CITY OF VALDEZ
ALASKA

CONTRACT DOCUMENTS

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605
Contract Number: 1572
Cost Code: 350-0310-55000.1605
Issued for Construction
Date: December 11, 2019

City of Valdez
Capital Facilities and Engineering
300 Airport Road, Suite 201
P.O. Box 307
Valdez, Alaska 99686

Project Manager:
Brad Sontag

Construction Plan Set Completed By:
Wolf Architecture, Inc.
625 S. Cobb St., Ste. 200
Palmer, AK 99645

City of Valdez
Contract Documents

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

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City of Valdez
Invitation to Bid

Date: December 11, 2019

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

This project includes, but is not necessarily limited to:

Base Bid: Remediation of known and suspected mold contamination in wall and ceiling assemblies at Decontamination Room and adjoining spaces. Remediation of known and suspected materials containing asbestos in areas of work. Demolish affected finishes and assemblies as required. Patch/repair/replace assemblies and finishes, as required, in areas of remediation and other work. Replace existing HRV with new in Decontamination Room. Provide and install new HRV to serve Residential Dormitory. Implement recommendations to improve ventilation from existing AHU-1. Implement recommendations to improve monitoring and evacuation of vehicle exhaust in apparatus bays 1, 2, and 3. See attached drawings and specifications for further scope of work.

Additive Alternate #1 Provide and install a Vehicle Exhaust Capture system in apparatus bays 4 and 5. See attached drawings and specifications for further scope of work.

Sealed bids will be accepted until 2:00pm local time on January 7, 2020 at the office of the Capital Facilities Director, 300 Airport Road, Suite 201, P. O. Box 307, Valdez, Alaska 99686. The bids will be publicly opened and read at that time.

A ***MANDATORY PRE-BID CONFERENCE*** will be held at the office of the Capital Facilities Director, 300 Airport Road, Suite 201, Valdez, Alaska on December 17,18, and 19, 2019 at 2:00pm each day.

All questions must be submitted in writing by 4:00pm on December 30, 2019.

Complete sets of the bid documents may be purchased from Digital Blueprint, 903 West Northern Lights Blvd., Anchorage, AK 99503, (907) 274-4060. Bid documents may also be downloaded from the City of Valdez website at www.valdezak.gov; documents are located under “Bids” on the lower right hand side of the opening page. Bidders are encouraged to download, fill out, and return the Request for Addendum form located at the link listed above to ensure receipt of any addendum issued for this project.

Bid security in the amount of 5% of the total bid is required.

The City reserves the right to waive any irregularities or informalities in a bid and to reject any and all bids without cause.

Current minimum prevailing wage rates as published by the Alaska Department of Labor must be paid if required by law.

Requirements of the Alaska Employment Preference (AS 36.10) must be met.

The City of Valdez “Standard Specifications and Standard Details” shall be used. An electronic copy is available from the City of Valdez website at www.valdezak.gov under “standards and specifications” located on the “quick links” portion of the Capital Facilities Department page.

City of Valdez
Instructions to Bidders

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

CAUTION:
Your bid may be rejected if it is not properly executed. Check that the following items have been accomplished to help assure a responsive bid. Please read Sections 6 and 7 carefully.

1. Bid Form
   A. The Bid Form has been executed and signed.
   B. Addendum Acknowledgement Form has been executed and signed.
2. Bid Security or Bid Bond
   A. An executed Bid Security (Bid Bond) in the amount indicated on the Invitation to Bid.
   B. Verify that the Certificate showing the Corporate Principal on the form is executed if applicable.
3. Alaska Business License, a copy your current license must be included.
4. Alaska Contactor Certificate of Registration
   A. A copy of your current Alaska Contractor License of Registration in the bidder's name must be included with the bid.
   B. The Contractor is required to verify that the appropriate license(s) is in place prior to submitting their bid for the project's scope of work.
5. A bid may be rejected if it contains any alterations or erasures that are not initialed by the signer of the bid.

Note: Any certified checks may be held uncollected at the risk of bidders submitting them.

1. General

Bidders are requested to study and follow these instructions about the method and form for submitting bids to avoid having their bid rejected.

Bidders will find all required forms and documents contained within this assembly. Please notice under Section 7, Required Documents for Bid, as to which forms and documents are required for your bid to be considered.

2. Explanation to Bidders

Requests from bidders concerning interpretations or clarifications of the bid documents shall be made in writing to the project manager or project engineer. Such requests shall arrive at least three working days prior to the date for opening bids. There needs to be sufficient time allowed for a reply to reach all bidders before the submission of the bids. Explanations made will be in the form of an addendum to the specifications or drawings and will be furnished to all bidders and receipt of the addendum must be acknowledged on the Addendum Form.

3. Site Conditions

Bidders are encouraged to visit the site to ascertain pertinent local conditions, location, accessibility, terrain, labor conditions, conditions of surrounding areas, and any other aspect that may impact the project.

4. Addenda Requirements

All bids must include the Addendum Acknowledgement Form. If addendums have been issued the bidder must state on the form all the addendums have been acknowledged. If no addendums were issued then the bidder is to write "NONE" on the form. The Addendum Acknowledgement Form shall be reviewed prior to acceptance of the bid.

5. Submissions of Bids

All bids, including any amendment or withdrawal, must be received at the address shown in the Invitation to Bid no later than the scheduled time of bid opening. Any bid, amendment or withdrawal that has not been actually received by the person opening the bid prior to the time of the scheduled bid opening will not be considered, and bid will be returned unopened. Conditioned or qualified bids unless requested will be considered nonresponsive.

Bids must be in a sealed envelope marked as follows:

BIDS FOR CITY OF VALDEZ
FIRE STATION 1 HAZMAT REMEDIATION AND VENTILATION UPGRADES
PROJECT NO. 19-350-1605
CONTRACT NO. 1572
DATE OF BID OPENING: JANUARY 7, 2020

CAPITAL FACILITIES DIRECTOR
CITY OF VALDEZ
300 AIRPORT ROAD, SUITE 201
P.O. BOX 307
VALDEZ, AK 99686

6. Preparation of Bids

Bids shall be submitted on the forms furnished, or copies thereof, and must be manually signed in ink. If erasures or other changes appear on the forms, the person signing the bid must initial each erasure or change.

The Bid Form will provide for quotation or price for all items. Bidders must quote on all items. Failure to do so may result in disqualification. Alternative bids will not be acceptable unless requested.

Modification by facsimile of bids already submitted will be considered if received before the bid opening time noted in the Invitation for Bid or the addenda. Modification by facsimile is at the risk of the bidder. The Owner makes no warranty as to telephone line or equipment availability or condition. All addenda must be acknowledged prior to the bid opening; facsimile acknowledgement is acceptable for all addenda issued as long as an original completed form was provided within your sealed bid. Facsimile modifications shall not reveal the total amount of the original or revised bid.

Facsimile number to use is (907) 835-5574.

7. Required Documents for Bid

The following listed documents are to be completed and submitted at the time of bidding. Deviation from these requirements will be grounds for rejection of the bid.

A. Addenda Acknowledged Form, fully completed original (see Item 6 above also)
B. Bid Schedule, fully completed original (see Item 6 above also)
C. Bid Bond, original
D. Copy of current and appropriate Alaska Contractor License for this Scope of Work.
E. Copy of current Alaska Business License

8. Required Documents for Award of the Contract

The following documents must be executed prior to award of the contract and the initiation of work. Contractors are urged to expedite the completion of these documents. This will allow the contract award and notice to proceed to be issued expeditiously. These documents must be submitted within ten (10) working days after the date of notice of award.

A. Contract Bond (Payment Bond: See Bonding Requirements below)
B. Contract Bond (Performance Bond: See Bonding Requirements below)
C. Certificate of Insurance naming City of Valdez as an "Additional Insured"
D. Certificate of good standing for a Corporation or LLC
E. Non-collusion Affidavit
F. Agreement (2 signed copies)
G. City of Valdez Business Registration
H. Executed W-9 Form
I. Application for City of Valdez building permit

9. Bonding Requirements

A. Bid Security (Bid Bond or Certified Check)

Bid Security is required and shall be in the form of a Certified Check for each bid or a Bid Bond prepared on the attached Bid Bond Form.

The Bid Bond must be executed by the bidder as principal and be executed by a surety company authorized to transact business in the State of Alaska. The Owner must approve the surety company.

The Bid Security shall be issued for five percent (5%) of the bid amount.

Bid Securities will be returned to all except the three lowest bidders. The remaining certified checks or bid bonds will be returned, after the Owner and the accepted bidder have executed the Contract. Failure of the Owner to return the certified checks or bid bonds in a timely manner will create no liability on the part of the Owner. If no award has been made within sixty (60) days after the bid opening, all bidders except the one who has received the notice of intent to award may request the return of their cash, check or bid bonds.

B. Contract Payment Bond

A Contract Payment Bond is not required if the total dollar amount of the contract is less than One Hundred Thousand Dollars ($100,000).

A Contract Payment Bond is required if the total dollar amount of the contract is equal to or greater than One Hundred Thousand Dollars ($100,000). Contract Payment Bond will be in the amount of One Hundred Percent (100%) of the Bid amount.

Contract Payment Bond shall be prepared on the Payment Bond Form that is attached. The Bond must be executed by the Contractor as principal and executed by a surety company authorized to transact business in the State of Alaska. The Owner must approve the surety company.

C. Contract Performance Bond

A Contract Performance Bond is not required if the total dollar amount of the contract is less than One Hundred Thousand Dollars ($100,000).

A Contract Performance Bond is required if the total dollar amount of the contract is equal to or greater than One Hundred Thousand Dollars ($100,000). Contract Performance Bond) will be in the amount of One Hundred Percent (100%) of the Bid amount.

Contract Performance Bond shall be prepared on the Performance Bond Form that is attached. The Bond must execute by the Contractor as principal and executed by a surety company authorized to transact business in the State of Alaska. The Owner must approve the surety company.

Section 2.80.080 of Valdez City Code provides for a modified contractor bond. Bidders shall familiarize themselves with exemptions allowed and the requirements for exemptions.

10. Bidder Qualifications

Before a bid is considered for award, the apparent low bidder may be requested to submit a statement of facts or proof in detail as to his previous experience in performing similar or comparable work, technical abilities, equipment, size, manpower and financial resources to complete and perform the work as outlined in the contract documents, plans and specifications.

11. Withdrawal of Bids

Bids may be withdrawn by written request received from the bidder prior to the bid opening time. Errors on the part of the bidder in preparing the bid, confers no right for the withdrawal of the bid after the bid has been opened.

12. Bidders Interested in More than One Bid

If any one party, by or in name of his or their agent, partner or other person, offers more than one bid, all such bids will be rejected. A party who quoted prices to a bidder is not disqualified from quoting prices to other bidders or from a bid directly for the work.

13. Rejection of Bids

The Owner reserves the right to reject any and all bids, when such rejection is in the interest of the Owner; to reject the bid of a bidder who previously failed to perform properly or to complete on time; and to reject the bid of a bidder who is not, in the opinion of the Owner in, in a position to perform the contract; or to waive any irregularities or informalities in a bid.

14. Hiring of Local Labor

The Owner encourages that every Contractor and Subcontractor, employ to the maximum extent practical and allowed by law, qualified people who regularly reside in the project area.

15. Local Bidder Preference

The Valdez City Code provides for a local bidder preference as follows:

> Section 2.80.020 Definitions
>
> "Local bidder" means a bidder that is not delinquent in the payment of any taxes, fees, assessments, or other charges owing the city and satisfies one of the requirements set forth in subsections (1) through (3) of this definition for a period of eighteen consecutive months immediately prior to the opening of a competitive city bid for which the bidder wishes to utilize the local bidder preference:
> 1. If the bidder is a corporation or limited liability company, the bidder's primary business address has a city of Valdez postal zip code, as reflected on the bidder's state of Alaska business license or the records of the State of Alaska Department of Commerce, Community and Economic Development, Division of Corporations;
> 2. If the bidder is an individual, the bidder's primary business or residential address has a city of Valdez postal zip code, as reflected on the bidder's state of Alaska business license;
> 3. If the bidder is a general partnership, a limited partnership, or a joint venture, at least one of the general partners has a postal zip code compliant with subsection (1) or (2) of this definition.
>
> Section 2.80.065H Competitive Bidding
>
> Except where prohibited by state or federal grant requirements, a local bidder, as defined in Section 2.80.020, may be given consideration as low bidder where the offer is the lesser of ten percent or fifty thousand dollars in excess of the lowest offer received from a bidder not qualified as a local bidder. The city may split the award between two or more suppliers in any manner the city deems to be in its best interest.

16. Award of Bid

The bid, if awarded, will be awarded to the lowest responsive responsible bidder as determined by the terms of the City Code and this document.

17. Pre-Bid Conference

A ***MANDATORY PRE-BID CONFERENCE*** will be held December 17, 18, and 19, 2019, at 2:00pm each day at the office of the Capital Facilities Director, Suite 201 300 Airport Road, Valdez, Alaska.

18. Pre-Award Conference

Before the award of the contract a Pre-Award Conference may be held between the Engineer or Project Manager and the apparent low bidder.

City of Valdez
Addendum Acknowledgement

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

The bidder acknowledges receipt of the following addenda and certifies that their contents have been considered in the preparation of this Bid. If there are no addendums please state NONE above your name.

Addendum Number	1	Dated	12/16/19	Initials	
Addendum Number	2	Dated	12/18/19	Initials	
Addendum Number	3	Dated	12/20/19	Initials	
Addendum Number	4	Dated	12/31/19	Initials	
Addendum Number		Dated		Initials	
Addendum Number		Dated		Initials	
Addendum Number		Dated		Initials	
Addendum Number		Dated		Initials	
Addendum Number		Dated		Initials	
Addendum Number		Dated		Initials	

Orion Construction Inc
Company Name

Patrick Merow
Authorizing Name

1/7/20
Date

Vice President
Title

Signature

City of Valdez
Bid Schedule
Page 1 of 2

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
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Item No.	Item Description	Quantity	Unit	Total Item Price
1	Mobilization and Demobilization	1	LS	25,000
2	All labor/materials required for remediation of hazardous materials and station 1 repairs	All Req'd	LS	100,000
3	All labor/materials required for ventilation upgrades in station 1	All Req'd	LS	100,000
4	Field engineering, submittals, shop & record drawings, operating instructions, O&M manuals, and close-out punchlist	1	LS	25,000
AA#1	All labor/materials for installation of vehicle exhaust capture system in bays 4 and 5	All Req'd	LS	100,000

City of Valdez
Bid Schedule
Page 2 of 2

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

Total Base Bid Amount:

Three hundred fifty thousand Dollars 00/100 Cents

($ 350,000.00)

I, Patrick Meehan, hereinafter called Bidder, an individual doing business as Orion Construction Inc (strike out inapplicable words:) a ~~partnership~~, a corporation incorporated in the State of Alaska, ~~a joint venture~~, hereby submits this bid and agrees: to hold this bid open for forty five (45) days, to accomplish the work in accordance with the contract documents, plans, specifications, for the lump sum and unit price amounts as set forth in this bid schedule.

Respectfully submitted this 7 day of Jan, 2020

BIDDER:

Orion Construction Inc
Company Name

Patrick Meehan
Authorizing Name

3038 N. Caribou St.
Address

Vice President
Title

Wasilla, AK 99654
City, State, Zip Code

Signature

907-631-3550
Telephone Number

orionconstructioninc@gmail.com
Email Address

26-0426783
Federal I.D. or S.S.N.

CORPORATE SEAL

ATTEST:

Signature of Corporate Sec.

JEFF WHALEY
Print Name

City of Valdez
Bid Bond

KNOW ALL MEN BY THERE PRESENTS, that we
Orion Construction, Inc.
3038 N. Caribou Street, Wasilla, AK 99654 (Insert full name and address or legal title of Contractor)
as Principal, hereinafter called the Principal, and
The Ohio Casualty Insurance Company (Insert full name and address or legal title of Surety)
2233 112th Avenue NE, Bellevue, WA 98004
a corporation duly organized under the laws of the State of Alaska as surety, hereinafter called the Surety, are held and firmly bound unto

City of Valdez
P.O. Box 307
Valdez, Alaska 99686

as Obligee, hereinafter called the Obligee, in the sum of

Five Percent (5%) of the Total Amount Bid Dollars ($ ---5%---),

For the payment of which sum well and truly to be made, the said Principal and the Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severely, firmly by these presents.

Whereas, the Principal has submitted a bid for

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with Obligee in accordance with terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this 7th day or January, 2020

(Witness)

(Witness)

Orion Construction, Inc.
(Principal) (Seal)

(Title)

The Ohio Casualty Insurance Company
(Surety) (Seal)

(Title) Roger Kaltenbach, Attorney-in-Fact

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: **8202295-023001**

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Guy Armfield, John Claeys, Carly C. Fehringer, Scott Fisher, Nicholas Fredrickson, Deanna M. French, Scott Garcia, Elizabeth R. Hahn, Roger Kaltenbach, Ronald J. Lange, Andrew P. Larsen, Susan B. Larson, Scott McGilvray, Mindee L. Rankin, Jana M. Roy

all of the city of Bellevue state of Washington each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 4th day of October, 2019.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 4th day of October, 2019 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts: Section 5. Surety Bonds and Undertakings.
Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 7 day of January, 2020.

By: _____
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

CITY OF VALDEZ, ALASKA
BUSINESS REGISTRATION #938

This is to certify that

Orion Construction Inc

NAME OF BUSINESS

Orion Construction Inc

OWNER

3038 N Caribou St
Wasilla AK 99654

ADDRESS

is a registered business in compliance with Section 5.04 of the Valdez City Code.

Business Registrar
City of Valdez, Alaska

12/31/2020

Expiration Date

****

NOTE: BUSINESS REGISTRATIONS are required to be renewed yearly.

License #: CONE33379
Effective: 11/20/2018
Expires: 12/31/2020

STATE OF ALASKA

Department of Commerce, Community, and Economic Development

Division of Corporations, Business, and Professional Licensing

Regulation of Construction Contractors and Home Inspectors

Licensee: **ORION CONSTRUCTION, INC.**

License Type: **General Contractor Without Residential Contractor Endorsement**

Status: **Active**

Doing Business As: **ORION CONSTRUCTION, INC.**

Commissioner: Mike Navarre

Relationships

RelationType	License #	LicenseType	Owners/Entities	Names/DBA

No relationships found.

Designations

Type	Group

No designations found.

Wallet Card

State of Alaska
Department of Commerce, Community, and Economic Development
Division of Corporations, Business, and Professional Licensing
Regulation of Construction Contractors and Home Inspectors
ORION CONSTRUCTION, INC.
DBA: ORION CONSTRUCTION, INC.
As
General Contractor Without Residential Contractor Endorsement

License	Effective	Expires
CONE33379	11/20/2018	12/31/2020

ORION CONSTRUCTION, INC.
3038 N CARIBOU ST
Wasilla, AK 99654

Alaska Business License # **906888**

Alaska Department of Commerce, Community, and Economic Development

Division of Corporations, Business, and Professional Licensing
PO Box 110806, Juneau, AK 99811-0806

This is to certify that

ORION CONSTRUCTION, INC.

3038 N. CARIBOU ST., WASILLA, AK 99654

owned by

ORION CONSTRUCTION, INC

is licensed by the department to conduct business for the period

October 15, 2019 to December 31, 2021
for the following line(s) of business:

23 - Construction

This license shall not be taken as permission to do business in the state without having complied with the other requirements of the laws of the State or of the United States.

This license must be posted in a conspicuous place at the business location.
It is not transferable or assignable.

Julie Anderson
Commissioner

City of Valdez
Agreement Page 1 of 2

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

This agreement is made on the 21st day of January, 2020, by and between the City of Valdez, Alaska, hereinafter called the Owner, acting through its Mayor, and Orion Construction, Inc. doing business as a corporation located in Wasilla, Alaska, hereinafter called the Contractor.

The Contractor agrees to this Contract known as:

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
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Furthermore the Contractor agrees to accept as full and complete payment for all work to be done in this Contract for the lump sum and per unit prices as set forth in the Bid Form and Addendums in the Contract Documents for this project. The total amount of this Contract shall be: **two hundred seventy-one thousand, five hundred dollars and zero cents ($271,500.00).**

The Contractor hereby agrees to commence work on this project within ten (10) working days after the date of the written Notice to Proceed and to complete all work in accordance with the contract documents and addendums within 45 calendar days of the Notice to Proceed. Said contract documents are listed in the Table of Contents herein. All documents listed therein are by this reference made a part hereof.

The Contractor further agrees to pay, as liquidated damages, the sum of five hundred dollars ($500.00) for each calendar day in excess of the completion date specified in the written Notice to Proceed in which this project remains incomplete.

The Owner agrees to pay the Contractor for the performance of the Contract, subject to additions and deductions, as provided in the City of Valdez Standard Specifications Section 10 Standard General Provisions of this of this Contract, and to make payments on account thereof as provided in the City of Valdez Standard Specifications Section 10 Standard General Provisions and City of Valdez City Code.

City of Valdez
Agreement Page 2 of 2

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
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IN WITNESS WHEREOF, the parties to this presence have executed this Contract in two (2) counterparts, each of which shall be deemed as original, in the year and day first mentioned above.

Orion Construction, Inc.

Signature

Name

Title

Date

Mailing Address

City, State, Zip Code

Federal I.D. or S.S.N.

Corporate Secretary

Attest: _____
Corporate Secretary

City of Valdez, Alaska, Authorized

Jeremy O'Neil, Mayor

Date

Attested:

Sheri L. Pierce, MMC, City Clerk

Date

Recommended:

Mark Detter, City Manager

Date

Nathan Duval, Capital Facilities Director

Date

Approved as to Form:
Brena, Bell & Walker, P.C.

Jon S. Wakeland

Date

City of Valdez
Corporate Acknowledgement

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
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(To be filled in when Contract is executed in behalf of Corporation)

UNITED STATES OF AMERICA)
)SS.
STATE OF ALASKA)

The foregoing instrument was acknowledged before me this ___ day of _____, 20_____.

_____ _____
(Name of Officer) (Title of Officer)

_____
(Name of Corporation)

_____ Corporation, on behalf of said Corporation.
(State of Incorporation)

_____
Notary Public

My Commission Expires: _____

City of Valdez
Non-Collusion Affidavit

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

(to be executed prior to award)

UNITED STATES OF AMERICA)
)SS.
STATE OF ALASKA)

I, _____, of _____, being duly sworn, do depose and state:

I, or the firm, association of corporation of which I am a member, a bidder on the Contract to be awarded, by the City of Valdez, Alaska, for the construction of that certain construction project designated as:

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

Located at Valdez, in the State of Alaska, have not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such Contract.

_____
Signature

Subscribed and sworn to this _____ day of _____, 20_____.

_____
Notary Public

My Commission Expires:_____

City of Valdez
Labor and Material Payment Bond

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

Know all men by these presents that:

(Insert full name and address or legal title of Contractor)

as Principal, hereinafter called Principal, and,

(Here insert full name and address or legal title of Surety)

as Surety, hereinafter called Surety, are held and firmly bound unto

City of Valdez
P.O. Box 307
Valdez, Alaska 99686

as Obligee, hereinafter called Owner, for the use and benefit of claimants as herein below defined, in the amount of

Dollars ($_____),
(Here insert a sum equal to the contract amount)

for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

Principal has by written agreement dated _____, 20_____, entered into a contract with Owner for

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

in accordance with Drawings and Specifications prepared by

Wolf Architecture, Inc.
625 S. Cobb St., Ste. 200
Palmer, AK 99645

which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

City of Valdez
Labor and Material Payment Bond

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

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

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

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

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

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

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

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

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

Signed and Sealed this _____, day of _____, 202___

_____ _____
(Witness) (Principal) (Seal)

_____
(Title)

_____ _____
(Witness) (Surety) (Seal)

_____
(Title)

City of Valdez
Performance Bond

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

KNOW ALL MEN BY THESE PRESENTS: that

(Here insert full name and address or legal title of contractor)

as Principal, hereinafter called Contractor, and ,

(Here insert full name and address or legal title Surety)

as Surety, hereinafter called Surety, are held and firmly bound unto

City of Valdez
P.O. Box 307
Valdez, AK 99686

as Obligee, hereinafter called Owner, in the amount of

Dollars ($)

for the payment whereof Contractor and Surety bind themselves, their heirs, executor, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

Contractor has by written agreement dated _____, 20_____, entered into a contract with Owner for

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

in accordance with Drawings and Specifications prepared by

Wolf Architecture, Inc.
625 S. Cobb St., Ste. 200
Palmer, AK 99645

which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

City of Valdez
Performance Bond

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

Now, therefore the condition of this obligation is such that, if Contractor shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the Owner.

Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly comply with one of the following:

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

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

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators or successors of the Owner.

Signed and Sealed this _____ day of _____, 20_____

_____ _____
(Witness) (Principal) (Seal)

_____
(Title)

_____ _____
(Witness) (Surety) (Seal)

_____
(Title)

City of Valdez
Contractor Certificate of Substantial Completion

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

CONTRACTOR: _____

This is to certify that I, _____, am a duly authorized official of the said CONTRACTOR working in the capacity of_____, and in my official capacity representing said CONTRACTOR do hereby certify as follows:

1. The work of the subject Contract above has been performed, and materials used and installed in accordance with and in conformity to, the Contract Drawings, Contract Specifications, City of Valdez Standard Specifications and Details.

2. The Contract work is now substantially complete in all parts and requirements.

3. I understand that neither the determination by the Engineer--Architect that the work is substantially complete nor the acceptance thereof by the Owner shall operate as a bar to claim against the Contractor under the terms of the guarantee provisions of the Contract Documents.

4. The work to which this Certificate applies has been properly inspected and that work is hereby declared to be substantially complete in accordance with the Contract Documents.

5. The date of Substantial Completion is the date upon which all guarantees and warranties begin.

6. The Owner accepts the Project or specified area as described under "REMARKS," of the Project as substantially complete and will assume full possession of the Project or specified area of the Project at _____(time) on _____day,_____, 202__.

