonstrate unit operation and maintenance.

3.4 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Do not operate units until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

END OF SECTION

SECTION 32 31 29
WOOD FENCES AND GATES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes
 - a. Construction of wood fences as shown on plans.

1.2 REFERENCES

- A. Reference Standards
 - 1. American Society for Testing and Materials (ASTM)
 - a. A 123, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - b. A 500, Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
 - c. F 1043, Standard Specification for Strength and Protective Coatings on Steel Industrial Chain Link Fence Framework
 - d. F 1083, Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General
 - 1. Gate hinges and post caps shall be of steel, malleable iron, ductile iron or equal.
 - 2. Post tops may be of aluminum.
- B. Slats: Southern Yellow Pine pressure treated in accordance with AWPA Specification UC3B.
- C. Bottom and Top Rail: Minimum 2-inch x 4-inch Southern Yellow Pine studs pressure treated in accordance with AWPA Specification UC3B.
- D. Corner, Gate, End, or Line Posts
 - 1. Wood Posts
 - a. 6x6 Southern Yellow Pine pressure treated in accordance with AWPA Specification UC4B.
 - b. Posts shall be No. 2 Grade or better.
- E. Accessories
 - 1. Setting Materials
 - a. Concrete
 - 1) Minimum 28 day compressive strength of 3,000 psi
 - 2) Bagged concrete allowed.
 - 3) 12" diameter by 3'-6" deep pier foundation as shown on drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions

1. Verify areas to receive fencing are completed to final grades and elevations.

3.2 INSTALLATION

A. Wood Fence Framing

1. Space line posts as shown on drawings.
2. All posts shall be set in concrete.
 - a. All posts holes shall be drilled in undisturbed soil.
 - b. All post holes shall be 12 inch diameter as shown on drawings.
 - c. Post shall be embedded in concrete 24 inches and concrete footing shall be 3 foot – six inches below grade as shown on drawings.
 - d. Place concrete around posts in a continuous pour.
 - e. Trowel finish around post. Slope to direct water away from posts.
3. Check each post for vertical and top alignment, and maintain in position during placement and finishing operations.

B. Slats

1. Place slats approximately 1 inch above the ground, and on a straight grade between posts by excavating high points of the ground.
2. Fasten slats to top and bottom railings with 2 galvanized screws designed for wood fence construction at both the top and bottom rail.

END OF SECTION