CONTRACTOR	CITY OF VALDEZ, OWNER
_____	_____
(Signature)	Capital Facilities Director
_____	_____
(Title)	Date
_____	
Date	

REMARKS:_____
_____

City of Valdez
Contract Release Page 1 of 2

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

The undersigned, _____
for itself, its successors in interest, assigns trustees, administrators, subcontractors, suppliers, and laborers do hereby release and forever discharge the CITY OF VALDEZ, ALASKA a municipal corporation, from all actions, causes of actions, suits, controversies, claims, damages and demands of every kind and nature, mature or to mature in the future, for and by reason of any matter, thing or claim arising out of the following Contract:

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

The undersigned also intends hereby to discharge the City of Valdez from all liability for any and all damages or injuries presently undiscovered or unanticipated. The undersigned's intention hereby is to waive any right it may subsequently have to set aside this release under the doctrine of Witt v. Watkins, 579 P.2d 1065 (Alaska 1978).

The undersigned further agrees to defend, indemnify and hold harmless the City of Valdez against any claims, liens, or causes of action arising under or by virtue of this Contract, including, but not limited to, any claim that the undersigned, any successor in interest, assignee, trustee, administrator, subcontractor, supplier or laborer of the undersigned or any other person might make or claim that he could possibly make against the City of Valdez.

The undersigned certifies that he has not assigned any amounts payable under this Contract to anyone.

The undersigned hereby acknowledges receipt of the amount of $_____ as full and final payment in consideration for all services, materials and labors rendered in connection with this Contract.

The undersigned hereby declares that the terms of this RELEASE have been completely read and are fully understood, and said terms are voluntarily accepted for the purpose of making a full and final release of any and all claims, disputed or otherwise, arising under or by virtue of this Contract.

City of Valdez
Contract Release Page 2 of 2

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

IN WITNESS WHEREOF, I have hereunto set my hand and seal this _____day of _____, 20_____.

_____
COMPANY

_____
SIGNATURE

_____
TITLE

STATE OF ALASKA)
)ss.
THIRD JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this _____ day of _____, 20_____, before me, Notary Public in and for the State of Alaska, personally appeared _____of _____, known to me to be its _____and acknowledged to me that he has read this foregoing RELEASE and knew contents thereof to be true and correct to the best of his knowledge and belief, and that he signed the same freely and voluntarily for the uses and purposes therein mentioned, and that he was duly authorized to execute the foregoing document according to the Bylaws or by Resolutions of said corporation.

WITNESS my hand and notarial seal this _____ day of _____, 20_____.

_____
Notary Public in and for Alaska
My Commission expires: _____

City of Valdez
Special Provisions

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

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City of Valdez
Special Provisions

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

SP 01 General Statement

The Special Provisions set forth conditions and requirements unique to this Project and are supplemental to, and supersede, the City of Valdez "Standard Specifications and Standard Details."

SP 02 Scope of Work

Base Bid

The Scope of Work of the Base Bid of this Contract shall include providing all labor, materials, tools, equipment, transportation, supervision and facilities necessary to:

Remediation of known and suspected mold contamination in wall and ceiling assemblies at Decontamination Room and adjoining spaces. Remediation of known and suspected materials containing asbestos in areas of work. Demolish affected finishes and assemblies as required. Patch/repair/replace assemblies and finishes, as required, in areas of remediation and other work. Replace existing HRV with new in Decontamination Room. Provide and install new HRV to serve Residential Dormitory. Implement recommendations to improve ventilation from existing AHU-1. Implement recommendations to improve monitoring and evacuation of vehicle exhaust in apparatus bays 1, 2, and 3. See attached drawings and specifications for further scope of work.

Alternate Bid(s)

The Scope of Work of the Additive Alternate No. 1 Bid of this Contract shall include providing all labor, materials, tools, equipment, transportation, supervision and facilities necessary to:

Additive Alternate #1 Provide and install a Vehicle Exhaust Capture system in apparatus bays 4 and 5.
See attached drawings and specifications for further scope of work.

SP 03 Time of Completion

All work shall be completed in accordance with the Contract Documents within 45 calendar days of the date of the written Notice to Proceed.

Liquidated damages will be assessed in the sum of five hundred dollars ($500.00) for each calendar day after the completion date during which the Project remains incomplete.

Substantial Completion: Substantial Completion shall be defined as the stage in the progress of the work when the work is sufficiently complete in accordance with the Contract Documents so the Owner (City of Valdez) can occupy or use the structure or that which is the subject of the contract, for its intended use.

SP 04 Special Site Conditions

The Contractor will be responsible for the disposal of all refuse and debris generated by the project. The City has, on a limited 'first come first served' basis, dumpsters for use free of charge on City projects if available.

Dump fees will be waived. The Contractor will be responsible for hauling demolished materials and construction waste out to the City Baler facility on South Sawmill Drive. The Baler is located approximately 5 miles out of town. Please contact the Baler ahead of time to make arrangements for the disposal of such materials. The Baler's number is 907-835-2356. The project name or contract number will be required on all Baler disposal forms and when calling to reserve or empty dumpsters.

Local building permit fees are waived. The Contractor will be responsible for obtaining local building permits before the NTP is issued. The Contractor will need to call the City Building Department at 907-834-3401.

Staging area will be determined in the field before construction begins.

The Contractor will be responsible for moving furniture and other items necessary to complete the work.

The Contractor is responsible for setting up detours or barricades if their work is in a public area and will interfere with normal traffic flow.

The contractor will be responsible for providing their own restroom facilities (porta potty).

SP 05 Hazardous Waste Generation

Every effort to minimize or eliminate the generations of hazardous waste shall be used by the Contractor in the performance of the work of this Contract. Unless there is no substitute, no hazardous material shall be used in the performance of the work of this Contract.

SP 06 Coordination and Schedule

The Contractor shall, within ten (10) working days of the date of the Notice to Proceed, submit to the Engineer a schedule as required in Section 10.5, Control of Work, Article 5.3. The

schedule shall be updated every week. An updated schedule shall be submitted with each of the Contractor's Periodic Payment Requests. Failure to provide an updated schedule will be cause to withhold partial payment.

SP 07 Site Preservation, Restoration, Cleanup and Environmental Reporting

The Contractor shall be solely responsible for damage to public or private property caused by construction operations. The Contractor shall take all precautions necessary to control dust. The Contractor shall notify the City of any claims of damage, and shall clean and restore any property so damaged at the sole expense of the Contractor. All spills or releases of any hazardous substance shall be reported to the appropriate governmental agency as well as notice to the City. Contractor shall be responsible for all associated cleanup costs and fines.

At all times during the work, keep the premises clean and orderly. Upon completion of the work, repair all damage caused by equipment and leave the Project free of rubbish and excess materials of any kind.

SP 08 Permits

The Contractor shall obtain all licenses and permits that are required to do the work. A Building Permit will be required but there will be no charge.

SP 09 Order of Award of Alternative Bids

Additive Alternate and/or Deductive Alternative Bids will be awarded, if any are awarded, in any order determined to be the most advantageous combination by the owner.

SP 10 Payment

Payments shall be in accordance with Section 10.07, Measurement and Payment of the CVSS. All invoices for payment must be submitted on a City of Valdez *Periodic Payment Request Form.* An electronic copy of this form (Excel Spreadsheet) will be made available for the Contractor's use.

Disbursement of money to a person, firm or corporation will be made only after all the various receivable accounts of the general government and any municipal utility or enterprise have been reviewed for outstanding balances owed, and the disbursement will be reduced by setting off the amount of any delinquent indebtedness due the city from such person, firm or corporation.

All contracts to which the city is a party which will or may involve the disbursement of city funds shall contain the following clause, or its substantial equivalent: "Disbursement of money by the City of Valdez hereunder shall subject to set-off pursuant to the provisions of the Valdez City Code." Such contracts include, but are not limited to, oral contracts, employment contracts,

construction contracts, purchasing contracts and contracts of any municipal utility or enterprise, including customer's deposits.

SP 11 References to City of Valdez Standard Specifications (CVSS)

The City of Valdez Standard Specifications & Standard Details, Streets-Drainage-Utilities-Parks, dated April 2003, hereafter referred to as CVSS, are incorporated in and become a part of the Contract Documents for the work, The Standard Specifications are available for purchase from the Engineer's Office of the City of Valdez, P.O. Box 307, Valdez, Alaska 99686. All work under this Contract shall comply with the latest edition and addenda to all applicable codes, ordinances, and standards.

It shall be the responsibility of the Bidder to prepare his bid so all materials and/or different arrangements of connections or fittings shall harmoniously conform with the intent of the Contract Drawings, CVSS, and the Special Provisions.

SP 12 Construction Specifications

The Specifications for construction of the work of this Project are incorporated into the following pages and on the attached drawing titled "STATION 1 REPAIRS & VENTILATION UPGRADES". These drawings are by reference included herein.

City of Valdez
Modifications and Additions to the Standard Specifications

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

Division 10 Standard General Provisions

Article 7.5 Progress Payments

Add the following:

Any request for payments for work accomplished within the calendar fiscal year (January 1st to December 31st) must be received by the city no later than January 31st of the following year. Failure to provide a request for payment by Jan. 31st for work accomplished the previous year will delay payment. Failure to provide a request for payment by January 31st for work accomplished the previous year will be subject to a penalty. Penalty may be assessed at a minimum of $1000 and up to 5% of the invoice not to exceed $10,000.

Article 7.7 Final Payments

Add the following:

Any request for final payment for work accomplished within the calendar fiscal year (January 1st to December 31st) must be received by the city no later than January 31st of the following year. Failure to provide a request for final payment by January 31st for work accomplished the previous year will delay payment. Failure to provide a request for payment by January 31st for work accomplished the previous year will be subject to a penalty. Penalty may be assessed at a minimum of $1000 and up to 5% of the invoice not to exceed $10,000.

City of Valdez
Minimum Prevailing Wage Rates

Project: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project Number: 19-350-1605 / Contract Number: 1572

Minimum Prevailing Wage Rates and Title 36 Public Contracts Follows
See attached Links:

http://labor.state.ak.us/lss/pamp600.htm
http://labor.alaska.gov/lss/forms/Pam400.pdf

In accordance with the requirements of AS 36.05.070 and AS 36.05.080, the following provisions are included where applicable:

(1) The Contractor or subcontractors of the Contractor shall pay all employees unconditionally and not less than once a week;

(2) wages may not be less than those stated in the advertised specifications, regardless of the contractual relationship between the Contractor or subcontractors and laborers, mechanics, or field surveyors;

(3) the scale of wages to be paid shall be posted by the Contractor in a prominent and easily accessible place at the site of the work;

(4) Owner shall withhold so much of the accrued payments as is necessary to pay to laborers, mechanics, or field surveyors employed by the Contractor or subcontractors the difference between

(A) the rates of wages required by the contract to be paid laborers, mechanics, or field surveyors on the work; and

(B) the rates of wages in fact received by laborers, mechanics, or field surveyors.

(5) If it is found that a laborer, mechanic, or field surveyor employed by the Contractor or subcontractor has been or is being paid a rate of wages less than the rate of wages required by the contract to be paid, the Owner may, by written notice to the Contractor, terminate the Contractor's right to proceed with the work or the part of the work for which there is a failure to pay the required wages and to prosecute the work to completion by contract or otherwise, and the Contractor and the Contractor's sureties are liable to Owner for excess costs for completing the work.

Laborers' & Mechanics' Minimum Rates of Pay

Effective May 1, 2019
Issue 38

Title 36. Public Contracts
AS 36.05 & AS 36.10
Wage & Hour Administration
Pamphlet No. 600

ALASKA DEPARTMENT OF LABOR
& WORKFORCE DEVELOPMENT

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THE STATE of ALASKA
GOVERNOR MICHAEL J. DUNLEAVY

Department of Labor and Workforce Development

Office of the Commissioner

Post Office Box 111149
Juneau, Alaska 99811
Main: 907.465.2700
fax: 907.465-2784

May 1, 2019

TO ALL CONTRACTING AGENCIES:

At the Alaska Department of Labor and Workforce Development, our goal is putting Alaskans to work. This pamphlet is designed to help contractors awarded public construction contracts understand the most significant laws of the State of Alaska pertaining to prevailing wage and resident hire requirements.

This pamphlet identifies current prevailing wage rates and resident hire classifications for public construction contracts (any construction projects awarded for the State of Alaska or its political subdivisions, such as local governments and certain non-profit organizations). Because these rates may change in a subsequent determination, please be sure you are using the appropriate rates. The rates published in this edition become effective May 1, 2019.

The prevailing wage rates contained in this pamphlet are applicable to public construction projects with a final bid date of May 11, 2019, or later. As the law now provides, these rates will remain stable during the life of a contract or for 24 calendar months, whichever is shorter. **The 24-month period begins on the date the prime contract is awarded.** Upon expiration of the initial 24-month period, the latest wage rates issued by the department shall become effective for a subsequent 24-month period or until the original contract is completed, whichever occurs first. This process shall be repeated until the original contract is completed.

The term "original contract" means the signed contract that resulted from the original bid and any amendments, including changes of work scope, additions, extensions, change orders, and other instruments agreed to by the parties that have not been subject to subsequent open bid procedures.

If a higher federal rate is required due to partial federal funding or other federal participation, the higher rate must be paid.

For additional copies of this pamphlet go to: http://labor.state.ak.us/lss/pamp600.htm

For questions regarding prevailing wage or employment preference requirements, please contact the nearest Wage and Hour office. These offices are listed on Page xi.

Sincerely,

Dr. Tamika L. Ledbetter
Commissioner

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Note to Readers: The statutes and administrative regulations listed in this publication were taken from the official codes, as of the effective date of the publication. However, there may be errors or omissions that have not been identified and changes that occurred after the publication was printed. This publication is intended as an informational guide only and is not intended to serve as a precise statement of the statutes and regulations of the State of Alaska. To be certain of current laws and regulations, please refer to the official codes.

Photo By: Sgt. Ian Leones. Courtesy of the United States Marine Corps. Safety Note: Potential safety issues include making sure the vehicle and equipment are secured from inadvertent movement while work is performed. Gloves and eye protection would help reduce the chances of injuries while performing this type of work.

EXCERPTS FROM ALASKA LAW

Sec. 36.05.005. Applicability.
This chapter applies only to a public construction contract that exceeds $25,000.

Sec. 36.05.010. Wage rates on public construction.
A contractor or subcontractor who performs work on a public construction contract in the state shall pay not less than the current prevailing rate of wages for work of a similar nature in the region in which the work is done. The current prevailing rate of wages is that contained in the latest determination of prevailing rate of wages issued by the Department of Labor and Workforce Development at least 10 days before the final date for submission of bids for the contract. The rate shall remain in effect for the life of the contract or for 24 calendar months, whichever is shorter. At the end of the initial 24-month period, if new wage determinations have been issued by the department, the latest wage determination shall become effective for the next 24-month period or until the contract is completed, whichever occurs first. This process shall be repeated until the contract is completed.

Sec. 36.05.040. Filing schedule of employees, wages paid, and other information.
All contractors or subcontractors who perform work on a public construction contract for the state or for a political subdivision of the state shall, before the Friday of every second week, file with the Department of Labor and Workforce Development a sworn affidavit for the previous reporting period, setting out in detail the number of persons employed, wages paid, job classification of each employee, hours worked each day and week, and other information on a form provided by the Department of Labor and Workforce Development.

Sec. 36.05.045. Notice of work and completion; withholding of payment.

(a) Before commencing work on a public construction contract, the person entering into the contract with a contracting agency shall designate a primary contractor for purposes of this section. Before work commences, the primary contractor shall file a notice of work with the Department of Labor and Workforce Development. The notice of work must list work to be performed under the public construction contract by each contractor who will perform any portion of work on the contract and the contract price being paid to each contractor. The primary contractor shall pay all filing fees for each contractor performing work on the contract, including a filing fee based on the contract price being paid for work performed by the primary contractor's employees. The filing fee payable shall be the sum of all fees calculated for each contractor. The filing fee shall be one percent of each contractor's contract price. The total filing fee payable by the primary contractor under this subsection may not exceed $5,000. In this subsection, "contractor" means an employer who is using employees to perform work on the public construction contract under the contract or a subcontract.

(b) Upon completion of all work on the public construction contract, the primary contractor shall file with the Department of Labor and Workforce Development a notice of completion together with payment of any additional filing fees owed due to increased contract amounts. Within 30 days after the department's receipt of the primary contractor's notice of completion, the department shall inform the contracting agency of the amount, if any, to be withheld from the final payment.

(c) A contracting agency

(1) may release final payment of a public construction contract to the extent that the agency has received verification from the Department of Labor and Workforce Development that

(A) the primary contractor has complied with (a) and (b) of this section;

(B) the Department of Labor and Workforce Development is not conducting an investigation under this title; and

(C) the Department of Labor and Workforce Development has not issued a notice of a violation of this chapter to the primary contractor or any other contractors working on the public construction contract; and

(2) shall withhold from the final payment an amount sufficient to pay the department's estimate of what may be needed to compensate the employees of any contractors under investigation on this construction contract, and any unpaid filing fees.

(d) The notice and filing fee required under (a) of this section may be filed after work has begun if
   (1) The public construction contract is for work undertaken in immediate response to an emergency; and
   (2) The notice and fees are filed not later than 14 days after the work has begun.

(e) A false statement made on a notice required by this section is punishable under AS 11.56.210.

Sec. 36.05.060. Penalty for violation of this chapter.

A contractor who violates this chapter is guilty of a misdemeanor and upon conviction is punishable by a fine of not less than $100 nor more than $1,000, or by imprisonment for not less than 10 days nor more than 90 days, or by both. Each day a violation exists constitutes a separate offense.

Sec. 36.05.070. Wage rates in specifications and contracts for public works.

(a) The advertised specifications for a public construction contract that requires or involves the employment of mechanics, laborers, or field surveyors must contain a provision stating the minimum wages to be paid various classes of laborers, mechanics, or field surveyors and that the rate of wages shall be adjusted to the wage rate under AS 36.05.010.

(b) Repealed by §17 ch 142 SLA 1972.

(c) A public construction contract under (a) of this section must contain provisions that
   (1) the contractor or subcontractors of the contractor shall pay all employees unconditionally and not less than once a week;
   (2) wages may not be less than those stated in the advertised specifications, regardless of the contractual relationship between the contractor or subcontractors and laborers, mechanics, or field surveyors;
   (3) the scale of wages to be paid shall be posted by the contractor in a prominent and easily accessible place at the site of the work;
   (4) the state or a political subdivision shall withhold so much of the accrued payments as is necessary to pay to laborers, mechanics, or field surveyors employed by the contractor or subcontractors the difference between
      (A) the rates of wages required by the contract to be paid laborers, mechanics, or field surveyors on the work; and
      (B) the rates of wages in fact received by laborers, mechanics, or field surveyors.

Sec. 36.05.080. Failure to pay agreed wages.

Every contract within the scope of AS 36.05.070 shall contain a provision that if it is found that a laborer, mechanic, or field surveyor employed by the contractor or subcontractor has been or is being paid a rate of wages less than the rate of wages required by the contract to be paid, the state or its political subdivision may, by written notice to the contractor, terminate the contractor's right to proceed with the work or the part of the work for which there is a failure to pay the required wages and to prosecute the work to completion by contract or otherwise, and the contractor and the contractor's sureties are liable to the state or its political subdivision for excess costs for completing the work.

Sec. 36.05.090. Payment of wages from withheld payments and listing contractors who violate contracts.

(a) The state disbursing officer in the case of a state public construction contract and the local fiscal officer in the case of a political subdivision public construction contract shall pay directly to laborers, mechanics, or field surveyors from accrued payments withheld under the terms of the contract the wages due laborers, mechanics, or field surveyors under AS 36.05.070.

(b) The state disbursing officer or the local fiscal officer shall distribute to all departments of the state government and to all political subdivisions of the state a list giving the names of persons who have disregarded their obligations to employees. A person appearing on this list and a firm, corporation,

partnership, or association in which the person has an interest may not work as a contractor or subcontractor on a public construction contract for the state or a political subdivision of the state until three years after the date of publication of the list. If the accrued payments withheld under the contract are insufficient to reimburse all the laborers, mechanics, or field surveyors with respect to whom there has been a failure to pay the wages required under AS 36.05.070, the laborers, mechanics, or field surveyors have the right of action or intervention or both against the contractor and the contractor's sureties conferred by law upon persons furnishing labor or materials, and in the proceedings it is not a defense that the laborers, mechanics, or field surveyors accepted or agreed to accept less than the required rate of wages or voluntarily made refunds.

Sec. 36.05.900. Definition.
In this chapter, "contracting agency" means the state or a political subdivision of the state that has entered into a public construction contract with a contractor.

EXCERPTS FROM ALASKA ADMINISTRATIVE CODE

*****Notice:** Regulations relating to board and lodging and per diem went into effect on November 25, 2018. The new regulations are excerpted here*******

8 AAC 30.051. Purpose. The purpose of 8 AAC 30.052 – 8 AAC 30.056 is to ensure that wages paid to laborers, mechanics, and field surveyors do not fall below the prevailing rate of pay.

8 AAC 30.052. Board and lodging; remote sites. (a) A contractor on a public construction project located 65 or more road miles from the international airport closest to the project area in either Fairbanks, Juneau, or Anchorage, or that is inaccessible by road in a two-wheel drive vehicle, shall provide adequate board and lodging to each laborer, mechanic, or field surveyor while the person is employed on the project. If commercial lodging facilities are not available, the contractor shall provide temporary lodging facilities. Lodging facilities must comply with all applicable state and federal laws. For a highway project, the location of the project is measured from the midpoint of the project.

(b) A contractor is not required to provide board and lodging:

(1) to a laborer, mechanic, or field surveyor who is a domiciled resident of the project area; or

(2) on a laborer, mechanic, or field surveyor's scheduled days off, when the person can reasonably travel between the project and the person's permanent residence; for the purposes of this paragraph, "scheduled day off" means a day in which a person does not perform work on-site, is not required to remain at or near the job location for the benefit of the contractor, and is informed of the day off at least seven days before the day off.

(c) Upon a contractor's written request, the commissioner may waive the requirements of (a) of this section where:

(1) the project is inaccessible by road in a two-wheel drive vehicle, but the laborer, mechanic, or field surveyor can reasonably travel between the project and the person's permanent residence within one hour; or

(2) a laborer, mechanic, or field surveyor is not a domiciled resident of the project area, but has established permanent residence, with the intent to remain indefinitely, within 65 road miles of the project, or for a highway project, the mid-point of the project.

8 AAC 30.054. Per diem instead of board and lodging. (a) A contractor may pay a laborer, mechanic, or field surveyor per diem instead of providing board and lodging, when the following conditions are met:

(1) the department determines that per diem instead of board and lodging is an established practice for the work classification; the department shall publish and periodically revise its determinations in the pamphlet *Laborers' and Mechanics' Minimum Rates of Pay*;

(2) the contractor pays each laborer, mechanic, or field surveyor the appropriate per diem rate as published and periodically revised in the pamphlet *Laborers' and Mechanics' Minimum Rates of Pay*; and

(3) the contractor pays the per diem to each laborer, mechanic, or field surveyor on the same day that wages are paid.

(b) A contractor may not pay per diem instead of board and lodging on a highway project located

(1) west of Livengood on the Elliot Highway, AK-2;

(2) on the Dalton Highway, AK-11;

(3) north of milepost 20 on the Taylor Highway, AK-5;

(4) east of Chicken on the Top of the World Highway; or

(5) south of Tetlin Junction to the Alaska-Canada border on the Alaska Highway, AK-2.

8 AAC 30.056. Alternative arrangement. Upon a contractor's written request, the commissioner may approve an alternative board and lodging or per diem arrangement, provided

(1) the arrangement does not reduce the laborer, mechanic, or field surveyor's wages below the prevailing wage rate; and

(2) the laborer, mechanic, or field surveyor voluntarily enters into and signs the written arrangement; a labor organization representing laborers, mechanics, or field surveyors may enter into the written agreement on their behalf.

8 AAC 30.900. General definitions (selected excerpts only):

In this chapter and in AS 36

(22) "domiciled resident" means a person living within 65 road miles of a public construction project, or in the case of a highway project, the mid-point of the project, for at least 12 consecutive months prior to the award of the public construction project;

(23) "employed on the project" means the time period from the date the laborer, mechanic, or field surveyor first reports on-site to the project through the final date the person reports on-site to the project.

ADDITIONAL INFORMATION

PER DIEM

Notice: New regulations relating to board and lodging and per diem went into effect on November 25, 2018. The regulations provide a comprehensive set of requirements for the provision of board and lodging or per diem for workers on remote projects. Please refer to Alaska Administrative Code 8 AAC Chapter 30 and read the chapter carefully.

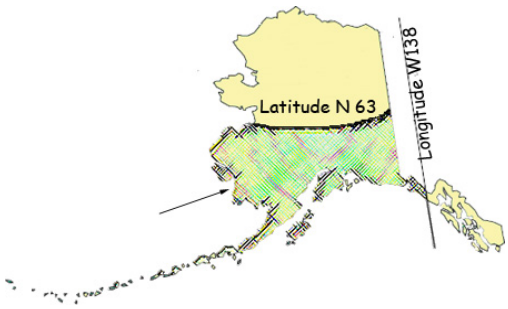
The Alaska Department of Labor and Workforce Development has determined that per diem is an established work practice for certain work classifications. These classifications are indicated throughout the Pamphlet by an asterisk (*) under the classification title. If all of the conditions of 8 AAC 30.054 are met, an employer may pay workers in these classifications per diem instead of providing board and lodging on a remote project.

Per Diem Rate: As of May 1st, 2019, the minimum per diem rate is $100.00 per day, or part thereof, the worker is employed on the project. In the event that a contractor provides lodging facilities, but no meals, the department will accept a payment of $48 per day for meals to meet the per diem requirements.

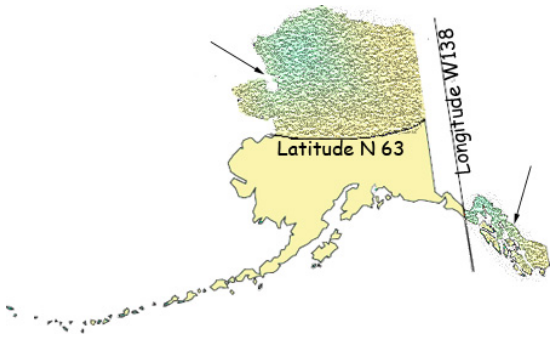
LABORER CLASSIFICATION CLARIFICATION

The laborer rates categorized in class code S1201-S1206 apply in one area of Alaska; the area that is south of N63 latitude and west of W138 Longitude. The laborer rates categorized in class code N1201-N1206 apply in two areas of Alaska; the Alaska areas north of N63 latitude and east of W138 longitude. The following graphic representations should assist with clarifying the applicable wage rate categories:

S1201-
S1206



N1201-
N1206



APPRENTICE RATES

Apprentice rates at less than the minimum prevailing rates may be paid to apprentices according to an apprentice program which has been registered and approved by the Commissioner of the Alaska Department of Labor and Workforce Development in writing or according to a bona fide apprenticeship program registered with the U.S. Department of Labor, Office of Apprenticeship Training. **Any employee listed on a payroll at an apprentice wage rate who is not registered as above shall be paid the journeyman prevailing minimum wage in that work classification.** Wage rates are based on prevailing crew makeup practices in Alaska and apply to work performed regardless of either the quality of the work performed by the employee or the titles or classifications which may be assigned to individual employees.

FRINGE BENEFIT PLANS

Contractors/subcontractors may compensate fringe benefits to their employees in any one of three methods. The fringe benefits may be paid into a union trust fund, into an approved benefit plan, or paid directly on the paycheck as gross wages.

Where fringe benefits are paid into approved plans, funds, or programs including union trust funds, the payments must be contributed at least monthly. If contractors submit their own payroll forms and are paying fringe benefits into approved plans, funds, or programs, the employer's certification must include, in addition to those requirements of 8 AAC 30.020(c), a statement that fringe benefit payments have been or will be paid at least monthly. Contractors who pay fringe benefits to a plan must ensure the plan is one approved by the Internal Revenue Service and that the plan meets the requirements of 8 AAC 30.025 (eff. 3/2/08) in order for payments to be credited toward the prevailing wage obligation.

SPECIAL PREVAILING WAGE RATE DETERMINATION

Special prevailing wage rate determinations may be requested for special projects or a special worker classification if the work to be performed does not conform to traditional public construction for which a prevailing wage rate has been established under 8 AAC 30.050(a) of this section. Requests for special wage rate determinations must be in writing and filed with the Commissioner at least 30 days before the award of the contract. An applicant for a special wage rate determination shall have the responsibility to support the necessity for the special rate. An application for a special wage rate determination filed under this section must contain:

(1) a specification of the contract or project on which the special rates will apply and a description of the work to be performed;
(2) a brief narrative explaining why special wage rates are necessary;
(3) the job class or classes involved;
(4) the special wage rates the applicant is requesting, including survey or other relevant wage data to support the requested rates;
(5) the approximate number of employees who would be affected; and
(6) any other information which might be helpful in determining if special wage rates are appropriate.

Requests made pursuant to the above should be addressed to:

Director
Alaska Department of Labor and Workforce Development
Labor Standards and Safety Division
Wage and Hour Administration
P.O. Box 111149
Juneau, AK 99811-1149
-or-
Email: statewide.wagehour@alaska.gov

DEPARTMENT OF LABOR and WORKFORCE DEVELOPMENT

ALASKA EMPLOYMENT PREFERENCE INFORMATION

By authority of AS 36.10.150 and 8 AAC 30.064, the Commissioner of Labor and Workforce Development has determined the State of Alaska to be a Zone of Underemployment. A Zone of Underemployment requires that Alaska residents who are eligible under AS 36.10.140 be given a minimum of 90 percent employment preference on public works contracts throughout the state in certain job classifications. **This 90 percent Alaska resident hiring preference applies on a project-by-project, craft-by-craft or occupational basis and must be met each workweek by each contractor/subcontractor in each of the following classifications:**

Boilermakers	Electricians	Laborers	Roofers
Bricklayers	Engineers & Architects	Mechanics	Sheet Metal Workers
Carpenters	Equipment Operators	Millwrights	Surveyors
Cement Masons	Foremen & Supervisors	Painters	Truck Drivers
Culinary Workers	Insulation Workers	Piledriving Occupations	Tug Boat Workers
	Ironworkers	Plumbers & Pipefitters	Welders

This determination became effective July 1, 2017, and remains in effect through June 30, 2019. This determination will be applied to projects with a bid submission deadline on or after July 1, 2017 and to projects previously covered by the 2015 Alaska employment preference determination. This will afford contractors an opportunity to consider the impacts of Alaska resident hire in their bids.

The first person on a certified payroll in any classification is called the "first worker" and is not required to be an Alaskan resident. However, once the contractor adds any more workers in the classification, then all workers in the classification are counted, and the 90 percent calculation is applied to compute the number of required Alaskans to be in compliance. To compute the number of Alaskan residents required in a workweek in a particular classification, multiply the total number of workers in the classification by 90 percent. The result is then rounded down to the nearest whole number to determine the number of Alaskans that must be employed in that classification.

If a worker works in more than one classification during a week, the classification in which they spent the most time would be counted for employment preference purposes. If the time is split evenly between two classifications, the worker is counted in both classifications.

If you have difficulty meeting the 90 percent requirement, an approved waiver must be obtained before a non-Alaska resident is hired who would put the contractor/subcontractor out of compliance (8 AAC 30.081 (e) (f)). The waiver process requires proof of an adequate search for qualified Alaskan workers. Qualified Alaska residents identified through the search must be hired before waivers for non-resident workers may be granted. To apply for a waiver, contact the nearest Wage and Hour Office for instructions.

Here is an example to apply the 90 percent requirement to four boilermaker workers. Multiply four workers by 90% and drop the fraction (.90 X 4 = 3.6 - .6 = 3). The remaining number is the number of Alaskan resident boilermakers required to be in compliance in that particular classification for that week.

The penalties for being out of compliance are serious. AS 36.10.100 (a) states "A contractor who violates a provision of this chapter shall have deducted from amounts due to the contractor under the contract the prevailing wages which should have been paid to a displaced resident and these amounts shall be retained by the contracting agency." If a contractor/subcontractor is found to be out of compliance, penalties accumulate until they come into compliance.

Contractors are responsible for determining residency status. If you have difficulty determining whether a worker is an Alaska resident, you should contact the nearest Wage and Hour Office. Contact Wage and Hour in Anchorage at (907) 269-4900, in Fairbanks at (907) 451-2886, or in Juneau at (907) 465-4842.

Alaska Department of Labor and Workforce Development
Labor Standards and Safety Division
Wage and Hour Administration
Web site: http://labor.state.ak.us/lss/pamp600.htm

Anchorage	Juneau	Fairbanks
1251 Muldoon Road, Suite 113 Anchorage, Alaska 99504-2098 Phone: (907) 269-4900 Email: statewide.wagehour@alaska.gov	PO Box 111149 Juneau, Alaska 99811 Phone: (907) 465-4842 Email: statewide.wagehour@alaska.gov	Regional State Office Building 675 7th Ave., Station J-1 Fairbanks, Alaska 99701-4593 Phone: (907) 451-2886 Email: statewide.wagehour@alaska.gov

LABOR STANDARDS AND SAFETY NOTICE REQUESTS

If you would like to receive Wage and Hour Administration or Mechanical Inspection **regulation notices** or **publications information**, they are available via electronic mail, by signing up in the GovDelivery System, https://public.govdelivery.com/accounts/AKDOL/subscriber/new and selecting topics *LSS – Wage and Hour – Forms and Publications*, *LSS – Mechanical Inspection Regulations*, or *LSS – Wage and Hour Regulations*.

Publications are also available online at http://labor.alaska.gov/lss/home.htm

DEBARMENT LIST

AS 36.05.090(b) states that "the state disbursing officer or the local fiscal officer shall distribute to all departments of the state government and to all political subdivisions of the state a list giving the names of persons who have disregarded their obligations to employees."

A person appearing on the following debarment list and a firm, corporation, partnership, or association in which the person has an interest may not work as a contractor or subcontractor on a public construction contract for the state or a political subdivision of the state for three years from the date of debarment.

Company Name	Debarment Expires
Tim Banach, Individual	February 23, 2021
Boulder Creek Electric	February 23, 2021

Laborers' & Mechanics' Minimum Rates of Pay

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Boilermakers								
	*See per diem note on last page							
						VAC	**SAF**	
A0101	Boilermaker (journeyman)	46.13	8.57	16.42	1.65	3.50	0.34	76.61
Bricklayers & Blocklayers								
	*See per diem note on last page							
						L&M		
A0201	Blocklayer	40.81	9.83	8.50	0.55	0.15	0.74	60.58
	Bricklayer							
	Marble or Stone Mason							
	Refractory Worker (Firebrick, Plastic, Castable, and Gunite Refractory Applications)							
	Terrazzo Worker							
	Tile Setter							
						L&M		
A0202	Tuck Pointer Caulker	40.81	9.83	8.50	0.55	0.15	0.74	60.58
	Cleaner (PCC)							
						L&M		
A0203	Marble & Tile Finisher	34.79	9.83	8.50	0.55	0.15	0.74	54.56
	Terrazzo Finisher							
						L&M		
A0204	Torginal Applicator	38.83	9.83	8.50	0.55	0.15	0.74	58.60
Carpenters, Statewide								
	*See per diem note on last page							
						L&M	**SAF**	
A0301	Carpenter (journeyman)	38.34	10.08	14.63	0.95	0.10	0.10	64.20
	Lather/Drywall/Acoustical							
Cement Masons, Region I (North of N63 latitude)								
	*See per diem note on last page							
						L&M		
N0401	Group I, including:	38.13	8.70	11.80	1.18	0.10		59.91
	Application of Sealing Compound							
	Application of Underlayment							
	Building, General							
	Cement Mason (journeyman)							
	Concrete							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Cement Masons, Region I (North of N63 latitude)							
	*See per diem note on last page						
						L&M	
N0401	Group I, including:	38.13	8.70	11.80	1.18	0.10	59.91
	Concrete Paving						
	Curb & Gutter, Sidewalk						
	Curing of All Concrete						
	Grouting & Caulking of Tilt-Up Panels						
	Grouting of All Plates						
	Patching Concrete						
	Screed Pin Setter						
	Spackling/Skim Coating						
						L&M	
N0402	Group II, including:	38.13	8.70	11.80	1.18	0.10	59.91
	Form Setter						
						L&M	
N0403	Group III, including:	38.13	8.70	11.80	1.18	0.10	59.91
	Concrete Saw (self-powered)						
	Curb & Gutter Machine						
	Floor Grinder						
	Pneumatic Power Tools						
	Power Chipping & Bushing						
	Sand Blasting Architectural Finish						
	Screed & Rodding Machine Operator						
	Troweling Machine Operator						
						L&M	
N0404	Group IV, including:	38.13	8.70	11.80	1.18	0.10	59.91
	Application of All Composition Mastic						
	Application of All Epoxy Material						
	Application of All Plastic Material						
	Finish Colored Concrete						
	Gunite Nozzleman						
	Hand Powered Grinder						
	Tunnel Worker						
						L&M	
N0405	Group V, including:	38.13	8.70	11.80	1.18	0.10	59.91
	Plasterer						
Cement Masons, Region II (South of N63 latitude)							
	*See per diem note on last page						
						L&M	
S0401	Group I, including:	37.88	8.70	11.80	1.18	0.10	59.66

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Cement Masons, Region II (South of N63 latitude)							
	*See per diem note on last page						
						L&M	
S0401	Group I, including:	37.88	8.70	11.80	1.18	0.10	59.66
	Application of Sealing Compound						
	Application of Underlayment						
	Building, General						
	Cement Mason (journeyman)						
	Concrete						
	Concrete Paving						
	Curb & Gutter, Sidewalk						
	Curing of All Concrete						
	Grouting & Caulking of Tilt-Up Panels						
	Grouting of All Plates						
	Patching Concrete						
	Screed Pin Setter						
	Spackling/Skim Coating						
						L&M	
S0402	Group II, including:	37.88	8.70	11.80	1.18	0.10	59.66
	Form Setter						
						L&M	
S0403	Group III, including:	37.88	8.70	11.80	1.18	0.10	59.66
	Concrete Saw (self-powered)						
	Curb & Gutter Machine						
	Floor Grinder						
	Pneumatic Power Tools						
	Power Chipping & Bushing						
	Sand Blasting Architectural Finish						
	Screed & Rodding Machine Operator						
	Troweling Machine Operator						
						L&M	
S0404	Group IV, including:	37.88	8.70	11.80	1.18	0.10	59.66
	Application of All Composition Mastic						
	Application of All Epoxy Material						
	Application of All Plastic Material						
	Finish Colored Concrete						
	Gunite Nozzleman						
	Hand Powered Grinder						
	Tunnel Worker						
						L&M	
S0405	Group V, including:	37.88	8.70	11.80	1.18	0.10	59.66
	Plasterer						

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Culinary Workers								
A0501	Baker/Cook	28.37	7.40	6.97		**LEG** 0.07		42.81
A0503	General Helper	25.05	7.40	6.97		**LEG** 0.07		39.49
	Housekeeper Janitor Kitchen Helper							
A0504	Head Cook	28.97	7.40	6.97		**LEG** 0.07		43.41
A0505	Head Housekeeper	25.45	7.40	6.97		**LEG** 0.07		39.89
	Head Kitchen Help							
Dredgemen *See per diem note on last page								
A0601	Assistant Engineer	39.76	10.00	12.50	1.00	**L&M** 0.10	0.05	63.41
	Craneman Electrical Generator Operator (primary pump/power barge/dredge) Engineer Welder							
A0602	Assistant Mate (deckhand)	38.60	10.00	12.50	1.00	**L&M** 0.10	0.05	62.25
A0603	Fireman	39.04	10.00	12.50	1.00	**L&M** 0.10	0.05	62.69
A0605	Leverman Clamshell	42.29	10.00	12.50	1.00	**L&M** 0.10	0.05	65.94
A0606	Leverman Hydraulic	40.53	10.00	12.50	1.00	**L&M** 0.10	0.05	64.18
A0607	Mate & Boatman	39.76	10.00	12.50	1.00	**L&M** 0.10	0.05	63.41
A0608	Oiler (dredge)	39.04	10.00	12.50	1.00	**L&M** 0.10	0.05	62.69
Electricians *See per diem note on last page								
A0701	Inside Cable Splicer	40.03	13.64	13.84	0.95	**L&M** 0.20	**LEG** 0.15	68.81

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Electricians								
	*See per diem note on last page							
						L&M	**LEG**	
A0702	Inside Journeyman Wireman, including:	39.70	13.64	14.08	0.95	0.20	0.15	68.72
	Technicians (including use of drones in electrical construction)							
						L&M	**LEG**	
A0703	Power Cable Splicer	56.05	13.64	18.87	0.95	0.20	0.15	89.86
						L&M	**LEG**	
A0704	Tele Com Cable Splicer	49.28	13.64	16.13	0.95	0.20	0.15	80.35
						L&M	**LEG**	
A0705	Power Journeyman Lineman, including:	54.30	13.64	18.82	0.95	0.20	0.15	88.06
	Power Equipment Operator Technician (including use of drones in electrical construction)							
						L&M	**LEG**	
A0706	Tele Com Journeyman Lineman, including:	47.53	13.64	16.08	0.95	0.20	0.15	78.55
	Technician (including use of drones in telecommunications construction) Tele Com Equipment Operator							
						L&M	**LEG**	
A0707	Straight Line Installer - Repairman	47.53	13.64	16.08	0.95	0.20	0.15	78.55
						L&M	**LEG**	
A0708	Powderman	52.30	13.64	18.76	0.95	0.20	0.15	86.00
						L&M	**LEG**	
A0710	Material Handler	26.57	13.07	4.80	0.15	0.15	0.15	44.89
						L&M	**LEG**	
A0712	Tree Trimmer Groundman	27.54	13.64	12.23	0.15	0.15	0.15	53.86
						L&M	**LEG**	
A0713	Journeyman Tree Trimmer	36.21	13.64	12.49	0.15	0.15	0.15	62.79
						L&M	**LEG**	
A0714	Vegetation Control Sprayer	39.66	13.64	12.59	0.15	0.15	0.15	66.34
						L&M	**LEG**	
A0715	Inside Journeyman Communications CO/PBX	38.28	13.64	13.79	0.95	0.20	0.15	67.01
Elevator Workers								
	*See per diem note on last page							
						L&M	**VAC**	
A0802	Elevator Constructor	40.06	15.58	17.51	0.62	0.42	4.44	78.63
						L&M	**VAC**	
A0803	Elevator Constructor Mechanic	57.23	15.58	17.51	0.62	0.42	6.35	97.71

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Heat & Frost Insulators/Asbestos Workers								
	*See per diem note on last page							
						SAF		
A0902	Asbestos Abatement-Mechanical Systems	38.68	9.24	11.01	1.20	0.12		60.25
						SAF		
A0903	Asbestos Abatement/General Demolition All Systems	38.68	9.24	11.01	1.20	0.12		60.25
						SAF		
A0904	Insulator, Group II	38.68	9.24	11.01	1.20	0.12		60.25
						SAF		
A0905	Fire Stop	38.68	9.24	11.01	1.20	0.12		60.25
IronWorkers								
	*See per diem note on last page							
						L&M	**IAF**	
A1101	Ironworkers, including:	37.90	8.73	21.18	1.57	0.20	0.36	69.94
	Bender Operators							
	Bridge & Structural							
	Machinery Mover							
	Ornamental							
	Reinforcing							
	Rigger							
	Sheeter							
	Signalman							
	Stage Rigger							
	Toxic Haz-Mat Work							
	Welder							
						L&M	**IAF**	
A1102	Helicopter	38.90	8.73	21.18	1.57	0.20	0.36	70.94
	Tower (energy producing windmill type towers to include nacelle and blades)							
						L&M	**IAF**	
A1103	Fence/Barrier Installer	34.40	8.73	20.93	1.47	0.20	0.36	66.09
	Guard Rail Installer							
						L&M	**IAF**	
A1104	Guard Rail Layout Man	35.14	8.73	20.93	1.47	0.20	0.36	66.83
Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)								
	*See per diem note on last page							
						L&M	**LEG**	
N1201	Group I, including:	30.71	8.70	17.31	1.30	0.20	0.20	58.42
	Asphalt Worker (shovelman, plant crew)							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
						L&M	LEG	

Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)

*See per diem note on last page

N1201	Group I, including:	30.71	8.70	17.31	1.30	0.20	0.20	58.42

Brush Cutter
Camp Maintenance Laborer
Carpenter Tender or Helper
Choke Setter, Hook Tender, Rigger, Signalman
Concrete Labor (curb & gutter, chute handler, curing, grouting, screeding)
Crusher Plant Laborer
Demolition Laborer
Ditch Digger
Dumpman
Environmental Laborer (hazard/toxic waste, oil spill)
Fence Installer
Fire Watch Laborer
Flagman
Form Stripper
General Laborer
Guardrail Laborer, Bridge Rail Installer
Hydro-seeder Nozzleman
Laborer, Building
Landscaper or Planter
Laying of Mortarless Decorative Block (retaining walls, flowered decorative block 4 feet or less - highway or landscape work)
Material Handler
Pneumatic or Power Tools
Portable or Chemical Toilet Serviceman
Pump Man or Mixer Man
Railroad Track Laborer
Sandblast, Pot Tender
Saw Tender
Slurry Work
Steam Cleaner Operator
Steam Point or Water Jet Operator
Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer)
Tank Cleaning
Utiliwalk & Utilidor Laborer
Watchman (construction projects)
Window Cleaner

N1202	Group II, including:	31.71	8.70	17.31	1.30	0.20	0.20	59.42

Burning & Cutting Torch

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
						L&M	LEG	

Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)

*See per diem note on last page

N1202	Group II, including:	31.71	8.70	17.31	1.30	0.20	0.20	59.42

Cement or Lime Dumper or Handler (sack or bulk)
Certified Erosion Sediment Control Lead (CESCL Laborer)
Choker Splicer
Chucktender (wagon, air-track & hydraulic drills)
Concrete Laborer (power buggy, concrete saws, pumpcrete nozzleman, vibratorman)
Culvert Pipe Laborer
Cured Inplace Pipelayer
Environmental Laborer (asbestos, marine work)
Floor Preparation, Core Drilling
Foam Gun or Foam Machine Operator
Green Cutter (dam work)
Gunite Operator
Hod Carrier
Jackhammer/Chipping Gun or Pavement Breaker
Laser Instrument Operator
Laying of Mortarless Decorative Block (retaining walls, flowered decorative block over 4 feet - highway or landscape work)
Mason Tender & Mud Mixer (sewer work)
Pilot Car
Pipelayer Helper
Plasterer, Bricklayer & Cement Finisher Tender
Powderman Helper
Power Saw Operator
Railroad Switch Layout Laborer
Sandblaster
Scaffold Building & Erecting
Sewer Caulker
Sewer Plant Maintenance Man
Thermal Plastic Applicator
Timber Faller, Chainsaw Operator, Filer
Timberman

N1203	Group III, including:	32.61	8.70	17.31	1.30	0.20	0.20	60.32

Bit Grinder
Camera/Tool/Video Operator
Guardrail Machine Operator
High Rigger & Tree Topper
High Scaler
Multiplate

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
						L&M	LEG	
Laborers (The Alaska areas north of N63 latitude and east of W138 longitude) *See per diem note on last page								
N1203	Group III, including: Plastic Welding Slurry Seal Squeegee Man Traffic Control Supervisor Welding Certified (in connection with laborer's work)	32.61	8.70	17.31	1.30	0.20	0.20	60.32
						L&M	LEG	
N1204	Group IIIA Asphalt Raker, Asphalt Belly Dump Lay Down Drill Doctor (in the field) Driller (including, but not limited to, wagon drills, air-track drills, hydraulic drills) Pioneer Drilling & Drilling Off Tugger (all type drills) Pipelayers Powderman (Employee Possessor) Storm Water Pollution Protection Plan Specialist (SWPPP Specialist) Traffic Control Supervisor, DOT Qualified	35.89	8.70	17.31	1.30	0.20	0.20	63.60
						L&M	LEG	
N1205	Group IV Final Building Cleanup Permanent Yard Worker	20.28	8.70	17.31	1.30	0.20	0.20	47.99
						L&M	LEG	
N1206	Group IIIB Federal Powderman (Responsible Person in Charge) Grade Checking (setting or transferring of grade marks, line and grade, GPS, drones) Stake Hopper	39.68	5.99	17.31	1.30	0.20	0.20	64.68
Laborers (The area that is south of N63 latitude and west of W138 longitude) *See per diem note on last page								
						L&M	LEG	
S1201	Group I, including: Asphalt Worker (shovelman, plant crew) Brush Cutter Camp Maintenance Laborer Carpenter Tender or Helper Choke Setter, Hook Tender, Rigger, Signalman Concrete Labor (curb & gutter, chute handler, curing, grouting, screeding) Crusher Plant Laborer Demolition Laborer Ditch Digger	30.71	8.70	17.31	1.30	0.20	0.20	58.42

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
						L&M	LEG	

Laborers (The area that is south of N63 latitude and west of W138 longitude)

*See per diem note on last page

S1201	Group I, including:	30.71	8.70	17.31	1.30	0.20	0.20	58.42

Dumpman
Environmental Laborer (hazard/toxic waste, oil spill)
Fence Installer
Fire Watch Laborer
Flagman
Form Stripper
General Laborer
Guardrail Laborer, Bridge Rail Installer
Hydro-seeder Nozzleman
Laborer, Building
Landscaper or Planter
Laying of Mortarless Decorative Block (retaining walls, flowered decorative block 4 feet or less - highway or landscape work)
Material Handler
Pneumatic or Power Tools
Portable or Chemical Toilet Serviceman
Pump Man or Mixer Man
Railroad Track Laborer
Sandblast, Pot Tender
Saw Tender
Slurry Work
Steam Cleaner Operator
Steam Point or Water Jet Operator
Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer)
Tank Cleaning
Utiliwalk & Utilidor Laborer
Watchman (construction projects)
Window Cleaner

						L&M	LEG	
S1202	Group II, including:	31.71	8.70	17.31	1.30	0.20	0.20	59.42

Burning & Cutting Torch
Cement or Lime Dumper or Handler (sack or bulk)
Certified Erosion Sediment Control Lead (CESCL Laborer)
Choker Splicer
Chucktender (wagon, air-track & hydraulic drills)
Concrete Laborer (power buggy, concrete saws, pumpcrete nozzleman, vibratorman)
Culvert Pipe Laborer
Cured Inplace Pipelayer

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
						L&M	LEG	

Laborers (The area that is south of N63 latitude and west of W138 longitude)

*See per diem note on last page

						L&M	LEG	
S1202	Group II, including:	31.71	8.70	17.31	1.30	0.20	0.20	59.42

Environmental Laborer (asbestos, marine work)
Floor Preparation, Core Drilling
Foam Gun or Foam Machine Operator
Green Cutter (dam work)
Gunite Operator
Hod Carrier
Jackhammer/Chipping Gun or Pavement Breaker
Laser Instrument Operator
Laying of Mortarless Decorative Block (retaining walls, flowered decorative block over 4 feet - highway or landscape work)
Mason Tender & Mud Mixer (sewer work)
Pilot Car
Pipelayer Helper
Plasterer, Bricklayer & Cement Finisher Tender
Powderman Helper
Power Saw Operator
Railroad Switch Layout Laborer
Sandblaster
Scaffold Building & Erecting
Sewer Caulker
Sewer Plant Maintenance Man
Thermal Plastic Applicator
Timber Faller, Chainsaw Operator, Filer
Timberman

						L&M	LEG	
S1203	Group III, including:	32.61	8.70	17.31	1.30	0.20	0.20	60.32

Bit Grinder
Camera/Tool/Video Operator
Guardrail Machine Operator
High Rigger & Tree Topper
High Scaler
Multiplate
Plastic Welding
Slurry Seal Squeegee Man
Traffic Control Supervisor
Welding Certified (in connection with laborer's work)

						L&M	LEG	
S1204	Group IIIA	35.89	8.70	17.31	1.30	0.20	0.20	63.60

Asphalt Raker, Asphalt Belly Dump Lay Down
Drill Doctor (in the field)

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Laborers (The area that is south of N63 latitude and west of W138 longitude) *See per diem note on last page								
						L&M	**LEG**	
S1204	Group IIIA	35.89	8.70	17.31	1.30	0.20	0.20	63.60
	Driller (including, but not limited to, wagon drills, air-track drills, hydraulic drills) Pioneer Drilling & Drilling Off Tugger (all type drills) Pipelayers Powderman (Employee Possessor) Storm Water Pollution Protection Plan Specialist (SWPPP Specialist) Traffic Control Supervisor, DOT Qualified							
						L&M	**LEG**	
S1205	Group IV	20.28	8.70	17.31	1.30	0.20	0.20	47.99
	Final Building Cleanup Permanent Yard Worker							
						L&M	**LEG**	
S1206	Group IIIB	39.68	5.99	17.31	1.30	0.20	0.20	64.68
	Federal Powderman (Responsible Person in Charge) Grade Checking (setting or transferring of grade marks, line and grade, GPS, drones) Stake Hopper							
Millwrights *See per diem note on last page								
						L&M		
A1251	Millwright (journeyman)	36.99	10.08	12.28	1.00	0.40	0.05	60.80
						L&M		
A1252	Millwright Welder	37.99	10.08	12.28	1.00	0.40	0.05	61.80
Painters, Region I (North of N63 latitude) *See per diem note on last page								
						L&M		
N1301	Group I, including:	32.29	8.21	12.70	1.08	0.07		54.35
	Brush General Painter Hand Taping Hazardous Material Handler Lead-Based Paint Abatement Roll							
						L&M		
N1302	Group II, including:	32.81	8.21	12.70	1.08	0.07		54.87
	Bridge Painter							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Painters, Region I (North of N63 latitude) *See per diem note on last page							
						L&M	
N1302	Group II, including:	32.81	8.21	12.70	1.08	0.07	54.87
	Epoxy Applicator General Drywall Finisher Hand/Spray Texturing Industrial Coatings Specialist Machine/Automatic Taping Pot Tender Sandblasting Specialty Painter Spray Structural Steel Painter Wallpaper/Vinyl Hanger						
N1304	Group IV, including:	39.78	8.21	15.23	1.05	0.05	64.32
	Glazier Storefront/Automatic Door Mechanic						
N1305	Group V, including:	29.13	8.21	5.02	0.83	0.07	43.26
	Carpet Installer Floor Coverer Heat Weld/Cove Base Linoleum/Soft Tile Installer						
Painters, Region II (South of N63 latitude) *See per diem note on last page							
						L&M	
S1301	Group I, including :	30.13	8.21	12.85	1.08	0.07	52.34
	Brush General Painter Hand Taping Hazardous Material Handler Lead-Based Paint Abatement Roll Spray						
						L&M	
S1302	Group II, including :	31.38	8.21	12.85	1.08	0.07	53.59
	General Drywall Finisher Hand/Spray Texturing Machine/Automatic Taping Wallpaper/Vinyl Hanger						

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Painters, Region II (South of N63 latitude)								
	*See per diem note on last page							
						L&M		
S1303	Group III, including :	31.48	8.21	12.85	1.08	0.07		53.69
	Bridge Painter							
	Epoxy Applicator							
	Industrial Coatings Specialist							
	Pot Tender							
	Sandblasting							
	Specialty Painter							
	Structural Steel Painter							
						L&M		
S1304	Group IV, including:	39.99	8.21	14.27	1.08	0.07		63.62
	Glazier							
	Storefront/Automatic Door Mechanic							
						L&M		
S1305	Group V, including:	29.13	8.21	5.02	0.83	0.07		43.26
	Carpet Installer							
	Floor Coverer							
	Heat Weld/Cove Base							
	Linoleum/Soft Tile Installer							
Piledrivers								
	*See per diem note on last page							
						L&M	**IAF**	
A1401	Piledriver	38.34	10.08	14.63	0.95	0.10	0.10	64.20
	Assistant Dive Tender							
	Carpenter/Piledriver							
	Rigger							
	Sheet Stabber							
	Skiff Operator							
						L&M	**IAF**	
A1402	Piledriver-Welder/Toxic Worker	39.34	10.08	14.63	0.95	0.10	0.10	65.20
						L&M	**IAF**	
A1403	Remotely Operated Vehicle Pilot/Technician	42.65	10.08	14.63	0.95	0.10	0.10	68.51
	Single Atmosphere Suit, Bell or Submersible Pilot							
						L&M	**IAF**	
A1404	Diver (working) **See note on last page	82.45	10.08	14.63	0.95	0.10	0.10	108.31
						L&M	**IAF**	
A1405	Diver (standby) **See note on last page	42.65	10.08	14.63	0.95	0.10	0.10	68.51

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Piledrivers								
	*See per diem note on last page							
						L&M	**IAF**	
A1406	Dive Tender **See note on last page	41.65	10.08	14.63	0.95	0.10	0.10	67.51
						L&M	**IAF**	
A1407	Welder (American Welding Society, Certified Welding Inspector)	43.90	10.08	14.63	0.95	0.10	0.10	69.76
Plumbers, Region I (North of N63 latitude)								
	*See per diem note on last page							
						L&M	**S&L**	
N1501	Journeyman Pipefitter	41.46	8.25	16.90	1.25	0.65		68.51
	Plumber							
	Welder							
Plumbers, Region II (South of N63 latitude)								
	*See per diem note on last page							
						L&M		
S1501	Journeyman Pipefitter	39.00	10.33	15.02	1.35	0.20		65.90
	Plumber							
	Welder							
Plumbers, Region IIA (1st Judicial District)								
	*See per diem note on last page							
						L&M		
X1501	Journeyman Pipefitter	38.02	13.37	11.25	2.50	0.24		65.38
	Plumber							
	Welder							
Power Equipment Operators								
	*See per diem note on last page							
						L&M		
A1601	Group I, including:	40.53	10.00	12.50	1.00	0.10	0.05	64.18
	Asphalt Roller: Breakdown, Intermediate, and Finish							
	Back Filler							
	Barrier Machine (Zipper)							
	Beltcrete with Power Pack & similar conveyors							
	Bending Machine							
	Boat Coxswain							
	Bulldozer							
	Cableways, Highlines & Cablecars							
	Cleaning Machine							
	Coating Machine							

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
	Power Equipment Operators *See per diem note on last page							
						L&M		
A1601	Group I, including:	40.53	10.00	12.50	1.00	0.10	0.05	64.18

Concrete Hydro Blaster

Cranes (45 tons & under or 150 feet of boom & under (including jib & attachments))

(a) Hydralifts or Transporters, (all track or truck type)

(b) Derricks

(c) Overhead

Crushers

Deck Winches, Double Drum

Ditching or Trenching Machine (16 inch or over)

Drag Scraper, Yarder, and similar types

Drilling Machines, Core, Cable, Rotary and Exploration

Finishing Machine Operator, Concrete Paving, Laser Screed, Sidewalk, Curb & Gutter Machine

Helicopters

Hover Craft, Flex Craft, Loadmaster, Air Cushion, All-Terrain Vehicle, Rollagon, Bargecable, Nodwell, & Snow Cat

Hydro Ax, Feller Buncher & similar

Hydro Excavation (Vac-Truck and Similar)

Licensed Line & Grade

Loaders (2 1/2 yards through 5 yards, including all attachments):

(a) Forklifts (with telescopic boom & swing attachment)

(b) Front End & Overhead, (2-1/2 yards through 5 yards)

(c) Loaders, (with forks or pipe clamp)

(d) Loaders, (elevating belt type, Euclid & similar types)

Material Transfer Vehicle (Elevating Grader, Pickup Machine, and similar types)

Mechanic, Welder, Bodyman, Electrical, Camp & Maintenance Engineer

Micro Tunneling Machine

Mixers: Mobile type with hoist combination

Motor Patrol Grader

Mucking Machine: Mole, Tunnel Drill, Horizontal/Directional Drill Operator and/or Shield

Off-Road Hauler (including Articulating and Haul Trucks)

Operator on Dredges

Piledriver Engineer, L.B. Foster, Puller or similar paving breaker

Plant Operator (Asphalt & Concrete)

Power Plant, Turbine Operator 200 k.w & over (power plants or combination of power units over 300 k.w.)

Remote Controlled Equipment

Scraper (through 40 yards)

Service Oiler/Service Engineer

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Power Equipment Operators *See per diem note on last page								
						L&M		
A1601	Group I, including:	40.53	10.00	12.50	1.00	0.10	0.05	64.18
	Shot Blast Machine							
	Shovels, Backhoes, Excavators with all attachments, and Gradealls (3 yards & under)							
	Sideboom (under 45 tons)							
	Spreaders Topside (Asphalt Paver, Slurry machine, and similar types)							
	Sub Grader (Gurries, Reclaimer & similar types)							
	Tack Tractor							
	Truck Mounted Concrete Pump, Conveyor/Tele-belt, & Creter							
	Wate Kote Machine							
						L&M		
A1602	Group IA, including:	42.29	10.00	12.50	1.00	0.10	0.05	65.94
	Camera/Tool/Video Operator (Slipline)							
	Certified Welder, Electrical Mechanic, Camp Maintenance Engineer, Mechanic (over 10,000 hours)							
	Cranes (over 45 tons or 150 feet including jib & attachments)							
	(a) Clamshells & Draglines (over 3 yards)							
	(b) Tower Cranes							
	Licensed Water/Waste Water Treatment Operator							
	Loaders (over 5 yards)							
	Motor Patrol Grader, Dozer, Grade Tractor, Roto-Mill/Profiler (finish: when finishing to final grade and/or to hubs, or for asphalt)							
	Power Plants (1000 k.w. & over)							
	Quad							
	Scrapers (over 40 yards)							
	Screed							
	Shovels, Backhoes, Excavators with all attachments (over 3 yards)							
	Sidebooms (over 45 tons)							
	Slip Form Paver, C.M.I. & similar types							
						L&M		
A1603	Group II, including:	39.76	10.00	12.50	1.00	0.10	0.05	63.41
	Boiler - Fireman							
	Cement Hogs & Concrete Pump Operator							
	Conveyors (except those listed in Group I)							
	Grade Checker							
	Hoists on Steel Erection, Towermobiles & Air Tuggers							
	Horizontal/Directional Drill Locator							
	Licensed Grade Technician							
	Locomotives, Rod & Geared Engines							
	Mixers							
	Screening, Washing Plant							

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Power Equipment Operators *See per diem note on last page								
						L&M		
A1603	Group II, including:	39.76	10.00	12.50	1.00	0.10	0.05	63.41
	Sideboom (cradling rock drill, regardless of size)							
	Skidder							
	Trenching Machines (under 16 inches)							
	Water/Waste Water Treatment Operator							
						L&M		
A1604	Group III, including:	39.04	10.00	12.50	1.00	0.10	0.05	62.69
	"A" Frame Trucks, Deck Winches							
	Bombardier (tack or tow rig)							
	Boring Machine							
	Brooms, Power (sweeper, elevator, vacuum, or similar)							
	Bump Cutter							
	Compressor							
	Farm Tractor							
	Forklift, Industrial Type							
	Gin Truck or Winch Truck (with poles when used for hoisting)							
	Hoists, Air Tuggers, Elevators							
	Loaders:							
	(a) Elevating-Athey, Barber Greene & similar types							
	(b) Forklifts or Lumber Carrier (on construction job sites)							
	(c) Forklifts, (with tower)							
	(d) Overhead & Front End, (under 2-l/2 yards)							
	Locomotives: Dinkey (air, steam, gas & electric) Speeders							
	Mechanics, Light Duty							
	Oil, Blower Distribution							
	Posthole Digger, Mechanical							
	Pot Fireman (power agitated)							
	Power Plant, Turbine Operator, (under 200 k.w.)							
	Pumps, Water							
	Roller (other than Asphalt)							
	Saws, Concrete							
	Skid Hustler							
	Skid Steer (with all attachments)							
	Stake Hopper							
	Straightening Machine							
	Tow Tractor							
						L&M		
A1605	Group IV, including:	32.83	10.00	12.50	1.00	0.10	0.05	56.48
	Crane Assistant Engineer/Rig Oiler							
	Drill Helper							

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Power Equipment Operators								
	*See per diem note on last page							
						L&M		
A1605	Group IV, including:	32.83	10.00	12.50	1.00	0.10	0.05	56.48
	Parts & Equipment Coordinator							
	Spotter							
	Steam Cleaner							
	Swamper (on trenching machines or shovel type equipment)							
Roofers								
	*See per diem note on last page							
						L&M		
A1701	Roofer & Waterproofer	44.62	11.75	3.41	0.81	0.10	0.03	60.72
						L&M		
A1702	Roofer Material Handler	31.23	11.75	3.41	0.81	0.10	0.03	47.33
Sheet Metal Workers, Region I (North of N63 latitude)								
	*See per diem note on last page							
						L&M		
N1801	Sheet Metal Journeyman	47.74	10.80	13.11	1.45	0.12		73.22
	Air Balancing and duct cleaning of HVAC systems							
	Brazing, soldering or welding of metals							
	Demolition of sheet metal HVAC systems							
	Fabrication and installation of exterior wall sheathing, siding, metal roofing, flashing, decking and architectural sheet metal work							
	Fabrication and installation of heating, ventilation and air conditioning ducts and equipment							
	Fabrication and installation of louvers and hoods							
	Fabrication and installation of sheet metal lagging							
	Fabrication and installation of stainless steel commercial or industrial food service equipment							
	Manufacture, fabrication assembly, installation and alteration of all ferrous and nonferrous metal work							
	Metal lavatory partitions							
	Preparation of drawings taken from architectural and engineering plans required for fabrication and erection of sheet metal work							
	Sheet Metal shelving							
	Sheet Metal venting, chimneys and breaching							
	Skylight installation							
Sheet Metal Workers, Region II (South of N63 latitude)								
	*See per diem note on last page							

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Sheet Metal Workers, Region II (South of N63 latitude) *See per diem note on last page							
S1801	Sheet Metal Journeyman	42.70	10.80	13.49	1.68	**L&M** 0.43	69.10
	Air Balancing and duct cleaning of HVAC systems Brazing, soldering or welding of metals Demolition of sheet metal HVAC systems Fabrication and installation of exterior wall sheathing, siding, metal roofing, flashing, decking and architectural sheet metal work Fabrication and installation of heating, ventilation and air conditioning ducts and equipment Fabrication and installation of louvers and hoods Fabrication and installation of sheet metal lagging Fabrication and installation of stainless steel commercial or industrial food service equipment Manufacture, fabrication assembly, installation and alteration of all ferrous and nonferrous metal work Metal lavatory partitions Preparation of drawings taken from architectural and engineering plans required for fabrication and erection of sheet metal work Sheet Metal shelving Sheet Metal venting, chimneys and breaching Skylight installation						
Sprinkler Fitters *See per diem note on last page							
A1901	Sprinkler Fitter	47.25	10.02	15.95	0.52	**L&M** 0.25	73.99
Surveyors *See per diem note on last page							
A2001	Chief of Parties	43.16	10.83	12.14	1.15	**L&M** 0.10	67.38
A2002	Party Chief	41.57	10.83	12.14	1.15	**L&M** 0.10	65.79
A2003	Line & Grade Technician/Office Technician/GPS, Drones	40.97	10.83	12.14	1.15	**L&M** 0.10	65.19
A2004	Associate Party Chief (including Instrument Person & Head Chain Person)/Stake Hop/Grademan	38.85	10.83	12.14	1.15	**L&M** 0.10	63.07
A2006	Chain Person (for crews with more than 2 people)	34.51	10.83	12.14	1.15	**L&M** 0.10	58.73

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Truck Drivers							
	*See per diem note on last page						
						L&M	
A2101	Group I, including:	39.94	10.83	12.14	1.15	0.10	64.16
	Air/Sea Traffic Controllers						
	Ambulance/Fire Truck Driver (EMT certified)						
	Boat Coxswain						
	Captains & Pilots (air & water)						
	Deltas, Commanders, Rollagons, & similar equipment (when pulling sleds, trailers or similar equipment)						
	Dump Trucks (including rockbuggy, side dump, belly dump, & trucks with pups) over 40 yards up to & including 60 yards						
	Helicopter Transporter						
	Liquid Vac Truck/Super Vac Truck						
	Lowboys (including attached trailers & jeeps up to & including 8 axles)						
	Material Coordinator or Purchasing Agent						
	Ready-mix (over 12 yards up to & including 15 yards) (over 15 yards to be negotiated)						
	Semi with Double Box Mixer						
	Tireman, Heavy Duty/Fueler						
	Water Wagon (250 Bbls and above)						
						L&M	
A2102	Group 1A including:	41.21	10.83	12.14	1.15	0.10	65.43
	Dump Trucks (including rockbuggy, side dump, belly dump & trucks with pups) over 60 yards up to & including 100 yards (over 100 yards to be negotiated)						
	Jeeps (driver under load)						
	Lowboys, including tractor attached trailers & jeeps, 9 axles, up to & including 12 axles (over 12 axles or 150 tons to be negotiated)						
						L&M	
A2103	Group II, including:	38.68	10.83	12.14	1.15	0.10	62.90
	All Deltas, Commanders, Rollagons, & similar equipment						
	Batch Trucks (8 yards & up)						
	Batch Trucks (up to & including 7 yards)						
	Boom Truck/Knuckle Truck (over 5 tons)						
	Cacasco Truck/Heat Stress Truck						
	Construction and Material Safety Technician						
	Dump Trucks (including rockbuggy, side dump, belly dump, & trucks with pups) over 20 yards up to & including 40 yards						
	Gin Pole Truck, Winch Truck, Wrecker (truck mounted "A" frame manufactured rating over 5 tons)						
	Mechanics						
	Oil Distributor Driver						
	Partsman						
	Ready-mix (up to & including 12 yards)						

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Truck Drivers							
	*See per diem note on last page						
						L&M	
A2103	Group II, including:	38.68	10.83	12.14	1.15	0.10	62.90
	Stringing Truck						
	Turn-O-Wagon or DW-10 (not self loading)						
						L&M	
A2104	Group III, including:	37.86	10.83	12.14	1.15	0.10	62.08
	Boom Truck/Knuckle Truck (up to & including 5 tons)						
	Dump Trucks (including rockbuggy, side dump, belly dump, & trucks with pups) over 10 yards up to & including 20 yards						
	Expeditor (electrical & pipefitting materials)						
	Gin Pole Truck, Winch Truck, Wrecker (truck mounted "A" frame manufactured rating 5 tons & under)						
	Greaser - Shop						
	Semi or Truck & Trailer						
	Thermal Plastic Layout Technician						
	Traffic Control Technician						
	Trucks/Jeeps (push or pull)						
						L&M	
A2105	Group IV, including:	37.28	10.83	12.14	1.15	0.10	61.50
	Air Cushion or similar type vehicle						
	All Terrain Vehicle						
	Buggymobile						
	Bull Lift & Fork Lift, Fork Lift with Power Boom & Swing Attachment (over 5 tons)						
	Bus Operator (over 30 passengers)						
	Cement Spreader, Dry						
	Combination Truck-Fuel & Grease						
	Compactor (when pulled by rubber tired equipment)						
	Dump Trucks (including rockbuggy, side dump, belly dump, & trucks with pups) up to & including 10 yards						
	Dumpster						
	Expeditor (general)						
	Fire Truck/Ambulance Driver						
	Flat Beds, Dual Rear Axle						
	Foam Distributor Truck Dual Axle						
	Front End Loader with Fork						
	Grease Truck						
	Hydro Seeder, Dual Axle						
	Hyster Operators (handling bulk aggregate)						
	Loadmaster (air & water operations)						
	Lumber Carrier						
	Ready-mix, (up to & including 7 yards)						

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Truck Drivers							
	*See per diem note on last page						
						L&M	
A2105	Group IV, including:	37.28	10.83	12.14	1.15	0.10	61.50
	Rigger (air/water/oilfield)						
	Tireman, Light Duty						
	Track Truck Equipment						
	Truck Vacuum Sweeper						
	Warehouseperson						
	Water Truck (Below 250 Bbls)						
	Water Truck (straight)						
	Water Wagon, Semi						
						L&M	
A2106	Group V, including:	36.52	10.83	12.14	1.15	0.10	60.74
	Buffer Truck						
	Bull Lifts & Fork Lifts, Fork Lifts with Power Boom & Swing Attachments (up to & including 5 tons)						
	Bus Operator (up to 30 passengers)						
	Farm Type Rubber Tired Tractor (when material handling or pulling wagons on a construction project)						
	Flat Beds, Single Rear Axle						
	Foam Distributor Truck Single Axle						
	Fuel Handler (station/bulk attendant)						
	Gear/Supply Truck						
	Gravel Spreader Box Operator on Truck						
	Hydro Seeders, Single axle						
	Pickups (pilot cars & all light-duty vehicles)						
	Rigger/Swamper						
	Tack Truck						
	Team Drivers (horses, mules, & similar equipment)						
Tunnel Workers, Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)							
	*See per diem note on last page						
						L&M	**LEG**
N2201	Group I, including:	33.78	8.70	17.31	1.30	0.20	0.20	61.49
	Brakeman						
	Mucker						
	Nipper						
	Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer)						
	Topman & Bull Gang						
	Tunnel Track Laborer						
						L&M	**LEG**
N2202	Group II, including:	34.88	8.70	17.31	1.30	0.20	0.20	62.59

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
						L&M	LEG	

Tunnel Workers, Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)
*See per diem note on last page

						L&M	LEG	
N2202	Group II, including:	34.88	8.70	17.31	1.30	0.20	0.20	62.59
	Burning & Cutting Torch							
	Certified Erosion Sediment Control Lead (CESCL Laborer)							
	Concrete Laborer							
	Floor Preparation, Core Drilling							
	Jackhammer/Chipping Gun or Pavement Breaker							
	Laser Instrument Operator							
	Nozzlemen, Pumpcrete or Shotcrete							
	Pipelayer Helper							
						L&M	LEG	
N2203	Group III, including:	35.87	8.70	17.31	1.30	0.20	0.20	63.58
	Miner							
	Retimberman							
						L&M	LEG	
N2204	Group IIIA, including:	39.48	8.70	17.31	1.30	0.20	0.20	67.19
	Asphalt Raker, Asphalt Belly Dump Lay Down							
	Drill Doctor (in the field)							
	Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)							
	Pioneer Drilling & Drilling Off Tugger (all type drills)							
	Pipelayer							
	Powderman (Employee Possessor)							
	Storm Water Pollution Protection Plan Specialist (SWPPP Specialist)							
						L&M	LEG	
N2206	Group IIIB, including:	43.65	5.99	17.31	1.30	0.20	0.20	68.65
	Federal Powderman (Responsible Person in Charge)							
	Grade Checking (setting or transferring of grade marks, line and grade, GPS, drones)							
	Stake Hopper							

Tunnel Workers, Laborers (The area that is south of N63 latitude and west of W138 longitude)
*See per diem note on last page

						L&M	LEG	
S2201	Group I, including:	33.78	8.70	17.31	1.30	0.20	0.20	61.49
	Brakeman							
	Mucker							
	Nipper							
	Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer)							
	Topman & Bull Gang							

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
	Tunnel Workers, Laborers (The area that is south of N63 latitude and west of W138 longitude) *See per diem note on last page							
						L&M	**LEG**	
S2201	Group I, including:	33.78	8.70	17.31	1.30	0.20	0.20	61.49
	Tunnel Track Laborer							
						L&M	**LEG**	
S2202	Group II, including:	34.88	8.70	17.31	1.30	0.20	0.20	62.59
	Burning & Cutting Torch							
	Certified Erosion Sediment Control Lead (CESCL Laborer)							
	Concrete Laborer							
	Floor Preparation, Core Drilling							
	Jackhammer/Chipping Gun or Pavement Breaker							
	Laser Instrument Operator							
	Nozzlemen, Pumpcrete or Shotcrete							
	Pipelayer Helper							
						L&M	**LEG**	
S2203	Group III, including:	35.87	8.70	17.31	1.30	0.20	0.20	63.58
	Miner							
	Retimberman							
						L&M	**LEG**	
S2204	Group IIIA, including:	39.48	8.70	17.31	1.30	0.20	0.20	67.19
	Asphalt Raker, Asphalt Belly Dump Lay Down							
	Drill Doctor (in the field)							
	Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)							
	Pioneer Drilling & Drilling Off Tugger (all type drills)							
	Pipelayer							
	Powderman (Employee Possessor)							
	Storm Water Pollution Protection Plan Specialist (SWPPP Specialist)							
						L&M	**LEG**	
S2206	Group IIIB, including:	43.65	5.99	17.31	1.30	0.20	0.20	68.65
	Federal Powderman (Responsible Person in Charge)							
	Grade Checking (setting or transferring of grade marks, line and grade, GPS, drones)							
	Stake Hopper							
	Tunnel Workers, Power Equipment Operators *See per diem note on last page							
						L&M		
A2207	Group I	44.58	10.00	12.50	1.00	0.10	0.05	68.23
						L&M		
A2208	Group IA	46.52	10.00	12.50	1.00	0.10	0.05	70.17

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Tunnel Workers, Power Equipment Operators *See per diem note on last page								
A2209	Group II	43.74	10.00	12.50	1.00	**L&M** 0.10	0.05	67.39
A2210	Group III	42.94	10.00	12.50	1.00	**L&M** 0.10	0.05	66.59
A2211	Group IV	36.11	10.00	12.50	1.00	**L&M** 0.10	0.05	59.76

*** Per diem is an established practice for this classification. This means that per diem is an allowable alternative to board and lodging if all criteria are met. See 8 AAC 30.051-08 AAC 30.056, and the per diem information on page vii of this Pamphlet.**

**** Work in combination of classifications: Employees working in any combination of classifications within the diving crew (working diver, standby diver, and tender) in a shift are paid in the classification with the highest rate for a minimum of 8 hours per shift.**

Title 36
Public Contracts

Wage and Hour Administration Pamphlet 400

Statutes
Regulations

November 2018

Alaska Department of Labor
and Workforce Development
Labor Standards and Safety Division

ALASKA DEPARTMENT OF LABOR
& WORKFORCE DEVELOPMENT

Anchorage

Alaska Department of Labor and Workforce Development
Wage and Hour Administration
1251 Muldoon Road, Suite 113
Anchorage, AK 99504
Phone: (907) 269-4900
Fax: (907) 269-4915
Email: statewide.wagehour@alaska.gov

Fairbanks

Alaska Department of Labor and Workforce Development
Wage and Hour Administration
675 Seventh Avenue, Station J-1
Fairbanks, AK 99701
Phone: (907) 451-2886
Fax: (907) 451-2885
Email: statewide.wagehour@alaska.gov

Juneau

Alaska Department of Labor and Workforce Development
Wage and Hour Administration
P.O. Box 111149
Juneau, AK 99811-1149
Phone: (907) 465-4842 Fax: (907) 465-3584
Email: statewide.wagehour@alaska.gov

If you would like to receive Wage and Hour Administration **regulation notices** or **publications information**, they are available via electronic mail, by signing up in the GovDelivery System, https://public.govdelivery.com/accounts/AKDOL/subscriber/new and selecting topics *LSS – Wage and Hour – Forms and Publications* or *LSS – Wage and Hour Regulations*.

Publications are also available online at http://labor.alaska.gov/lss/home.htm

The Alaska Department of Labor and Workforce Development is focused on putting Alaskans to work. An important part of that mission is to ensure that working conditions and wage payment practices are legal. This publication, *Pamphlet 400, Title 36, Public Contracts*, is designed to assist employers and employees by providing the applicable laws and regulations.

This pamphlet is set out in two sections. The first section contains the Alaska Statutes (pages 1-9), and the second section contains the Alaska Administrative Code or regulations (pages 10-22). The index of topics on page 23 should provide assistance in locating all of the places a particular topic is referenced.

When reviewing the subjects contained in this pamphlet, keep in mind that the statutes carry the greater weight. The regulations have been established to further clarify and interpret language used in the statutes.

Many wage and hour issues are complex. Please take advantage of the Wage and Hour Administration's cost-free counseling services to answer your questions regarding this pamphlet and Alaska's labor laws. You may call or come in to the nearest Wage and Hour Administration office, Monday through Friday, during regular business hours and a wage and hour investigator will be happy to assist you. Addresses and phone numbers for these offices are listed on the first page of this pamphlet.

For additional copies of this pamphlet, contact the nearest Wage and Hour Administration office in Anchorage, Juneau, or Fairbanks, or you may download and print this pamphlet from our internet site at: http://labor.alaska.gov/lss/forms/Pam400.pdf

TITLE 36. Public Contracts

Wage and Hour Administration

Pamphlet 400 - Statutes and Regulations

November 2018

State of Alaska

Alaska Department of Labor and Workforce Development

Labor Standards and Safety Division

Table of Contents

Disclaimer:

Note to Readers: The statutes and administrative regulations listed in this publication were taken from the official codes, as of the effective date of the publication. However, there may be errors or omissions that have not been identified and changes that occurred after the publication was printed. **This publication is intended as an informational guide only and is not intended to serve as a precise statement of the statutes and regulations of the State of Alaska. To be certain of the current laws and regulations, please refer to the official codes.**

ALASKA STATUTES
TITLE 36. PUBLIC CONTRACTS

CHAPTER 05. WAGES AND HOURS OF LABOR.

Section:

This chapter was modeled after the federal Davis-Bacon Act. 40 U.S.C. § 276a et seq. *Fowler v. City of Anchorage*, Sup. Ct. Op. No. 1699 (File No. 3586), 583 p.2d 817 (1978).

Sec. 36.05.005. Applicability.
This chapter applies only to a public construction contract that exceeds $25,000.
(§ 1 ch 28 SLA 2011)

Sec. 36.05.010. Wage rates on public construction.
A contractor or subcontractor who performs work on a public construction contract in the state shall pay not less than the current prevailing rate of wages for work of a similar nature in the region in which the work is done. The current prevailing rate of wages is that contained in the latest determination of prevailing rate of wages issued by the Department of Labor and Workforce Development at least 10 days before the final date for submission of bids for the contract. The rate shall remain in effect for the life of the contract or for 24 calendar months, whichever is shorter. At the end of the initial 24-month period, if new wage determinations have been issued by the department, the latest wage determination shall become effective for the next 24-month period or until the contract is completed whichever occurs first. This process shall be repeated until the contract is completed.
(§ 14-2-1 ACLA 1949; am § 1 ch 142 SLA 1972; am § 1 ch 89 SLA 1976; am § 1 ch 69 SLA 1993; am § 1 ch 28 SLA 2011)

Sec. 36.05.020. Basis for determining wage.
A subcontract that is performed on public construction may be reduced to a basis of day labor for the purpose of determining whether or not the subcontractor or contractors have paid at not less than the prevailing scale of wage.
(§ 14-2-2 ACLA 1949)

Sec. 36.05.030. Authority; investigations; hearings; regulations; enforcement.
(a) The Department of Labor and Workforce Development has the authority to determine the prevailing wage, and whether or not this chapter is being violated. The department may when necessary for the enforcement of this chapter
(1) conduct investigations and hold hearings concerning wages;
(2) compel the attendance of witnesses and the production of books, papers and documents;
(3) adopt regulations.
(b) If a person violates this chapter the attorney general shall, when requested by the Department of Labor and Workforce Development, enforce these provisions.
(§ 14-2-3 ACLA 1949; am § 2 ch 142 SLA 1972)

Sec. 36.05.035. Notification of contract awards.
Upon awarding a public construction contract, the state or a political subdivision of the state shall
(1) immediately notify the commissioner of labor and workforce development of the amount of the contract, the effective date of the contract, the identity of the contractor and all subcontractors, the site or sites of construction and provide a project description; and
(2) verify that the bonding requirements of AS 36.25 have been met and that the requirements of AS 08.18 have been met.
(§ 3 ch 142 SLA 1972)

Sec. 36.05.040. Filing schedule of employees, wages paid, and other information.
All contractors or subcontractors who perform work on a public construction contract for the state or for a political subdivision of the state shall, before the Friday of every second week, file with the Department of Labor and Workforce Development a sworn affidavit for the previous reporting period, setting out in detail the number of persons employed, wages paid, job classification of each employee, hours worked each day and week, and other information on a form provided by the Department of Labor and Workforce Development.
(§ 14-2-4 ACLA 1949; am § 4 ch 142 SLA 1972; am § 1 ch 111 SLA 2003)

Sec. 36.05.045. Notice of work and completion; withholding of payment.

(a) Before commencing work on a public construction contract, the person entering into the contract with a contracting agency shall designate a primary contractor for purposes of this section. Before work commences, the primary contractor shall file a notice of work with the Department of Labor and Workforce Development. The notice of work must list work to be performed under the public construction contract by each contractor who will perform any portion of work on the contract and the contract price being paid to each contractor. The primary contractor shall pay all filing fees for each contractor performing work on the contract, including a filing fee based on the contract price being paid for work performed by the primary contractor's employees. The filing fee payable shall be the sum of all fees calculated for each contractor. The filing fee shall be one percent of each contractor's contract price. The total filing fee payable by the primary contractor under this subsection may not exceed $5,000. In this subsection, "contractor" means an employer who is using employees to perform work on the public construction contract under the contract or a subcontract.

(b) Upon completion of all work on the public construction contract, the primary contractor shall file with the Department of Labor and Workforce Development a notice of completion together with payment of any additional filing fees owed due to increased contract amounts. Within 30 days after the department's receipt of the primary contractor's notice of completion, the department shall inform the contracting agency of the amount, if any, to be withheld from the final payment.

(c) A contracting agency

(1) may release final payment on a public construction contract to the extent that the agency has received verification from the Department of Labor and Workforce Development that

(A) the primary contractor has complied with (a) and (b) of this section;

(B) the Department of Labor and Workforce Development is not conducting an investigation under this title; and

(C) the Department of Labor and Workforce Development has not issued a notice of a violation of this chapter to the primary contractor or any other contractors working on the public construction contract; and

(2) shall withhold from the final payment an amount sufficient to pay the department's estimate of what may be needed to compensate the employees of any contractors under investigation on this construction contract, and any unpaid filing fees.

(d) The notice and filing fee required under (a) of this section may be filed after work has begun if

(1) the public construction contract is for work undertaken in immediate response to an emergency; and

(2) the notice and fees are filed not later than 14 days after the work has begun.

(e) A false statement made on a notice required by this section is punishable under AS 11.56.210.

(§ 2 ch 111 SLA 2003; am § 1 ch 28 SLA 2011)

Sec. 36.05.060. Penalty for violation of this chapter.

A contractor who violates this chapter is guilty of a misdemeanor, and upon conviction is punishable by a fine of not less than $100 nor more than $1,000, or by imprisonment for not less than 10 days nor more than 90 days, or by both. Each day a violation exists constitutes a separate offense.

(§ 14-2-6 ACLA 1949; am § 6 ch 142 SLA 1972)

Sec. 36.05.070. Wage rates in specifications and contracts for public works.

(a) The advertised specifications for a public construction contract that requires or involves the employment of mechanics, laborers, or field surveyors must contain a provision stating the minimum wages to be paid various classes of laborers, mechanics, or field surveyors and that the rate of wages shall be adjusted to the wage rate under AS 36.05.010.

(b) *Repealed by § 17 ch 142 SLA 1972.*

(c) A public construction contract under (a) of this section must contain provisions that

(1) the contractor or subcontractors of the contractor shall pay all employees unconditionally and not less than once a week;

(2) wages may not be less than those stated in the advertised specifications, regardless of the contractual relationship between the contractor or subcontractors and laborers, mechanics, or field surveyors;

(3) the scale of wages to be paid shall be posted by the contractor in a prominent and easily accessible place at the site of the work;

(4) the state or a political subdivision shall withhold so much of the accrued payments as is necessary to pay to laborers, mechanics, or field surveyors employed by the contractor or subcontractors the difference between

(A) the rates of wages required by the contract to be paid laborers, mechanics, or field surveyors on the work; and

(B) the rates of wages in fact received by laborers, mechanics or field surveyors.

(§ 1 ch 52 SLA 1959; am §§ 7, 8, 17 ch 142 SLA 1972; am § 2 ch 89 SLA 1976; am § 1 ch 28 SLA 2011)

Sec. 36.05.080. Failure to pay agreed wages.

Every contract within the scope of AS 36.05.070 shall contain a provision that if it is found that a laborer, mechanic, or field surveyor employed by the contractor or subcontractor has been or is being paid a rate of wages less than the rate of wages required by the contract to be paid, the state or its political subdivision may, by written notice to the contractor, terminate the contractor's right to

proceed with the work or the part of the work for which there is a failure to pay the required wages and to prosecute the work to completion by contract or otherwise, and the contractor and the contractor's sureties are liable to the state or its political subdivision for excess costs for completing the work.
(§2 Ch 52 SLA 1959)

Sec. 36.05.090. Payment of wages from withheld payments and listing contractors who violate contracts.

(a) The state disbursing officer in the case of a state public construction contract and the local fiscal officer in the case of a political subdivision public construction contract shall pay directly to laborers, mechanics, or field surveyors from accrued payments withheld under the terms of the contract the wages due laborers, mechanics, or field surveyors under AS 36.05.070.

(b) The state disbursing officer or the local fiscal officer shall distribute to all departments of the state government and to all political subdivisions of the state a list giving the names of persons who have disregarded their obligations to employees. A person appearing on this list and a firm, corporation, partnership or association in which the person has an interest may not work as a contractor or subcontractor on a public construction contract for the state or a political subdivision of the state until three years after the date of publication of the list. If the accrued payments withheld under the contract are insufficient to reimburse all the laborers, mechanics, or field surveyors with respect to whom there has been a failure to pay the wages required under AS 36.05.070, the laborers, the mechanics or field surveyors have the right of action or intervention or both against the contractor and the contractor's sureties conferred by law upon persons furnishing labor or materials, and in the proceedings it is not a defense that the laborers, mechanics or field surveyors accepted or agreed to accept less than the required rate of wages or voluntarily made refunds.
(§ 3 ch 52 SLA 1959; am § 9 ch 142 SLA 1972; am § 1 ch 28 SLA 2011)

Sec. 36.05.100. Effect of AS 36.05.070 - 36.05.110 on other laws.

AS 36.05.070 - 36.05.110 do not supersede or impair authority granted by state law to provide for the establishment of specific wage rates.
(§ 4 ch 52 SLA 1959; am § 10 ch 142 SLA 1972)

Sec. 36.05.110. Contracts entered into without advertising.

The fact that a public construction contract authorized by law is entered into upon a cost-plus-a-fixed-fee basis or otherwise, without advertising for proposals, does not make AS 36.05.070 - 36.05.110 inapplicable if those sections are otherwise applicable to the contract.
(§ 5 ch 52 SLA 1959; am § 1 ch 28 SLA 2011)

ARTICLE 2. GENERAL PROVISIONS

Section:

Sec. 36.05.900. Definition.

In this chapter, “contracting agency” means the state or a political subdivision of the state that has entered into a public construction contract with a contractor.
(§ 3 ch 111 SLA 2003)

CHAPTER 10. EMPLOYMENT PREFERENCE

Section:

Sec. 36.10.005. Legislative findings.

(a) The legislature finds that

(1) because of its unique climate and its distance from the contiguous states, the state has historically suffered from unique social, seasonal, geographic, and economic conditions that result in an unstable economy;

(2) the unstable economy is a hardship on the residents of the state and is aggravated by the large numbers of seasonal and transient nonresident workers;

(3) the rate of unemployment among residents of the state is one of the highest in the nation;

(4) the state has one of the highest ratios of nonresident to resident workers in the nation;

(5) the state has a compelling interest in reducing the level of unemployment among its residents;

(6) the construction industry in the state accounts for a substantial percentage of the available employment;

(7) construction workers receive a greater percentage of all unemployment benefits paid by the state than is typical of other states;

(8) historically, the rate of unemployment in the construction industry in the state is higher than the rate of unemployment in other industries in the state;

(9) it is appropriate for the state to consider the welfare of its residents when it funds construction activity;

(10) it is in the public interest for the state to allocate public funds for capital projects in order to reduce unemployment among its resident construction workers;

(11) the influx of nonresident construction workers contributes to or causes the high unemployment rate among resident construction workers because nonresident workers compete with residents for the limited number of available construction jobs;

(12) nonresident workers displace a substantial number of qualified, available, and unemployed Alaska workers on jobs on state funded public works projects;

(13) the state has a special interest in seeing that the benefits of state construction spending accrue to its residents;

(14) the natural resources of land owned by the state belong to the citizens of the state;

(15) Alaskans have chosen to use the majority of the royalties derived from the state's natural resources to fund state government;

(16) the vast majority of the state's revenue is derived from natural resource income rather than from other forms of taxation;

(17) because the state has no personal income tax or sales tax, nonresident workers use services provided by the state but do not contribute fairly to the costs of those services; and

(18) Alaskans, more than the residents of other states, suffer economically when nonresidents displace qualified residents since resident workers contribute local taxes as well as their share of the royalties from natural resources.

(b) The legislature further finds that

(1) the state and its political subdivisions, when acting as a market participant in funding public works projects, should give Alaska residents an employment preference to promote a more stable economy;

(2) the state and its political subdivisions have a duty of loyalty to their citizens and should fulfill this duty by giving residents preference for employment on public works projects they fund;

(3) there is a legitimate and compelling governmental interest and that the public health and welfare will suffer if state residents are not afforded employment preference in state funded construction related work.

(c) The legislature finds that the following factors are reasonable but not exclusive indicators of the ratio of nonresident to resident employees in the state:

(1) the ratio of applicants for unemployment insurance who list out-of-state residences to applicants who list residences in the state;

(2) the ratio of employees who are subject to unemployment insurance coverage and who did not apply for or were denied a permanent fund dividend to employees who were found eligible for a dividend.

(d) The legislature finds that

(1) the number of state residents who are unable to find work is considerably higher than is reflected by unemployment rates based on nationally accepted measures;

(2) many rural state residents who wish to work do not seek employment as frequently as necessary to meet federal definitions of unemployment because of continuing lack of employment opportunities in rural areas of the state.

(§ 1 ch 69 SLA 1985; am § 2 ch 33 SLA 1986)

Sec. 36.10.007. State policy.

It is the policy of this state that, to fulfill the duty of loyalty owed to its citizens and to remedy social or economic problems, the state will grant an employment preference to residents when the state is acting as a market participant.

(§ 1 ch 69 SLA 1985)

Sec. 36.10.020. Apprentices.

Apprentices must be properly registered apprentices in their particular craft.

(§ 1c ch 177 SLA 1960)

Sec. 36.10.030. Reduction of work force.

When a work force is reduced, resident workers, except supervisory personnel, shall be terminated last.

(§ 1d ch 177 SLA 1960)

Sec. 36.10.040. Application to contracts involving federal funds.

In a contract involving expenditure of federal aid funds, this chapter may not be enforced in a manner that conflicts with federal statutes giving preference to veterans or prohibiting other preferences or discriminations among United States citizens.

(§ 2 ch 177 SLA 1960)

Sec. 36.10.070. Unavailability of preferred workers.

(a) An employer subject to hiring requirements under this chapter may request the Department of Labor and Workforce Development to assist in locating qualified, eligible employees. After receiving a request for assistance, the department shall refer qualified, eligible, available residents to the employer to fill the employer's hiring needs. The employer shall cooperate with the department.

(b) If the department is unable to refer a sufficient number of qualified, eligible, available residents able to perform the work, the commissioner of labor may approve

the hiring of residents who are not eligible for preference and nonresidents for the balance of the request.
(§ 5 ch 177 SLA 1960; am § 2 ch 208 SLA 1972; am § 3 ch 33 SLA 1986)

Sec. 36.10.075. Regulations.

(a) The commissioner of labor and workforce development shall adopt regulations necessary to carry out the provisions of this chapter including but not limited to the method, time and content of reporting by employers covered by this chapter and reporting provisions permitting on-going supervision by the Department of Labor and Workforce Development on all public works projects covered by this chapter.

(b) The commissioner of labor and workforce development shall adopt regulations to encourage and require the hiring of residents to the maximum extent permitted by law.
(§ 3 ch 208 SLA 1972; am § 4 ch 33 SLA 1986)

Sec. 36.10.076. Notifications by state or political subdivision.

An agency or political subdivision of the state covered by the provisions of this chapter shall notify the Department of Labor and Workforce Development periodically regarding planned public works. Notification shall be in the form and manner prescribed by the Department of Labor and Workforce Development.
(§ 3 ch 208 SLA 1972)

Sec. 36.10.080. Chapter incorporated in contracts.

The provisions of this chapter are considered to be a part of every public works contract.
(§ 6 ch 177 SLA 1960; am § 16 ch 9 SLA 2014)

Sec. 36.10.090. Publication of list of violators.

(a) The commissioner of labor and workforce development shall distribute to all departments and agencies of the state government and to all political subdivisions of the state a list of the names of persons or firms convicted of a violation of this chapter. A person appearing on the list or a firm, corporation, partnership or association in which the person has an interest may not work as a contractor or subcontractor on a public construction contract for the state or a political subdivision until after three years from the date of publication of the list.

(b) A local government or school district covered by the provisions of this chapter that is found to be in violation of these provisions may be required to forfeit all or part of the state aid made available for the project in which the violation occurs and in addition may be denied up to 12 months of state community assistance or public school funding. A state department or agency head found to be in violation of this chapter may be required to forfeit the position of the department or agency head.

(c) A person or governmental entity covered by the provisions of (b) of this section who is not satisfied by a decision of the Department of Labor and Workforce Development may, as the final administrative process, appeal the decision to a committee consisting of the commissioners of transportation and public facilities, labor, and workforce development, and administration.

The commissioner of transportation and public facilities is the chairman of the committee. A quorum for conducting business is three members and any decision made must be supported by a majority of the committee members. The committee may, upon a showing of hardship, waive all or any part of the penalty provisions of this chapter.
(§ 7 ch 177 SLA 1960; am § 12 ch 142 SLA 1972; am § 4 ch 208 SLA 1972; am E.O. No. 39, § 11 (1977); am § 35 ch 83 SLA 1998; am § 13 ch 44 SLA 2016)

Sec. 36.10.100. Retainage and Penalty.

(a) A contractor who violates a provision of this chapter shall have deducted from amounts due to the contractor under the contract the prevailing wages that should have been paid to a displaced resident, and these amounts shall be retained by the contracting agency.

(b) A contractor or the agent of a contractor who violates a provision of this chapter is guilty of a misdemeanor, and upon conviction is punishable by a fine of not more than $500, or by imprisonment for not more than 90 days, or by both. (§ 8 ch 177 SLA 1960)

Sec. 36.10.120. Investigations and hearings.

The Department of Labor and Workforce Development may, when necessary to enforce this chapter,

(1) conduct investigations and hold hearings relating to employment preference;

(2) compel the attendance of witnesses and the production of books, papers and documents;
(§ 13 ch 142 SLA 1972; am § 46 ch 53 SLA 1973)

Sec. 36.10.125. Enforcement.

(a) The attorney general shall, when requested by the Department of Labor and Workforce Development, enforce the provisions of this chapter. The attorney general may obtain a court order prohibiting a contractor or subcontractor violating this chapter from continuing to work on existing public construction contracts of the state or a political subdivision of the state. The state or political subdivision of the state may prosecute the work to completion by contract or otherwise, and the contractor or subcontractor and the sureties of the contractor or subcontractor are liable for excess costs for completing the work.

(b) A private person is entitled to bring an action in the superior court to enforce the provisions of this chapter if that private person first gives at least 20 days notice to the commissioner of labor and workforce development. The notice must set out

(1) the intent of the private person to bring an action under this subsection;

(2) the specific violation complained of; and

(3) the name of the person accused of the violation.

(c) In an action brought under (b) of this section, the court may, in its discretion, order denial of state community assistance, revenue sharing, or public school

funding, forfeiture of office or position, or injunctive or other relief. If the court finds for the plaintiff in an action brought under (b) of this section, it may award the plaintiff an amount equal to the actual costs and attorney fees incurred by the plaintiff.
(§ 13 ch 142 SLA 1972; am § 1 ch 183 SLA 1976; am § 36 ch 83 SLA 1998; am § 14 ch 44 SLA 2016)

Sec. 36.10.130. Resident hire report.
The attorney general and the commissioner of labor and workforce development shall report annually to the governor on the status of employment in the state, the effect of nonresident employment on the employment of residents in the state, and methods to increase resident hire. The report shall be submitted by January 31 of each year, and the governor shall notify the legislature that the report is available.
(§ 5 ch 33 SLA 1986; am § 55 ch 21 SLA 1995)

Sec. 36.10.140. Eligibility for preference; approval of job-training programs.

(a) A person is eligible for an employment preference under this chapter if the person certifies eligibility as required by the Department of Labor and Workforce Development, is a resident, and

(1) is receiving unemployment benefits under AS 23.20 or would be eligible to receive benefits but has exhausted them;

(2) is not working and has registered to find work with a public or private employment agency or a local hiring hall;

(3) is underemployed or marginally employed as defined by the department; or

(4) has completed a job-training program approved by the department and is either not employed or is engaged in employment that does not use the skills acquired in the job-training program.

(b) In approving job-training programs under (a) of this section, the department shall use information and findings from other state and federal agencies as much as possible.

(c) An employer subject to a resident hiring requirement under this chapter shall certify that persons employed as residents under the preference were eligible for the preference at the time of hiring.

(d) A labor organization that dispatches members for work on a public works project under a collective bargaining agreement shall certify that persons dispatched as residents to meet a preference were eligible for the preference at the time of dispatch.

(e) An employer or labor organization may request assistance from the Department of Labor and Workforce Development in verifying the eligibility of an applicant for a hiring preference under this chapter.
(§ 5 ch 33 SLA 1986)

Sec. 36.10.150. Determination of zone of underemployment.

(a) Immediately following a determination by the commissioner of labor and workforce development that a zone of underemployment exists, and for the next two fiscal years after the determination, qualified residents of the zone who are eligible under AS 36.10.140 shall be given preference in hiring for work on each project under AS 36.10.180 that is wholly or partially sited within the zone. The preference applies on a craft-by-craft or occupational basis.

(b) The commissioner of labor and workforce development shall determine the amount of work that must be performed under this section by qualified residents who are eligible for an employment preference under AS 36.10.140. In making this determination, the commissioner shall consider the nature of the work, the classification of workers, availability of eligible residents, and the willingness of eligible residents to perform the work.

(c) The commissioner shall determine that a zone of underemployment exists if the commissioner finds that

(1) the rate of unemployment within the zone is substantially higher than the national rate of unemployment;

(2) a substantial number of residents in the zone have experience or training in occupations that would be employed on a public works project;

(3) the lack of employment opportunities in the zone has substantially contributed to serious social or economic problems in the zone; and

(4) employment of workers who are not residents is a peculiar source of the unemployment of residents of the zone. (§ 5 ch 33 SLA 1986)

Sec. 36.10.180. Projects subject to preference.

(a) The preferences established in AS 36.10.150 - 36.10.175 apply to work performed

(1) under a contract for construction, repair, preliminary surveys, engineering studies, consulting, maintenance work, or any other retention of services necessary to complete a given project that is let by the state or any agency of the state, a department, office, state board, commission, public corporation, or other organizational unit of or created under the executive, legislative or judicial branch of state government, including the University of Alaska and the Alaska Railroad Corporation, or by a political subdivision of the state including a regional school board with respect to an educational facility under AS 14.11.020;

(2) on a public works project under a grant to a municipality under AS 37.05.315 or AS 37.06.010;

(3) on a public works project under a grant to a named recipient under AS 37.05.316;

(4) on a public works project under a grant to an unincorporated community under AS 37.05.317 or AS 37.06.020; and

(5) on any other public works project or construction project that is funded in whole or in part by state money.

(b) If the governor has declared an area to be an area impacted by an economic disaster under AS 44.33.285, then the preference for residents of the area established

under AS 44.33.285 - 44.33.310 supersedes the preference under AS 36.10.150 - 36.10.175 for contracts awarded by the state.

(c) The commissioner shall define the boundaries of a zone within which a preference applies.
(§ 5 ch 33 SLA 1986; am § 2 ch 80 SLA 1993)

Sec. 36.10.190. Reporting provisions.
An employer obligated to meet resident hire requirements under this chapter shall comply with the reporting provisions that the commissioner of labor and workforce development determines are reasonably necessary to carry out this chapter. Except for statistical data, all information regarding specific employees is confidential and may not be released by the Department of Labor and Workforce Development. However, confidential employee information may be shared between departments for purposes of this chapter.
(§ 5 ch 33 SLA 1986)

Sec. 36.10.200. Criminal penalties.

(a) A person who makes a false sworn statement in connection with a certification of eligibility for an employment preference under this chapter is subject to criminal prosecution for perjury as provided in AS 11.56.200.

(b) A person who makes an unsworn falsification, with the intent to mislead a public servant in the performance of a duty, in connection with a certification of eligibility for an employment preference under this chapter, is subject to criminal prosecution as provided in AS 11.56.210.
(§ 5 ch 33 SLA 1986)

Sec. 36.10.210. Civil penalties.

(a) In addition to any criminal penalties imposed, after a hearing the department may impose a civil penalty on a person who, in connection with certification of eligibility for an employment preference under this chapter,

(1) made a false sworn statement; or

(2) made an unsworn falsification with intent to mislead a public servant in the performance of a duty.

(b) The amount of the civil penalty under (a) of this section for a person who falsely certifies that the person is eligible for an employment preference under this chapter is not more than $400 for each false certification.

(c) The amount of the civil penalty under (a) of this section for an employer who falsely certifies that employees are residents eligible for a preference under this chapter is not more than $2,000 for each of the first five false certifications. The penalty for the sixth false certification made by an employer and for each false certification thereafter is at least $2,000 and not more than $4,000.
(§ 5 ch 33 SLA 1986)

Sec. 36.10.900. Severability.
If a provision of this chapter, or the application of a provision to a person or circumstance, is held invalid, the remainder of this chapter and the application to other persons or circumstances shall not be affected by the holding. The remainder shall be enforced to the greatest extent constitutionally permissible under the constitutions of the United States and the State of Alaska.
(§ 5 ch 33 SLA 1986)

Sec. 36.10.990. Definitions.
In this chapter

(1) "qualified" means possesses the requisite education, training, skills, or experience to perform the work;

(2) "zone" includes a census area in the state, an economic region of the state, and the state as a whole.
(§ 5 ch 33 SLA 1986)

CHAPTER 15. ALASKA PRODUCT PREFERENCES.

ARTICLE 1. FOREST PRODUCTS PREFERENCE

Section:

Sec. 36.15.010. Use of local forest products required in projects financed by public money.
In a project financed by state money in which the use of timber, lumber, and manufactured lumber products is required, only timber, lumber and manufactured lumber projects originating in this state from local forests shall be used wherever practicable. (§ 14-3-1 ACLA 1949)

Sec. 36.15.020. Insertion of clause in calls for bids and in contracts.
A clause containing the substance of AS 36.15.010 shall be inserted in all calls for bids and in all contracts awarded. (§ 14-3-2 ACLA 1949)

CHAPTER 25. CONTRACTORS' BONDS.

Section:

Sec. 36.25.010. Bonds of contractors for public buildings or works.

(a) Except as provided in AS 44.33.300, before a contract exceeding $100,000 for the construction, alteration, or repair of a public building or public work of the state or a political subdivision of the state is awarded to a general or specialty contractor, the contractor shall furnish to the state or a political subdivision of the state the following bonds, which become binding upon the award of the contract to that contractor:

(1) a performance bond with a corporate surety qualified to do business in the state, or at least two individual sureties who shall each justify in a sum equal to the amount of the bond; the amount of the performance bond shall be equivalent to the amount of the payment bond;

(2) a payment bond with a corporate surety qualified to do business in the state, or at least two individual sureties who shall each justify in a sum equal to the amount of the bond for the protection of all persons who supply labor and material in the prosecution of the work provided for in the contract; when the total amount payable by the terms of the contract is not more than $1,000,000, the payment bond shall be in a sum of one-half the total amount payable by the terms of the contract; when the total amount payable by the terms of the contract is more than $1,000,000 and not more than $5,000,000, the payment bond shall be in a sum of 40 percent of the total amount payable by the terms of the contract; when the total amount payable by the terms of the contract is more than $5,000,000, the payment bond shall be in sum of $2,500,000.

(b) This section does not limit the authority of the contracting officer to require a performance bond or other security in addition to those, or in cases other than the cases specified in (a) of this section.

(c) When no payment bond has been furnished, the contracting department may not approve final payments to the contractor until the contractor files a written certification that all persons who supplied labor or material in the prosecution of the work provided for in the contract have been paid.

(§ 1 ch 49 SLA 1953; am § 1 ch 77 SLA 1964; am § 14 ch 142 SLA 1972; am §§ 1, 2 ch 180 SLA 1976; am § 8 ch 277 SLA 1976; am 34 ch 108 SLA 1982)

Sec. 36.25.020. Rights of persons furnishing labor or material.

(a) A person who furnishes labor or material in the prosecution of the work provided for in the contract for which a payment bond is furnished under AS 36.25.010 and who is not paid in full before the expiration of 90 days after the last day on which the labor is performed or material is furnished for which the claim is made, may sue on the payment bond for the amount unpaid at the time of the suit.

(b) However, a person having direct contractual relationships with a subcontractor but no contractual relationship express or implied with the contractor furnishing the payment bond has a right of action on the payment bond upon giving written notice to the contractor within 90 days from the last date on which the person performed labor or furnished material for which the claim is made. The notice must state with substantial accuracy the amount claimed and the name of the person to whom the material was furnished or for whom the labor was performed. The notice shall be served by mailing it by registered mail, postage prepaid, in an envelope addressed to the contractor at any place where the contractor maintains an office or conducts business, or the contractor's residence, or in any manner in which a peace officer is authorized to serve summons.

(c) A suit brought under this section shall be brought in the name of the state or the political subdivision of the state for the use of the person suing in the court with jurisdiction. A suit under this section is subject to AS 08.18.151. A suit may not be started after the expiration of one year after the date of final settlement of the contract. The state or political subdivision of the state is not liable for costs or expenses of the suit.

(§ 2 ch 49 SLA 1953; am § 15 ch 142 SLA 1972 am §58 ch 14 SLA 1987)

Sec. 36.25.025. Optional municipal exemption.

A municipality, by ordinance adopted by its governing body, may exempt contractors from compliance with the provisions as AS 36.25.010(a) if the estimated cost of the project does not exceed $400,000, and

(1) the contractor is, and for two years immediately preceding the award of the contract has been, a licensed contractor having its principal office in the state;

(2) the contractor certifies that it has not defaulted on a contract awarded to the contractor during the period of three years preceding the award of a contract for which a bid is submitted;

(3) the contractor submits a financial statement, prepared within a period of nine months preceding the submission of a bid for the contract and certified by a public accountant or a certified public accountant licensed under AS 08.04, demonstrating that the contractor has a net worth of not less than 20 percent of the amount of the contract for which a bid is submitted; and

(4) the total amount of all contracts that the contractor anticipates performing during the term of performance of the contract for which a bid is submitted does not exceed the net worth of the contractor reported in the certified financial statement prepared and submitted under (3) of this section by more than seven times.

(§ 1 ch 81 SLA 1978)

CHAPTER 95. GENERAL PROVISIONS

Section:

Sec. 36.95.010. Definitions.

In this title, unless the context requires otherwise,

(1) "contractor" means the contractor including subcontractors performing work necessary to facilitate public construction;

(2) "laborer, mechanic, or field surveyor" means a person who engages in work which is basically physical or unskilled in nature; or who engages in work, requiring the use of tools or machines, which basically consists of the shaping and working of materials into some type of structure, machine or other object; or who engages in outdoor tasks related to the operation of findings and delineating contour, dimensions, position, topography, as of any part of the earth's surface, by preparation of measured plan or description of any area or other portion of country or of road or line through any area or other portion of country;

(3) "public construction" or "public works" means the on-site field surveying, erection, rehabilitation,

alteration, extension or repair, including painting or redecorating of buildings, highways or other improvements to real property under contract for the state, a political subdivision of the state, or a regional school board;

(4) "resident" means a person who establishes residency under AS 01.10.055;

(5) "retainage" means money withheld from a contractor until completion of a contract or satisfaction of other contingency as evidenced by approval of the applicable pay estimate;

(6) "state or a political subdivision of the state" means any state department, state agency, state university, borough, city, village, school district or other state subdivision;

(7) "wages" includes fringe benefits.

(§ 16 ch 142 SLA 1972; am § 3 ch 89 SLA 1976; am § 16 ch 147 SLA 1978; am § 2 ch 85 SLA 1982; am § 92 ch 6 SLA 1984; am §§ 6, 11 ch 33 SLA 1986)

ALASKA ADMINISTRATIVE CODE
TITLE 8. LABOR

PART 2. RESIDENT EMPLOYMENT

CHAPTER 30. PUBLIC CONTRACTS.

Article:

ARTICLE 1. WAGES AND HOURS.

Section:

8 AAC 30.010. Notification of Contract Awards.

(a) Within 20 days of awarding a public contract, the state or political subdivision of the state shall notify the commissioner in writing that the contract has been awarded. The writing shall conform to the requirements of AS 36.05.035.

(b) Verification of contractors bonding requirements shall be by certified statement furnished to the commissioner by the state or political subdivision of the state which awarded the contract.

(Eff. 7/8/73, Register 47)

Authority: AS 36.05.030 AS 36.05.035

8 AAC 30.020. Certified Payroll.

(a) Before Friday of every second week, each contractor, subcontractor, or owner/operator who performs work on a public construction contract for the state or political subdivision of the state shall file with the department a certified payroll (Form 07-6058) that covers the preceding reporting period.

(b) The certified payroll shall be submitted to the department's regional office in the judicial district in which the work is performed:

1st Judicial District - Department of Labor and Workforce Development, Juneau
3rd Judicial District - Department of Labor and Workforce Development, Anchorage
2nd and 4th Judicial Districts - Department of Labor and Workforce Development, Fairbanks

(c) Instead of submitting Form 07-6058, a contractor may submit the contractor's payroll form. However, the payroll form must contain the same information and statement of compliance required by Form 07-6058.

(d) Owner/operators who perform duties as laborers, mechanics, or field surveyors while working as contractors or subcontractors on a public work project shall be included on their certified payrolls in the same manner as any other laborer, mechanic or field surveyor. However, an owner/operator who performs duties as a laborer, mechanic, field surveyor is not required to pay themselves each reporting period, but shall report hours worked and actual payments received under the terms of the contract and the period covered by each payment. After deducting operating expenses, the actual payment received by an owner/operator performing duties as a laborer, mechanic, or field surveyor must meet or exceed the minimum prevailing rate of pay in the applicable classification for each hour worked on a public construction project.

(e) If a contractor is under contract to provide trucks on a public construction project and leases a truck to an individual truck driver or dispatches an owner/operator working on that same project, the contractor shall pay no less than the prevailing wage for each hour worked each certified payroll reporting period to that driver.

(Eff. 7/8/73, Register 47; am 7/30/82, Register 83; am 8/9/01; Register 159; am 3/2/2008, Register 185)

Authority: AS 36.05.030 AS 36.05.040
AS 36.10.075

Editor's Note:

As of Register 151 (October 1999), the regulations attorney made technical revisions under AS 44.62.125 (b)(6) to reflect the name change of the Department of Labor to the Department of Labor and Workforce Development made by ch. 58, SLA 1999 and the corresponding title change of the commissioner of labor.

Form 07-6058 (payroll form) required in 8 AAC 30.020 may be obtained from the Department of Labor and Workforce Development, Wage and Hour Administration, 1251 Muldoon Road, Suite 113, Anchorage, AK 99504; telephone: (907) 269-4900. The form is also available on the department's website at:
http://labor.alaska.gov/lss/lssforms.htm

8 AAC 30.025. Fringe Benefit Contributions.

(a) Employers must remit contributions to union trusts, approved private pension plans, or other approved fringe benefit plans by the 15th of the month following the accrual of the contribution. If the plan itself has a more stringent remittance deadline, the plan deadline shall prevail. A copy of the actual deposit or other satisfactory proof shall be provided the department upon request.

(b) A private pension plan or other fringe benefit plan as referenced in (a) of this section must meet the following conditions in order to be approved as an offset against the prevailing wage rate requirement for fringe benefits:

(1) plan contributions must be

(A) irrevocable;

(B) deposited on a regular basis, not less than monthly, to a trustee or third-party administrator;

(C) free of administrative expense charges to employees, except reasonable and customary administrative fees charged to the plan as a whole, subject to approval of the plan trustee;

(D) non-discretionary;

(E) factored across all work performed by an employee in public construction and non-public construction with the exception of an automatic vesting 401(k) plan;

(2) plan contributions may not be made on behalf of employees who are not eligible to participate in the plan;

(3) except for an automatic vesting 401(k) plan, plan contributions must not be funded solely through hours worked on public construction projects.

(c) Except for an automatic vesting 401(k) plan which allows the actual hourly amount contributed to the plan during the public construction project to be directly credited against fringe benefit payment requirements, to establish an hourly rate for credit against prevailing wage requirements, the amount paid by the employer for the benefit shall be divided by the hours worked by the employee under the plan during the interval under which payments are due to the plan administrator. To allow for seasonal variations, the plan costs may be calculated on an annual basis.

(d) If the hourly rate established under (c) of this section does not meet the prevailing fringe benefit rate, the remainder must be paid to the employee.

(e) If a pension plan meets the requirements under 29 U.S.C. 1001 – 1461 (Employee Retirement Income Security Act of 1974) and includes a minimum vesting requirement, any forfeited amounts must remain in the trust, subject to the authority of the trustee and may not revert to the employer.

(f) The department may disallow an employer from taking credit for fringe benefit contributions as an offset to prevailing wage requirements if the provisions of this section are not met. Upon request, the employer shall provide the following to the department:

(1) a copy of the plan;

(2) a copy of the plan adoption agreement;

(3) the name, address, and telephone number of the plan broker;

(4) the name, address, and telephone number of the plan administrator;

(5) the United States Internal Revenue Service approval letter;

(6) the calculations of the hourly cost equivalent for the plan.

(g) An apprentice shall receive 100 percent of the prevailing fringe benefit rate established in the applicable *Laborers' and Mechanics' Minimum Rates of Pay*, unless a bona fide fringe benefit plan is specified in the applicable Standards of Apprenticeship approved by the United States Department of Labor, Office of Apprenticeship.

(h) In this section, "automatic vesting 401(k) plan," means a 401(k) plan maintained in compliance with 29 U.S.C. 1001 – 1461 (Employee Retirement Income Security Act of 1974) that allows for immediate vesting in the plan to ensure that the employee will not be subject to any forfeiture of amounts contributed to the plan since it has no vesting requirements.

(Eff. 1/2/91, Register 116; am 3/2/2008, Register 185; am 8/12/2018, Register 227)

Authority: AS 23.05.060 AS 36.05.030
AS 36.05.070

8 AAC 30.027. Notice of violation requiring withholding.

When the department determines, under the authority of AS 36.05.030, that a violation has occurred, it shall notify the contracting agency as to the nature and estimated amount of the violation so that the contracting agency can fulfill its obligation to withhold funds under AS 36.05.070 (4). (Eff. 1/2/91, Register 116)

Authority: AS 23.05.060 AS 36.05.030
AS 36.05.070

8 AAC 30.030. Notification of withholding accrued payments.

(a) If the state or a political subdivision of the state withholds accrued payments under those provisions of its contracts required by AS 36.05.070(c)(4), the state or political subdivision shall notify the commissioner within three working days.

(b) Notification shall be in writing and contain the following information:

(1) name of state agency or political subdivision of the state that awarded the contract;

(2) name of state agency or political subdivision of the state that is withholding accrued payments;

(3) contractor's name and address;

(4) address of construction site;

(5) job classification being underpaid;

(6) wage rate required by contract; and

(7) wage rate actually being paid.

(Eff. 7/8/73, Register 47)

Authority: AS 36.05.030 AS 36.05.070

8 AAC 30.040. Notification of Termination of Contract.

(a) If the state or a political subdivision of the state terminates a contract under those provisions of its contract required under AS 36.05.080, the state or political subdivision of the state shall notify the department within three working days.

(b) Notification shall be in writing and contain the following information:

(1) name of state agency or political subdivision of the state that awarded the contract;

(2) name of state agency or political subdivision of the state that is terminating the contract;

(3) contractor's name and address;

(4) address of construction site;

(5) job classification being underpaid;

(6) wage rate required by contract;

(7) wage rate actually being paid; and

(8) proposed action to be taken to complete construction.

(Eff. 7/8/73, Register 47)

Authority AS 36.05.030 AS 36.05.080

ARTICLE 2. WAGE SCALE.

Section:

50. Wage Scale

8 AAC 30.050. Wage Scale.

(a) The department will determine the prevailing wage rate to be paid laborers, mechanics, and field surveyors. The department will publish this determination in the pamphlet *Laborers' and Mechanics' Minimum Rates of Pay*. The department will periodically revise the prevailing wage rates, on a regional basis, to correspond with the prevailing wage rate for similar work.

(b) The prevailing wage will be determined on a regional basis for two geographic regions of the state, north of North 63 degrees latitude and south of North 63 degrees latitude. A region may be subdivided into zones if the commissioner determines that the prevailing wage rate has local variations within the region. In determining the prevailing wage rate for a region or zone, the department will consider the prevailing wage that represents majority penetration for each work classification. If there is no majority penetration the department may set the prevailing wage rate in the following manner:

(1) If less than a majority of the persons employed at a particular skill level in a particular job class receive the same wage, the prevailing wage rate will be determined by taking the arithmetic mean (average) of the wages in the survey for the job class being considered.

(2) Prior to calculating the arithmetic mean, the survey will be adjusted by eliminating five percent of the extreme wage rates.

(3) For example, in a survey consisting of 75 different pay rates the rates will be arrayed in order of size. Five percent at both ends of the scale, the four highest and four lowest, will be eliminated. The remaining 67 rates will be the final survey from which the arithmetic mean will be determined to be the prevailing rate of pay.

(4) In determining the prevailing wage rate for a region or zone, the department will consider the prevailing union wage, local practice, and any other standard considered by the department to be appropriate.

(c) Special prevailing wage rate determinations may be requested for special projects or special worker classifications, if the work to be performed does not conform to traditional public construction for which a prevailing wage rate has been established under (a) of this section. Requests for special wage rate determinations must be in writing and filed with the commissioner at least 30 days before the award of the contract. An applicant for a special wage rate determination shall have the responsibility to support the necessity for the special rate. An application for a special wage rate determination filed under this section must contain

(1) a specification of the contract or project on which the special rates will apply and a description of the work to be performed;

(2) a brief narrative explaining why special wage rates are necessary;

(3) the job class or classes involved;

(4) the special wage rates the applicant is requesting, including survey or other relevant wage data to support the requested rates;

(5) the approximate number of employees who will be affected; and

(6) any other information which might be helpful in determining if special wage rates are appropriate.

(d) The prevailing wage rate established in (a) of this section shall be considered the minimum wage rate that shall be paid to various classes of laborers, mechanics, and field surveyors.

(e) This section shall be made part of every contract that falls within the scope of AS 36.05.010 and 36.05.070(a).

(Eff. 7/8/73, Register 47; am 7/30/82, Register 83; am 8/9/2001, Register 159; am 3/2/2008, Register 185; am 11/25/2018, Register 228)

Authority: AS 36.05.010 AS 36.05.030
AS 36.05.070

Editor's note:

The pamphlet titled *Laborers' and Mechanics' Minimum Rates of Pay* may be obtained from the Department of Labor and Workforce Development, 1251 Muldoon Road, Suite 113, Anchorage, AK 99504; telephone: (907) 269-4900. The pamphlet is also available on the department's website at: http://labor.alaska.gov/lss/lssforms.htm.

8 AAC 30.051. Purpose.

The purpose of 8 AAC 30.052 – 8 AAC 30.056 is to ensure that wages paid to laborers, mechanics, and field surveyors do not fall below the prevailing rate of pay.

8 AAC 30.052. Board and lodging; remote sites.

(a) A contractor on a public construction project located 65 or more road miles from the international airport closest to the project area in either Fairbanks, Juneau, or Anchorage, or that is inaccessible by road in a two-wheel drive vehicle, shall provide adequate board and lodging to each laborer, mechanic, or field surveyor while the person is employed on the project. If commercial lodging facilities are not available, the contractor shall provide temporary lodging facilities. Lodging facilities must comply with all applicable state and federal laws. For a highway project, the location of the project is measured from the midpoint of the project.

(b) A contractor is not required to provide board and lodging:

(1) to a laborer, mechanic, or field surveyor who is a domiciled resident of the project area; or

(2) on a laborer, mechanic, or field surveyor's scheduled days off, when the person can reasonable travel between the project and the person's permanent residence; for the purposes of this paragraph, "scheduled day off" means a day in which a person does not perform work on-site, is not required to remain at or near the job location for the benefit of the contractor, and is informed of the day off at least seven days before the day off.

(c) Upon a contractor's written request, the commissioner may waive the requirements of (a) of this section where:

(1) the project is inaccessible by road in a two-wheel drive vehicle, but the laborer, mechanic, or field surveyor can reasonable travel between the project and the person's permanent residence within one hour; or

(2) a laborer, mechanic, or field surveyor is not a domiciled resident of the project area, but has established permanent residence, with the intent to remain indefinitely, within 65 road miles of the project, or for a highway project, the mid-point of the project.

(Eff. 11/25/2018, Register 228)

Authority: AS 23.05.060 AS 36.05.030
AS 36.10.075 AS 36.05.010

8 AAC 30.054. Per diem instead of board and lodging.

(a) A contractor may pay a laborer, mechanic, or field surveyor per diem instead of providing board and lodging, when the following conditions are met

(1) the department determines that per diem instead of board and lodging is an established practice for the work classification; the department shall publish and periodically revise its determinations in the pamphlet *Laborers' and Mechanics' Minimum Rates of Pay*;

(2) the contractor pays each laborer, mechanic, or field surveyor the appropriate per diem rate as published and periodically revised in the pamphlet *Laborers' and Mechanics' Minimum Rates of Pay*; and

(3) the contractor pays the per diem to each laborer, mechanic, or field surveyor on the same day that wages are paid.

(b) A contractor may not pay per diem instead of board and lodging on a highway project located

(1) west of Livengood on the Elliot Highway, AK-2;

(2) on the Dalton Highway, AK-11;

(3) north of milepost 20 on the Taylor Highway, AK-5;

(4) each of Chicken on the Top of the World Highway; or

(5) south of Tetlin Junction to the Alaska-Canada border on the Alaska Highway, AK-2.

(Eff. 11/25/2018, Register 228)

Authority: AS 23.05.060 AS 36.05.030
AS 36.05.010 AS 36.10.075

8 AAC 30.056. Alternative arrangement.

Upon a contractor's written request, the commissioner may approve an alternative board and lodging or per diem arrangement, provided

(1) the arrangement does not reduce the laborer, mechanic, or field surveyor's wages below the prevailing wage rate; and

(2) the laborer, mechanic, or field surveyor voluntarily enters into and signs the written arrangement; a labor organization representing laborers, mechanics, or field surveyors may enter into the written agreement on their behalf.

(Eff. 11/25/2018, Register 228)

Authority: AS 23.05.060 AS 36.05.010
AS 36.05.030 AS 36.10.075

ARTICLE 3. Employment Preference.

Section:

8 AAC 30.061. Contracting agency reporting requirements.

(a) Within 20 days after awarding a contract or grant covered by AS 36.10.180, a state agency or political subdivision of the state shall file with the department a notice containing

(1) the name and address of the state agency or political subdivision awarding the contract or grant;

(2) the name of the head of the state agency or political subdivision awarding the contract or grant;

(3) the date of the contract or grant award;

(4) the total amount of the contract or grant;

(5) the location of the project; and

(6) the name and address of each contractor and subcontractor performing work on the project.

(b) A state agency or political subdivision of the state shall report immediately to the department any changes or additions regarding the notice required in (a) of this section which involve either

(1) a change in the identity of a contractor or subcontractor performing work on the project; or

(2) a change in the total amount of the contract if the change exceeds $10,000.

(Eff. 9/27/87, Register 103)

Authority: AS 36.10.075 AS 36.10.076

8 AAC 30.062. Employer reporting requirements.

(a) Upon request by the department, an employer required to file a quarterly report of employment and wages under AS 23.20.105 - 23.20.535 shall include in its quarterly report the following information for each employee:

(1) either the occupational title or the four-digit standard occupational classification code for the last position held by the employee; and

(2) the two-digit geographic area code of the employee's primary work location.

(b) The department will provide each employer required to submit information under (a) of this section with a list of occupational codes and titles applicable to its industry and a map showing the boundaries and code for each geographic area of the state.

(Eff. 9/27/87, Register 103)

Authority: AS 36.10.075 AS 36.10.190

8 AAC 30.064. Hiring preference for residents of zone of underemployment.

(a) For purposes of AS 36.10.150, the commissioner will determine that an area is a zone of underemployment if

(1) the rate of unemployment within the area is at least 10 percent greater than the average national unemployment rate for the most recent 12-month period for which unemployment insurance figures are available, or a longer period determined appropriate by the commissioner to take into account unemployment trends exceeding a one-year period; for example, if the national unemployment rate is seven percent, the rate of unemployment in the area must be at least 7.7 percent for the area to be a zone of underemployment;

(2) at least 10 percent of the jobs in a particular craft or occupation that would be used on a particular public-funded project could be filled by residents of the area who are trained or experienced in that craft or occupation; a determination under this paragraph will be based on data for the quarter of highest employment for the most recent calendar year for which data is available;

(3) the lack of employment opportunities has substantially contributed to serious social or economic problems in the area, as determined under 8 AAC 30.068; and

(4) the employment of nonresidents is a peculiar source of unemployment for residents of the area, as determined under 8 AAC 30.069.

(b) For a public-funded project, the percentage of positions which must be reserved under AS 36.10.150 for eligible residents, in a craft or occupation subject to a hiring preference, is the percentage that would result in a determination under (a) of this section that the area was not a zone of underemployment. The department will compute the percentage for an occupation or craft and announce it after the determination under (a) of this section is made.

(Eff. 9/27/87, Register 103; am 6/8/11, Register 198)

Authority AS 36.10.075 AS 36.10.150

8 AAC 30.068. Determination that lack of employment opportunities has substantially contributed to serious social or economic problems.

For purposes of AS 36.10.150 - 36.10.175 and this chapter, the lack of employment opportunities has substantially contributed to serious social or economic problems if changes in indicators of social and economic problems are linked to changes in the number of people who want to work and are unable to obtain work. The commissioner will use correlation analysis, testimony, professional studies, or other evidence to establish the relationship between unemployment and social or economic problems.

(Eff. 9/27/87, Register 103)

Authority: AS 36.10.075 AS 36.10.160
AS 36.10.175 AS 36.10.150
AS 36.10.170

8 AAC 30.069. Determination of peculiar source of unemployment.

For purposes of AS 36.10.150 - 36.10.175, and 8 AAC 30.064, the commissioner will determine that employment of nonresidents is a peculiar source of unemployment if more than 10 percent of the residents of an area who are trained or experienced in a craft or occupation are unemployed and more than 10 percent of the total number of workers employed in that area in that craft or occupation are not residents of the area.

(Eff. 9/27/87, Register 103; am 08/9/01; Register 159)

Authority: AS 36.10.075 AS 36.10.160
AS 36.10.175 AS 36.10.150
AS 36.10.170

(Eff. 9/27/87, Register 103; repealed 08/9/01; Register 159)

8 AAC 30.072. Determining residency.
The department will consider the following information in determining whether a person is a resident:

(1) where the person, the person's spouse, and the person's dependent children maintain their principal place of abode;

(2) where the person's dependent children are enrolled in school;

(3) the person's address on driver's licenses;

(4) the person's address on motor vehicle registrations;

(5) where the person's bank, credit union, or other financial accounts are maintained;

(6) the person's address on hunting, fishing, trapping, or other licenses;

(7) where the person is registered to vote;

(8) the person's address as shown on Department of Revenue permanent fund dividend records; and

(9) any other relevant facts.

(Eff. 9/27/87, Register 103)
Authority: AS 36.10.075 AS 36.10.14
AS 36.95.010(4)

8 AAC 30.073. Determination of resident hiring preferences.

(a) The commissioner will, at least biennially, determine whether an area is a zone of preference under AS 36.10 and this chapter if enough data is available to make that determination.

(b) The commissioner will include, in the annual resident hire report required under AS 36.10.130, all resident preference determinations made during the previous calendar year.

(c) When an area has been determined to be a resident hiring zone of preference, the department will notify all contractors of record who are or will be performing work on public-funded projects in the zone, and will notify all state agencies and political subdivisions that have public-funded projects in the zone.

(d) Upon notification under (c) of this section, the resident hiring preference requirements are effective immediately and apply to all public-funded projects in the zone.

(Eff. 9/27/87, Register 103; am 3/2/2008, Register 185)
Authority: AS 36.10.075

8 AAC 30.078. Resident hiring preferences in overlapping or multiple zones.

(a) If two areas are determined to be zones of preference under AS 36.10 and this chapter for the same resident hiring preference, and one of the zones is located entirely within the other, the preference requirements will apply to the larger zone.

(b) As provided in AS 36.10.150 - 36.10.175, if a public-funded project is located in more than one zone, the entire project is subject to the resident hiring preferences in effect in those zones.

(Eff. 9/27/87, Register 103)
Authority: AS 36.10.075

8 AAC 30.081. Compliance with preference requirements.

(a) To comply with AS 36.10.150 - 36.10.175, an employer subject to a resident hiring reference shall meet the relevant resident hire percentage, prescribed under this chapter, for each separate workweek. If an area has been determined to be a zone of preference for more than one type of resident hiring preference, the requirements of each preference apply. An employer may count the hire of an eligible resident toward satisfaction of each preference for which the resident qualifies.

(b) An employer subject to a resident hiring preference shall certify that each person hired as a resident under the preference was eligible for the preference at the time of hiring. The employer's certification must be provided on the weekly certified payroll form filed with the department (Form 07-6058); must include the name and residence address of each employee on the project, including supervisory employees; and must include a statement of compliance with all resident hiring preferences in effect.

(c) A labor organization that dispatches members for work on a public-funded project subject to a resident hiring preference shall certify to the employer at the time of dispatch that each person dispatched as a resident to meet a preference was eligible for the preference at the time of dispatch. The labor organization's certification must be in writing and must include the name and residence address of each person dispatched to the project.

(d) An employer subject to a resident hiring preference who is unable to find enough eligible residents may request from the department a waiver to hire an ineligible person for a specific job. The waiver request must be submitted to the department at least seven calendar days before the waiver is required to be considered for approval. Within three working days, the department shall determine whether the contractor's proposed minimum qualifications for the position covered by the waiver request are acceptable. The employer must place an advertisement using at least one public form of statewide advertising, such as a newspaper with statewide circulation, and must request that the Alaska Employment Service post a statewide facilitated recruitment job order through the Alaska Job Center Network. The advertisement and the job order must run for at least three calendar days, and both must

(1) state that the purpose of the request is to satisfy employment preference requirements of this state under AS 36.10 and that applicants must be residents of this state;

(2) list the job title and minimum qualifications as accepted by the department;

(3) identify the rate of pay including fringe benefits and other compensation, such as travel or room and board;

(4) identify the job location, expected duration of the job, and the number of expected daily and weekly work hours; and

(5) specify that all job seekers apply through the Alaska Job Center Network.

(e) An employer subject to a resident hiring preference who is unable to find enough eligible residents from either private sources or from the applicants referred by the state employment center under (d) of this section may request from the department a waiver to hire an ineligible person for a specific job. A request for a waiver under this subsection must contain

(1) a description of the job for which a waiver is requested, to include the wages, benefits, expected start date, work schedule, and job duration;

(2) the required qualifications for the job for which a waiver is requested;

(3) the qualifications of the person for whom the waiver is requested;

(4) the name and residence address of the person for whom the waiver is requested;

(5) a description of the employer's efforts to obtain an eligible resident from private sources for the job for which a waiver is requested;

(6) a copy of the recruitment report from the Alaska Job Center Network containing the following information and documentation;

(A) a copy of the job order, a listing of all applicants from the job order and other private recruitment efforts, and the listing of the applicants referred to the employer;

(B) the recruitment result report to show the number of individuals interviewed, hired or not hired;

(C) and, a statement from the Alaska Job Center Network that the employer did or did not comply with the recruitment requirements;

(7) the name and location of the project for which the waiver is requested; and

(8) an explanation of why each applicant referred was not hired.

(f) The department will grant a waiver to employ an ineligible person if the employer establishes, to the department's satisfaction, that there are no qualified eligible residents for a specific job. A waiver granted by the department expires six months from the approval date, at the completion of the specific job for which the ineligible person was hired, or at the time the ineligible person terminates, whichever occurs first. The department will either grant or deny the waiver within 20 working days after receiving the request for a waiver and the supporting evidence required under (e) of this section.

(g) A waiver granted under this section will be determined invalid unless the same benefits provided to the ineligible nonresident, such as housing and transportation to the work site, are also offered and provided to eligible resident applicants.

(Eff. 9/27/87, Register 103; am 3/2/2008, Register 185)

Authority: AS 36.10.070 AS 36.10.140 AS 36.180
AS 36.10.190 AS 36.10.075

8 AAC 30.082. Department determination of eligibility for preference.

(a) Following a determination under this chapter that an area is a zone of preference, the department's assistance may be requested in determining a person's eligibility for a resident hiring preference in a craft or occupation on a public-funded project. Application for an eligibility determination must be made on a form available from the division or from any state employment center. An applicant may mail or deliver the completed application to the division or to any state employment center.

(b) A person will be determined to be eligible for a resident hiring preference if the person establishes, to the department's satisfaction, that he or she meets the eligibility criteria in AS 36.10.140 and 36.10.150 - 36.10.175. An applicant will be notified of the department's determination.

(c) The department will, in its discretion, request that an applicant provide additional information to the department. The additional information will be made a part of the application, and will, in the department's discretion, be used in determining the applicant's eligibility.

(d) If a person is determined under this section to be ineligible, a new application may be submitted if there are new or previously undisclosed facts bearing upon eligibility. The applicant shall note that the application is not an initial application and shall set out the new or previously undisclosed facts.

(e) An employer may rely on the department's determination of eligibility under this section in meeting the requirements of AS 36.10.140(c) and 36.10.150 - 36.10.175.

(Eff. 9/27/87, Register 103)

Authority: AS 36.10.070 AS 36.10.075
AS 36.10.140

8 AAC 30.084. Appeals of eligibility determinations.

(a) A determination by the department under 8 AAC 30.082 that a person is not eligible for a resident hiring preference is final unless the applicant, or the applicant's representative, files a written appeal with the department within 20 days after receipt of the determination.

(b) An appeal must contain the name and mailing address of the applicant, the reasons for the appeal, and any arguments or information in support of the appeal.

(c) The department will, in its discretion, consider any relevant evidence in deciding an appeal even if the evidence is not admissible under Alaska rules of evidence. The department will, in its discretion, request additional information from the applicant. The applicant must respond in writing to a request for additional information within 10 days after receipt of the request. The department will, in its discretion, grant an extension of time to an applicant for good cause shown.

(d) Any notices or other documents in connection with an appeal will be mailed to the last address furnished by the applicant.

(e) The department will issue a written decision on the appeal within 30 days after receipt of the appeal or within 30 days after the submission of additional information requested under (c) of this section. The decision will include findings of fact and conclusions of law, and will be served on all parties to the appeal. The decision under this subsection is the final decision of the department.

(Eff. 9/27/87, Register 103)
Authority: AS 36.10.075 AS 36.10.140

8 AAC 30.086. Approval of job training programs.

(a) For the purposes of AS 36.10.140(a)(4), the following types of job training programs are approved:

(1) a program approved by the Alaska Commission on Postsecondary Education, or by an equivalent agency in another state if the program is located in another state; or

(2) a program approved by the United States Department of Labor, Office of Apprenticeship.

(b) For the purposes of AS 36.10.140(a)(4), the following types of training programs will, in the department's discretion, be approved:

(1) a program sponsored or conducted by an employer or union; or

(2) a program approved under the Workforce Innovation and Opportunity Act (WIOA) 2014, Pub. L. No 113-138).

(Eff. 9/27/87, Register 103; am 8/12/2018, Register 227)
Authority: AS 36.10.140

8 AAC 30.088. Computations regarding hiring preference requirements.

Computing the number of workers or positions for resident employment preference under AS 36.10 and this chapter might result in a number that contains a fraction. In such cases, the fraction is to be dropped. For example, a result of 4.8 workers should be shown as 4 workers.

(Eff. 9/27/87, Register 103)
Authority: AS 36.10.075

ARTICLE 4. INVESTIGATIONS AND HEARINGS.

Section:

8 AAC 30.090. Investigations, conference, and persuasion.

(a) The division will investigate potential violations of AS 36 (Public Contracts), on its own motion or on the complaint of any person.

(b) If, after preliminary investigation, the division finds that probably cause exists to believe that a violation of AS 36.05 or AS 36.10 has occurred, the division will provide the respondent believed to have violated AS 36.05 or AS 36.10 a copy of the complaint or a description of the alleged violation by personal service or certified mail to the last known address of the respondent and to the respondent's registered agent, if any. If respondent is a subcontractor, the division will also provide the prime contractor with a copy of the complaint or a description of the alleged violation by personal service or certified mail to the prime contractor's registered agent.

(c) The division will attempt to eliminate the alleged violation through conference and persuasion by providing the respondent and prime contractor an opportunity for an information conference to discuss the matter and attempt to eliminate the alleged violations.

(d) If an alleged violation is not rectified by the informal conference, or if the respondent or prime contractor fails to attend the conference without good cause, the division will notify the respondent and the prime contractor in writing of the failure of the informal conference. The division will include in its notification a summary of the division's investigative findings.

(e) The respondent or the prime contractor may request a hearing by sending the division a written request postmarked not later than 30 days of the date of the division's notification of the failure of the informal conference under (d) of this section. The hearing request must identify any investigative findings in dispute and the basis for the dispute, including any affirmative defenses. Upon receipt of a request for a hearing, the division will refer the case for hearing. Hearings under this section will be conducted in accordance with 8 AAC 30.100.

(f) If no timely request for hearing is received, the division's investigative findings will be final.

(Eff. 12/4/76, Register 60; am 7/30/82, Register 83; am 1/2/91, Register 116; am 8/9/01, Register 159; am 3/2/2008, Register 185; am 8/12/2018, Register 227)
Authority: AS 23.05.060 AS 36.10.075
AS 36.10.120 AS 36.05.030

8 AAC 30.100. Hearings.

(a) Both respondent and complainant may be represented by counsel. If counsel for a party notifies the division, in writing, that counsel is appearing in the matter on behalf of the party, service of notices, memoranda, recommendations, or other papers will be considered sufficient if made on counsel.

(b) The division will give notice to the respondent and to the complainant, if any, of the time and place of the hearing on an alleged violation of AS 36.05 or AS 36.10 by certified mail, or by personal service at least 15 days before the hearing. Mailing to the last known address or the address listed with the division of occupational licensing for construction contractors shall be considered valid service. The notice will contain a copy of the complaint and a description of the alleged violation which will be considered at the hearing.

(c) The location of the hearing will be designated by the division with due regard for the convenience of all persons involved. All hearings are public.

(d) The director will appoint a wage and hour investigator or contract with an attorney licensed in this

state to serve as hearing officer, to preside over the hearing, and to make findings of fact and conclusions of law to be used as a basis for the director's decision. An investigator who has investigated the alleged violations or taken part in the informal conference under 8 AAC 30.090 will not be appointed hearing officer.

(e) The hearing officer has full authority to control the procedure of the hearing and to rule on all motions and objections.

(f) The hearing officer may admit any relevant evidence, regardless of the existence of any common law or statutory or court rule which might make improper the admission of such evidence over objection in civil actions, if it is the sort of evidence on which responsible persons are accustomed to rely in the conduct of serious affairs. Hearsay evidence may be used for the purpose of supplementing or explaining any direct evidence but will not be sufficient in itself to support a finding unless it would be admissible over objection in civil actions.

(g) Oral evidence must be given under oath or affirmation. A record of the proceedings will be kept.

(h) The hearing officer, respondent, and complainant may

(1) call and examine witnesses;

(2) cross-examine opposing witnesses on any matter relevant to the issue at hand even though that matter was not covered in direct examination; and

(3) introduce exhibits.

(i) If the respondent or complainant does not testify in that person's own behalf, that person may be called and examined as if under cross-examination.

(j) The hearing officer may, for good cause shown, continue a hearing from day to day or recess it to a later date or to a different place by announcement at the hearing or by notice.

(Eff. 12/4/76, Register 60; am 1/2/91, Register 116; am 8/9/01; Register 159)

Authority: AS 23.05.060 AS 36.10.075
AS 36.10.120 AS 36.05.030

8 AAC 30.110. Decisions.

(a) The hearing officer will prepare a written recommendation to the director containing findings of fact and conclusions of law. A copy of the recommendations will be mailed or otherwise delivered to the respondent and to the complainant, if any. The director will act upon the hearing officer's recommendation and render a final decision within 30 days.

(b) Upon making a decision, the director will serve it upon the respondent and complainant, if any, by personal service or certified mail, return receipt requested. If the director determines that the respondent has violated AS 36.05 or AS 36.10, the decision may contain such cease and desist orders and other orders and relief, including a recommendation that the respondent be placed on a list of violators who are barred from performing public contracts as provided under AS 36.05.090 and AS 36.10.090, as the director considers appropriate to correct the unlawful conduct. If, after the director's decision finding the respondent in violation of AS 36.05 or AS 36.10 is served on the respondent, the director determines that the respondent has not ceased or has failed to correct the unlawful conduct, the director will refer the matter to the attorney general for enforcement.

(Eff. 12/4/76, Register 60; am 8/9/01, Register 159)

Authority: AS 23.05.060 AS 36.10.075
AS 36.10.125 AS 36.05.030
AS 36.10.120

ARTICLE 5. DEBARMENT.

Section:

8 AAC 30.200. Review and Recommendations.

(a) Contractors or subcontractors who have disregarded their obligations to employees as defined in 8 AAC 30.900 may be subject to debarment for three years.

(b) Debarment will be considered in those cases in which a contractor or subcontractor has committed willful, aggravated or repeated violations of the provisions of AS 36.05.

(c) The standards to be considered in determining if the contractor's or subcontractor's violations merit recommendation for debarment are

(1) falsification or concealment of records;

(2) refusal to pay prevailing wages;

(3) failure to pay prevailing wages;

(4) extent and seriousness of the violations; or three or more violations on the same or separate contracts within a five-year period.

(d) A prime contractor may be considered for debarment in cases where the violations are committed by its subcontractors. Criteria considered in determining whether a prime should be debarred are:

(1) a history of subcontractors violating under that prime;

(2) failure of the prime contractor to notify its subcontractors of the requirements of AS 36.05; and

(3) informing subcontractors how not to comply, or assisting a subcontractor in not complying with AS 36.05.

(e) At the completion of an enforcement action against a contractor or subcontractor for a violation of AS 36.05, the investigator will review the file to determine if a recommendation for debarment is warranted in accordance with (c) or (d) of this section. If it is determined that a recommendation for debarment is proper, the investigator will forward the recommendation citing specific statutes through his or her supervisor to the director. The director will review the recommendation of

the investigator and determine if the case will be referred for hearing.

(f) When, as a result of an investigation conducted by the department, the director finds reasonable cause to believe that a contractor or subcontractor has committed willful or aggravated violations of AS 36.05 which constitute a disregard of its obligations to employees under that chapter, the director shall notify by personal service or certified mail to the last known address, the contractor or subcontractor and its responsible officers, of the finding. The director shall afford the contractor or subcontractor and any other parties notified an opportunity for a hearing as to whether debarment action should be taken under AS 36.05.090. The director will furnish to those notified a summary of the investigative findings. If the contractor or subcontractor or any other parties notified request a hearing, the request must be made by letter postmarked within 30 days of the date of the letter from the director. The request must set forth any findings which are in dispute and the reasons therefore, including any affirmative defenses to be raised. Upon receipt of a request for a hearing, the director shall refer the case for hearing to determine the facts in dispute.

(g) Hearings under this section shall be conducted in accordance with 8 AAC 30.210. If no hearing is requested within 30 days of the date of the director's letter, the director's findings shall be final.

(Eff. 1/2/91, Register 116)

Authority: AS 23.05.060 AS 36.05.030
AS 36.05.090

8 AAC 30.210. Hearings.

(a) The respondent may be represented by counsel. If counsel for a party notifies the division, in writing, that counsel is appearing in the matter on behalf of the party, service of notices, memoranda, recommendations, or other papers will be considered sufficient if made on counsel.

(b) The division will give notice to the respondent of the time and place of the hearing on an alleged violation of AS 36.05 by certified mail or by personal service at least 15 days before the hearing. The notice will contain a summary of investigative findings that will be considered at the hearing. Service on the address a contractor or subcontractor has provided to the division of occupational licensing for the purpose of obtaining a contractor's license, or the last known address furnished by the contractor or subcontractor, shall be considered valid service.

(c) The location of the hearing will be designated by the division with due regard for the convenience of all persons involved. All hearings are public.

(d) The director will appoint a wage and hour investigator or contract with an attorney licensed in this state to serve as hearing officer to preside over the hearing and to make findings of fact and conclusions of law to be used as a basis for the director's decision. An investigator who has investigated the alleged violations or taken part in the informal conference under 8 AAC 30.090 will not be appointed hearing officer.

(e) The hearing officer has full authority to control the procedure of the hearing and to rule on all motions and objections.

(f) The hearing officer may admit any relevant evidence, regardless of the existence of any common law or statutory or court rule that might make improper the admission of such evidence over objection in civil actions, if the evidence is the sort of evidence on which responsible persons are accustomed to rely in the conduct of serious affairs. Hearsay evidence may be used for the purpose of supplementing or explaining any direct evidence but is not sufficient in itself to support a finding unless the hearsay evidence would be admissible over objection in civil actions. The hearing officer may issue subpoenas at the request of either party or on the hearing officer's own motion.

(g) Oral evidence must be given under oath or affirmation. A record of the proceedings will be kept.

(h) The hearing officer, respondent, and complainant may

(1) call and examine witnesses;

(2) cross-examine opposing witnesses on any matter relevant to the issue at hand even though that matter was not covered in direct examination; and

(3) introduce exhibits.

(i) If the respondent does not testify in the respondent's own behalf, that person may be called and examined as if under cross-examination.

(j) The hearing officer may, for good cause shown, continue a hearing from day to day or recess it to a later date or to a different place by announcement at the hearing or by notice.

(k) The department has the burden of proving that the alleged violations have occurred. The standard of proof required is by a preponderance of the evidence.(Eff. 1/2/91, Register 116; am 8/9/01, Register 159)

Authority: AS 23.05.060 AS 36.05.030
AS 36.05.090

8 AAC 30.220. Decisions.

(a) Within 90 days of concluding a hearing, the hearing officer will prepare a written recommendation to the director containing findings of fact and conclusions of law. A copy of the recommendations will be mailed or otherwise delivered to the respondent and to the complainant, if any. The director may accept the recommendations, in part or in whole, or may remand the matter for further hearing. The director must act upon the hearing officer's recommendation and render a decision within 30 days.

(b) Upon making a decision, the director will serve it upon the respondent by personal service or certified mail. If the director determines that the respondent has disregarded its obligations to employees under AS 36.05, the decision will order that the respondent be placed on a list of violators who are barred from performing public contracts as provided under AS 36.05.090.

(c) In the absence of or in addition to action of a state disbursing officer or local fiscal officer, the department will distribute a list reflecting the names of debarred contractors and the effective period of the debarment.
(Eff. 1/2/91, Register 116; am 3/2/2008, Register 185)
Authority: AS 23.05.060 AS 36.05.030
AS 36.05.090

8 AAC 30.230. Appeals.
The director's decision is final. Appeals must be filed in superior court in accordance with Alaska court Rules of Appellate Procedure.
(Eff. 1/2/91, Register 116)
Authority: AS 23.05.060 AS 36.05.030
AS 36.05.090

8 AAC 30.240. Request for Removal.
Any person or firm debarred under AS 36.05.090 and 8 AAC 30.220 may, in writing, request removal from the debarment list after six months from the date the debarment took effect. All requests should be directed to the director of labor standards and safety and must contain a full explanation of the reasons why such person or firm should be removed from the debarred list. In cases where the contractor or subcontractor failed to make full restitution of wages and fringe benefit contributions to all underpaid employees, a request for removal will not be considered until all underpayments, including appropriate interest, are made. In other cases, the director will examine the facts and circumstances surrounding the violative practices which caused the debarment and issue a decision as to whether or not the person or firm has demonstrated a current responsibility to comply with AS 36.05 and therefore should be removed from the ineligible list.
(Eff. 1/2/91, Register 116)
Authority: AS 23.05.060 AS 36.05.030
AS 36.05.090

ARTICLE 6. GENERAL PROVISIONS.

Section:

8 AAC 30.900. General Definitions.
In this chapter and in AS 36

(1) "commissioner" means the commissioner of labor and workforce development;

(2) "crafts" and "occupations" mean the occupations identified in the *Standard Occupational Classification Manual* (2018 edition);

(3) "debar" or "debarment" means being placed on a list of persons who are barred from performing public contracts under AS 36.05.090;

(4) "department" means the Alaska Department of Labor and Workforce Development;

(5) "director" means the director of the labor standards and safety division of the department;

(6) "disregarded their obligations to employees" (or a grammatical variant) as used in AS 36.05.090 and this chapter includes any of the following:

(A) failure or refusal to pay basic prevailing wages;

(B) failure or refusal to pay fringe benefits into the appropriate union trust, approved private pension plan, or other approved fringe benefit plan within applicable time limits;

(C) failure to pay at least once a week;

(D) failure to pay unconditionally; or

(E) failure to report wage payments to employees accurately and timely as required by AS 36.05.040;

(7) "division" means the labor standards and safety division of the department;

(8) "eligible resident" means a person who meets the requirements of AS 36.10.140(a) and AS 01.10.055 and who, under 8 AAC 30.072, would be determined to be a resident of an area that has been determined by the department under this chapter to be a resident hiring zone of preference;

(9) "hire" and its derivatives mean engaging an individual to work on a public-funded project, and includes the transfer of an existing employee from one location to another or from one craft or occupation to another;

(10) "interest" as used in AS 36.05.090 means more than five percent investment in a partnership or association, more than ten percent share in stock in a corporation, or holding any elected or appointed office in the business entity;

(11) "majority penetration" means that the majority of qualified laborers, mechanics, and field surveyors working at a particular skill level in a particular job class, as indicated by response to a department survey, receive a particular wage; "marginally employed" means that a person is employed for fewer than 30 hours a week and the person wishes to work 30 hours or more a week;

(12) "owner/operator" as used in 8 AAC 30.020 (d) means those independent contractors who by virtue of the duties they perform, or the manner in which they perform them, cannot be considered employees of the person or entity who has contracted for their services. In making this determination, the department will use the criteria established by the Alaska Supreme Court in Jeffcoat v. State, Dept. of Labor, Sup. Ct. Op. No. 3162 (File No. S-1444), 732 P.2d 1073 (1987). These criteria include

(A) the degree of the alleged employer's right to control the manner in which the work is to be performed;

(B) the alleged employee's opportunity for profit or loss depending upon their managerial skill;

(C) the alleged employee's investment in equipment or materials required for their task, or their employment of helpers;

(D) whether the service rendered requires a special skill;

(E) the degree of permanence of the working relationship; and

(F) whether the service rendered is an integral part of the alleged employer's business.

(13) [repealed 8/9/2001;]

(14) "person" and "persons" as used in AS 36.05.090 means a person as that term is defined in AS 01.10.060 (8);

(15) "prevailing wage rate" means the total of the basic hourly rate, health and welfare, pension, legal service, apprentice training payments and other fringe benefits which inure to the benefit of the worker, as published by the department;

(16) "public-funded project" means a project described in AS 36.10.180 and AS 36.95.010 (3);

(17) "qualified" means having the education, training and experience necessary to perform the duties and satisfy the terms and conditions which are usual for the industry or profession or having the status specified in AS 36.95.010 (4);

(18) "state agency" means a state agency described in AS 36.10.180 (a)(1);

(19) "state employment centers" means those offices maintained by the department whose functions are to aid the unemployed in finding employment;

(20) "underemployed" means employed in a job that requires less skill or training than a job for which the employee is trained and qualified.

(21) “domiciled resident” means a person living within 65 road miles of a public construction project, or in the case of a highway project, the mid-point of the project, for at least 12 consecutive months prior to the award of the public construction project;

(22) “employed on the project” means the time period from the date the laborer, mechanic, or field surveyor first reports on-site to the project through the final date the person reports on-site to the project.

(Eff. 7/8/73, Register 47; am 12/4/76, Register 60; am 7/30/82, Register 83; am 9/27/87, Register 103; am 1/2/91, Register 116; am 8/9/01, Register 159; am 8/12/2018, Register 227; am 11/25/2018, Register 228)

Authority: AS 23.05.060 AS 36.10.075
AS 36.95.010 AS 36.05.030
AS 36.10.140

Editor's note:

Copies of the Standard Occupational Classification Manual adopted by reference in 8 AAC 30.900(2) are available for review at the Anchorage, Fairbanks, and Juneau offices of the department.

As of Register 151 (October 1999), the regulations attorney made technical revisions under AS 44.62.125 (b)(6) to reflect the name change of the Department of Labor to the Department of Labor and Workforce Development made by ch. 58, SLA 1999 and the corresponding title change of the commissioner of labor.

8 AAC 30.910. Definition of "on-site."

(a) In AS 36.95.010(3), "on-site" means at the physical place where the construction called for in a contract will remain when work on it has been completed and at other property used by the contractor or subcontractor in the construction which can reasonably be said to be included in the site because of proximity. The scope of “on-site”

(1) has the following exceptions:

(A) for a truck driver employee or truck driver owner/operator working for a contractor or subcontractor on the project, “on-site” encompasses all round-trip truck driving activity associated with delivering or hauling away materials, equipment, or supplies for the purposes of completing a public construction contract;

(B) for a truck driver employee or truck driver owner/operator who is working for a contractor or subcontractor on the project, and who, for the purposes of completing a public construction contract, hauls materials, equipment, or supplies away from a public construction project footprint, but does not return to the public construction project, “on-site” encompasses the haul-away activities until the truck is offloaded;

(C) a truck driver performing delivery as an employee of a bona fide material supplier or common carrier is not “on-site” when delivering materials from a location that is not “on-site,” including that material supplier’s home yard or warehouse, if that location is not dedicated exclusively or nearly so to performance of one or more public construction projects;

(2) is extensive for larger projects, including airports, dams and roads, and includes the whole area in which the contract construction activity will take place; work areas separate from the physical footprint of the construction activity, including fabrication plants, mobile factories, batch plants, borrow pits, rock quarries, job headquarters, tool yards, and similar work areas, are “on-site” if they are in close proximity and are dedicated exclusively or nearly so to performance of one or more public construction projects during the period of contract construction activity;

(3) for smaller projects, normally includes no more than the building itself and its grounds and other land or structures that are “down the block” or “across the street” that the contractor or subcontractor uses in performance of a particular public construction project.

(b) Laborers, mechanics, or field surveyors who perform duties within the limits of “on-site” are subject to the department’s wage decision for all hours spent working “on-site.” Workers who, under this subsection, are subject to the department’s wage decision include

(1) flaggers;

(2) barricade suppliers who set up or move barricades or other traffic control devices;

(3) employees of bona fide material suppliers or common carriers who perform work “on-site,” other than mere delivery, including drivers or delivery workers assisting in specific placement of asphalt or concrete during construction operations, stocking materials in rooms or on floors, or otherwise performing work in construction;

(4) workers who perform mobilization or demobilization activities;

(5) workers contracted or employed by material or equipment suppliers who erect, clean, repair, construct, or perform operational checks, other than contractually obligated warranty work, on equipment or material located "on-site"; and

(6) laborers, mechanics, or field surveyors who are engaged by a person or business that is hired or contracted by a prime construction contractor or subcontractor to provide services that are integral and necessary to the construction project; workers who are subject to this paragraph

(A) shall be considered to be "on-site" in the performance of those duties that the contractor or subcontractor was required to perform;

(B) include a trucking firm other than a common carrier whose services are engaged by a construction contractor or subcontractor on a public works job to pick up materials from a supplier's delivery point and transport them to the job site.

(c) Not included in "on-site" are permanent home offices, branch plants, fabrication plants, tool yards, and other establishments of a contractor or subcontractor whose locations and continuance are governed by its general business operations. This is so even though mechanics, laborers, and field surveyors working at these establishments may repair or maintain machinery used in contract performance or make doors, windows, frames, or forms called for by the contract while continuing normal commercial work. Regardless of the activities performed at these establishments, the department's wage decision does not apply, because they are not "on-site." However, if mechanics, laborers, or field surveyors are required to go to a place that is "on-site" to perform activities on the contract, the department's wage decision is applicable for the actual time so spent, not including travel.

(d) For purposes of this section, a location or work area, or the existence or continuing operation of an enterprise, is dedicated exclusively or nearly so to one or more public construction projects if

(1) the location, work area, or enterprise is established in conjunction with one or more public construction projects; and

(2) during the year before a public construction project and during the life of a public construction project, less than 10 percent of documented sales or other uses are attributed to non-public construction projects.

(e) For purposes of this section, a site is in proximity to a public construction project if it is nearby the public construction project footprint and used on a regular and recurring basis to complete the public construction contract. The department will determine whether a site is in proximity to a public construction project on a project-by-project basis, taking into account

(1) the type of project;

(2) whether the use of a nearby site is required for completion of the project;

(3) whether the area of contract operations is developed or undeveloped; and

(4) the geographical lay of the land.

(f) In this section,

(1) "bona fide material supplier"

(A) means a commercial enterprise that holds itself out to the public as offering to supply sand, gravel, ready-mixed concrete, hot asphalt, or other construction materials to multiple clients for both public and private jobs; does not include a commercial enterprise whose existence or continuing operation is dedicated exclusively or nearly so to one or more public construction projects;

(2) "common carrier"

(A) means a commercial enterprise that holds itself out to the public as offering to transport freight or passengers and delivers multiple types of materials to multiple clients for both public and private jobs on a recurrent basis over established routes; in this subparagraph, "freight"

(i) means materials, supplies, and equipment, other than materials described in (ii) of this subparagraph;

(ii) does not include dirt, sand, gravel, rock, or other naturally occurring earth materials;

(B) does not include a commercial enterprise whose existence or continuing operation is dedicated exclusively or nearly so to one or more public construction projects.

(Eff. 7/30/82, Register 83; am 1/2/91, Register 116; am 8/9/2001, Register 159; am 3/24/2011, Register 197)

Authority: AS 23.05.060 AS 36.05.030
AS 36.10.075

8 AAC 30.920. Definition of "Economic Region."

In AS 36.10, "economic region" means a geographic area of the state sharing similar economic or demographic characteristics.

(Eff. 9/27/87, Register 103)

Authority: AS 36.10.075 AS 36.10.990

Editor's note:

Forms and any other assistance needed for compliance with 8 AAC 30 may be obtained by contacting any state employment center or the Department of Labor and Workforce Development, Wage and Hour Administration, 1251 Muldoon Road, Suite 113, Anchorage, Alaska 99504.

PAMPHLET NO. 400 - INDEX
TITLE 36 - PUBLIC CONTRACTS

CITY OF VALDEZ
Project Title: Fire Station Hazmat Remediation and Ventilation Upgrades
Project No.: 19-350-1605
Contract No.: 1572

TO: **All Recipients** **Date: December 16, 2019**

SUBJECT: **Addendum No.1**

This one (1) page Addendum forms a part of the project scope documents and modifies the project scope for the above-referenced project. **Acknowledge receipt of this Addendum in the space provided on the Bid Form**. Failure to do so may subject the Bidder to disqualification.

This Addendum makes the following changes and/or clarifications:

Responses to Questions

1) Can a contractor who is Non-IICRC certified be allowed to bid the mold removal associated with the Fire Station 1 Remediation project?

Response: The contractor awarded the contract must be IICRC certified to work this project along with the supervisor. Workers do not need certification as long as they are under direction of an IICRC certified supervisor. If the contractor and its supervisor do not have the proper certification they cannot be awarded the project. No waiver.

2) Will the proficiency demonstrated for AMIAQC be waived for a supervisor with IAQA or IICRC certification.

Response: An IICRC certified supervisor is acceptable for this project.

End of Addendum

CITY OF VALDEZ
Project Title: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project No.: 19-350-1605
Contract No.: 1572

TO: **All Recipients** **Date: December 18, 2019**

SUBJECT: **Addendum No.2**

This one (1) page Addendum forms a part of the project scope documents and modifies the project scope for the above-referenced project. **Acknowledge receipt of this Addendum in the space provided on the Bid Form**. Failure to do so may subject the Bidder to disqualification.

This Addendum makes the following changes and/or clarifications:

Clarification of specifications – Mold Remediation Contractor Qualifications:

SECTION 02-85-00-1 and SECTION 02-85-00-2

Contractors who do not meet IICRC certification requirements for mold remediation will be allowed to request, in writing, to be pre-approved to bid this project. Contractors must present three previous commercial microbial remediation projects of similar scope in their request. All requests must be received a minimum of one week before the project bid opening. Contractors are still required to follow IICRC means, methods, and industry best practices as outlined in the specifications. The Contractor shall bear the cost of all work associated with failed post-remediation evaluations.

End of Addendum

CITY OF VALDEZ
Project Title: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project No.: 19-350-1605
Contract No.: 1572

TO: **All Recipients** **Date: December 20, 2019**

SUBJECT: **Addendum No.3**

This one (1) page Addendum forms a part of the project scope documents and modifies the project scope for the above-referenced project. **Acknowledge receipt of this Addendum in the space provided on the Bid Form**. Failure to do so may subject the Bidder to disqualification.

This Addendum makes the following changes and/or clarifications:

The following corrections, changes, additions, deletions, revisions, and or clarifications are hereby made a part of the bid specifications for the above referenced job, dated December 12, 2019. In case of conflicts between this Addendum and previously issued documents, this Addendum shall take precedence.

General

The contractor shall separate all equipment and labor for the Source Capture Diesel Fume Extraction System as Alternate Item No. 1.

Item 1: **Reference: Sheet M0.1**

a. Schedule - Source Capture Diesel Fume Extraction System.

b. Add the equipment listing to Additive Alternate No. 1

Item 2: **Reference: Sheet M2.1**

a. Detail 1 – Remodel Plan - First Floor

b. Add the Source Capture Diesel Fume Extraction System as indicated by Sheet Notes 2, 3, 4 & 5 to Additive Alternate No. 1.

Item 3: **Reference: Sheet E2.1**

a. Detail 1 – First Floor Remodel Plan

b. Add PB-1 and PB-1 Control Panel to Additive Alternate No. 1.

c. Sheet Note No. 4 Prefix with Additive No. 1.

End of Addendum

CITY OF VALDEZ
Project Title: Fire Station 1 Hazmat Remediation and Ventilation Upgrades
Project No.: 19-350-1605
Contract No.: 1572

TO: **All Recipients** **Date: December 31, 2019**

SUBJECT: **Addendum No. 4**

This Eleven (11) page Addendum forms a part of the project scope documents and modifies the project scope for the above-referenced project. **Acknowledge receipt of this Addendum in the space provided on the Bid Form**. Failure to do so may subject the Bidder to disqualification.

This Addendum makes the following changes and/or clarifications:

Request for Pre-approval to Bid

Per request, the City of Valdez will grant Alaska Abatement Corporation approval to bid the mold remediation portion of the Fire Station 1 Hazmat Remediation and Ventilation Upgrades project.

Responses to Questions

1) The room numbers in the mold remediation and the asbestos removal and disposal specifications do not match the room numbers on the plans. Can you please clarify?

Response: Disregard the numbers on the specification and drawings. Use the room names that are on the drawings to identify areas of work.

2) Does the sheetrock remediation on the west wall of vehicle bay 3 go all the way to the ceiling?

Response: No. The remediation on the west wall of vehicle bay 3 only goes up to 8 feet. See section 02 82 13-1 in the specifications.

Additive Alternate #1 Basis of Design

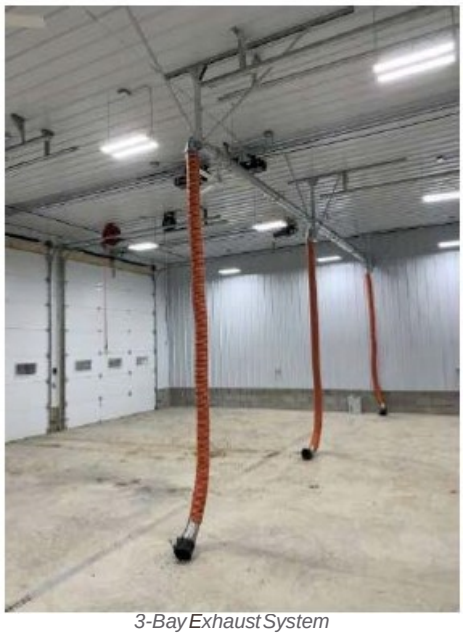
See attached specifications for the Fume-a-vent Exhaust Removal System.

FUME-A-VENT

EXHAUST REMOVAL SYSTEMS

(866) 455-2132
info@fumeavent.com

FIRE STATION EXHAUST SYSTEMS



3-Bay Exhaust System

DESIGNED FOR FIRST RESPONDERS

Vehicle exhausts from fire trucks can become extremely hazardous without proper ventilation. Fume-A-Vent offers exhaust removal systems are specially designed for first responder vehicles. Source capture systems protect firefighters from harmful fumes. and quick detachment mechanisms won't interfere with emergency exits.

Quick-Detach Source capture

Fume-A-Vent PB 12 Series Pressure Blowers

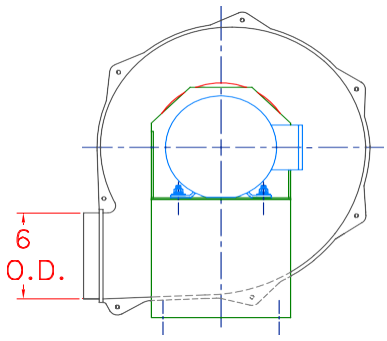
Date 7/12	Part No. PB12-		TAB 12-G

This exhaust fan is designed for the purpose of exhausting most particulates as well as volatile organic compounds (VOC's) created by internal combustion engines. These fans feature high pressure 3/16" minimum thickness radial flat wheels, direct drive, and are AMCA Type B spark resistant. Housing shall be of Aluminum/Magnesium alloy created by 2-piece construction with gaskets and steel hardware. Fan shall be in tested accordance with AMCA Standard 210.

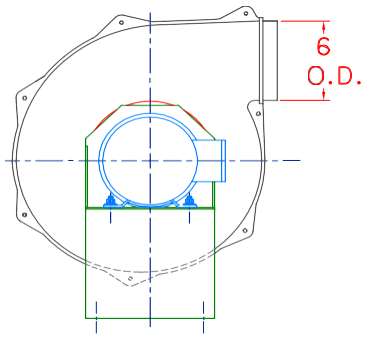
The motor is TEFC UL and CSA rated, and factory balanced by removal of material with no additional weights used. It shall run at 3450 RPM and can operate under normal temperatures up to 150 degrees. Motor bases made with 12 gauge steel minimum. High temperature upgrade available for use up to 400 degrees. To be manufactured in the United States and meets all local, state, and federal government standards.

Model No	H.P.	Phase	CFM	Inlet	Outlet	Weight	Voltage	FLA	Breaker Size	DBA @ 5'	Frame
PB12-1-1-X	1	1	642 CFM @ 4" w.g.	7"	6"	63 Lbs.	115/230V	12.8 / 6.4-6.4	20A/15A	75	56C
PB12-1-3-X	1	3	642 CFM @ 4" w.g.	7"	6"	63 Lbs.	208/230V/460V	3.6 / 1.8	15A	75	56C
Model No	**H.P.**	**Phase**	**CFM**	**Inlet**	**Outlet**	**Weight**	**Voltage**	**FLA**	**Breaker Size**	**DBA @ 5'**	**Frame**
PB12-1.5-1-X	1.5	1	795 CFM @ 4" w.g.	7"	6"	78 Lbs.	115/230V	15 / 7.5	20A	76	56C
PB12-1.5-3-X	1.5	3	795 CFM @ 4" w.g.	7"	6"	78 Lbs.	208/230/460V	4.9 - 4.6 / 2.3	20A	76	56C
Model No	**H.P.**	**Phase**	**CFM**	**Inlet**	**Outlet**	**Weight**	**Voltage**	**FLA**	**Breaker Size**	**DBA @ 5'**	**Frame**
PB12-2-1-X	2	1	873 CFM @ 4" w.g.	7"	6"	91 Lbs.	115/230V	23 / 11.5	20A	77	56C
PB12-2-3-X	2	3	873 CFM @ 4" w.g.	7"	6"	91 Lbs.	208/230/460V	6.2 - 5.8 / 2.9	20A/15A	77	56C
Model No	**H.P.**	**Phase**	**CFM**	**Inlet**	**Outlet**	**Weight**	**Voltage**	**FLA**	**Breaker Size**	**DBA @ 5'**	**Frame**
PB12-3-1-X	3	1	1222 CFM @ 4" w.g.	7"	6"	115 Lbs.	115V/230V	26.8 / 14.4	20A	81	182T
PB12-3-3-X	3	3	1222 CFM @ 4" w.g.	7"	6"	115 Lbs.	208/230/460V	8.4 / 7.6 - 3.8	15A	81	56C

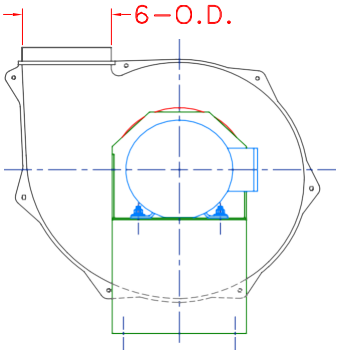
Typical Discharge directions shown below with Outlet Diameter. Inlet located at center mark.



CW Bottom Horizontal Discharge



CW Top Horizontal Discharge



CW Up Blast Discharge

NOTE: More fan discharge directions avaliable for all fans, including clockwise and counter-clockwise options.

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Fume-A-Vent Fan Mounting Examples

Date 7/12	Part No. PB-XX-X	Pressure Blowers	TAB 12-J-2

Below is the most common methods for mounting our Pressure Blower Series Fans. Unistrut is generally utilized as an inexpensive, easy, and quick installation with the bolt holes included in the base of the fan. We do not typically provide Unistrut or hardware, as it is available at most local supply stores. Please consult our experts for more assistance in choosing mounting styles. Venting either through the roof or wall is advised as shown below.

Ceiling Joist Mounting-
Unistrut Hung from Ceiling Joists

Unistrut Structure-
Unistrut can be Fabricated into Joists via Hardware

Custom Wall Mounting-
Unistrut Utilized on Both Sides of Wall via Hardware

Custom Shelf Mounting-
Fabricated Metal Shelf with Unistrut Support

Note: Pre-made Wall Mounting Brackets available as an option for additional cost. Please refer to TAB 12-C for information.

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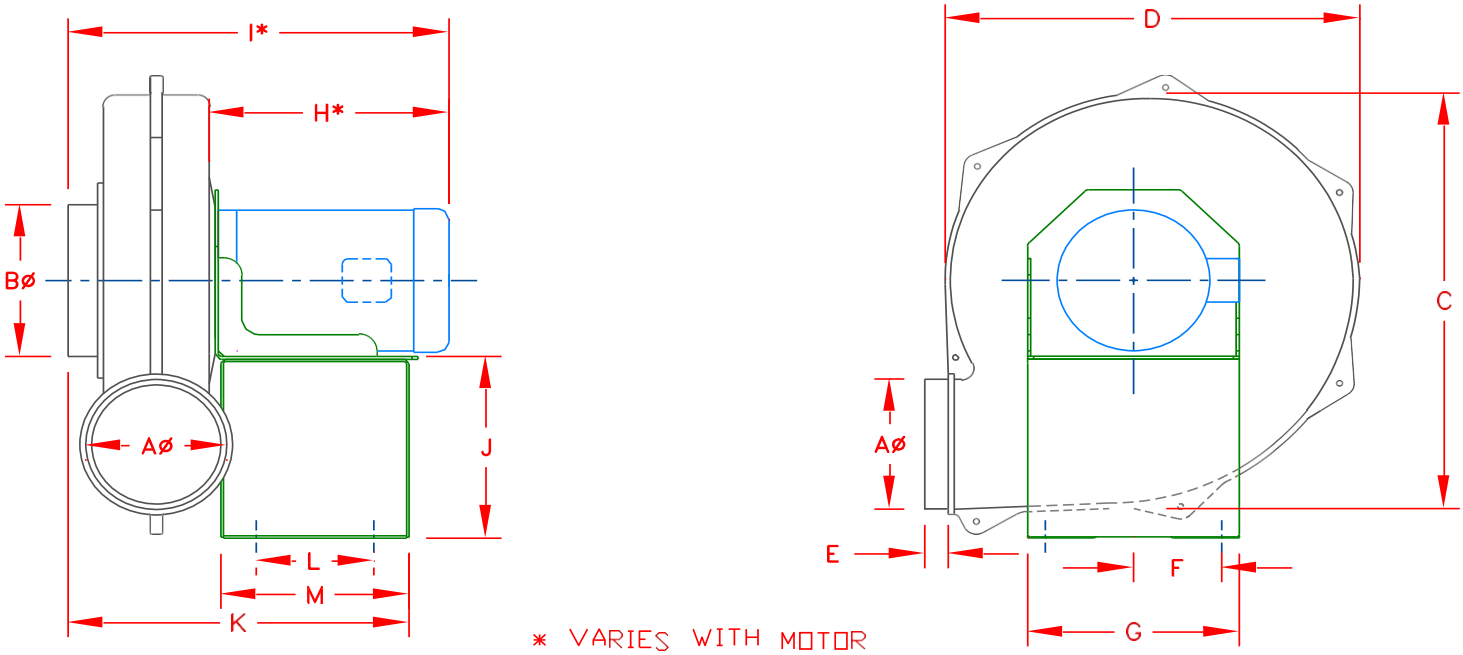
Fume-A-Vent PB Series Fans Dimensions

Date 7/12	Part No. PBXX	Pressure Blowers	TAB 12- J

All Dimensions in Inches ± 1/8"

Model Number	Motor Frame	A Outlet	B Inlet	C	D	E	F	G	H*	I*	J	K	L	M
PB-9	56	4	5	15-1/2	14	1	2-3/4	7	12-1/2	17-11/16	6-7/8	13-5/16	5-3/4	7-7/8
	143T	4	5	15-1/8	14	1	3-3/4	9	12	17-11/16	8-1/4	13-13/16	5	8
PB-10	56	5	6	18	16-5/16	1	2-3/4	7	12-1/2	18	6-7/8	13-11/16	5-3/4	7-7/8
	143T	5	6	18	16-5/16	1	3-3/4	9	12	17-1/2	8-1/4	13-3/16	5	8
PB-12	56	6	7	21-1/8	17-5/8	1	3-3/4	9	12-1/2	18-3/4	8-1/4	14-1/2	5	8
	143T	6	7	21-1/8	17-5/8	1	3-3/4	9	12	18-1/4	8-1/4	14-7/8	5	8
PB-14	56	6	7	22-7/16	19-3/16	1	4-15/16	12	12-1/2	19-3/4	9-15/16	20	8-3/4	11-3/4
	143T	6	7	22-7/16	19-3/16	1	4-15/16	12	12	19-1/4	9-15/16	20	8-3/4	11-3/4
PB-15	143T	8	8	23-13/16	21-3/16	1	4-15/16	12	15-1/2	24	9-15/16	21-1/4	8-3/4	11-3/4
	213T	8	8	23-13/16	21-3/16	1	4-15/16	12	16	24-1/2	9-15/16	21-1/4	8-3/4	11-3/4



The Motor Frame is normally decided by the factory based on H.P. and the RPM of the fan. The 56 frame is normally used on up to 1 H.P. motors, and 143T is used up to 3 H.P. in most cases. If you require a specific frame for your selected motor, contact your dealer as some fans can interchange between motor frames for special needs.

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Fume-A-Vent Control Panel w/Timer Overview

Date 2/14	Part No. CBS-X-XXX-X	Control Panels	TAB 19-A

Fume-A-Vent offers State-of-the-Art Control Panels, that are able to control our systems with limited installation required. Our Panels feature a mild- steel NEMA 4 enclosure with 3-way (HAND-OFF-AUTO) switch and reset button, and low voltage landing terminals. These Control Panels have a built in timer that is adjustable in length, ideal for Fire Station Systems with Engine Sensors.

Maintance shops and Dealerships can also utilize these control panels, to further automate their exhaust extraction systems.

Control Panels are based on the Building Power, and Fan/Blower that is to be run. We offer 1 and 3 Phase, 120V, or 230V, with 1, 2, 3, 5, or 7.5, H.P. blower ratings. ***120V not available in 3 Phase.*

We recommend a licensed electrician install our panels.

Enclosure Dimensions: 10" H x 10"W x 6"D (Up to 5.0 H.P.)
12" H x 10" W x 8"D (7.5 H.P.)

Other Control Panel options available including multiple motor starts, multiple timers, among other custom controls. Please consult our expers if you require anything not accomodated for in our standard panels.

Part Number	HP	Voltage	Phase	Description	Timer
CBS-1-230-1-T	1	230	1	For use with a 230V, 1HP, 1PH Fan and compatible 230V, 1PH source.	Y
CBS-2-230-1-T	2	230	1	For use with a 230V, 2HP, 1PH Fan and compatible 230V, 1PH source.	Y
CBS-3-230-1-T	3	230	1	For use with a 230V, 3HP, 1PH Fan and compatible 230V, 1PH source.	Y
CBS-5-230-1-T	5	230	1	For use with a 230V, 5HP, 1PH Fan and compatible 230V, 1PH source.	Y
CBS-7.5-230-1-T	7.5	230	1	For use with a 230V, 7.5HP, 1PH Fan and compatible 230V, 1PH source.	Y
CBS-1-230-3-T	1	230	3	For use with a 230V, 1HP, 3PH Fan and compatible 230V, 3PH source.	Y
CBS-2-230-3-T	2	230	3	For use with a 230V, 2HP, 3PH Fan and compatible 230V, 3PH source.	Y
CBS-3-230-3-T	3	230	3	For use with a 230V, 3HP, 3PH Fan and compatible 230V, 3PH source.	Y
CBS-5-230-3-T	5	230	3	For use with a 230V, 5HP, 3PH Fan and compatible 230V, 3PH source.	Y
CBS-7.5-230-3-T	7.5	230	3	For use with a 230V, 7.5HP, 3PH Fan and compatible 230V, 3PH source.	Y
CBS-1-120-1-T	1	120	1	For use with a 120V, 1HP, 1PH Fan and compatible 120V, 1PH source.	Y
CBS-2-120-1-T	2	120	1	For use with a 120V, 2HP, 1PH Fan and compatible 120V, 1PH source.	Y
CBS-3-120-1-T	3	120	1	For use with a 120V, 3HP, 1PH Fan and compatible 120V, 1PH source.	Y
CBS-5-120-1-T	5	120	1	For use with a 120V, 5HP, 1PH Fan and compatible 120V, 1PH source.	Y
CBS-7.5-120-1-T	7.5	120	1	For use with a 120V, 7.5HP, 1PH Fan and compatible 120V, 1PH source.	Y

**Custom Enclosures available at request. Please consult our experts to discuss your options.

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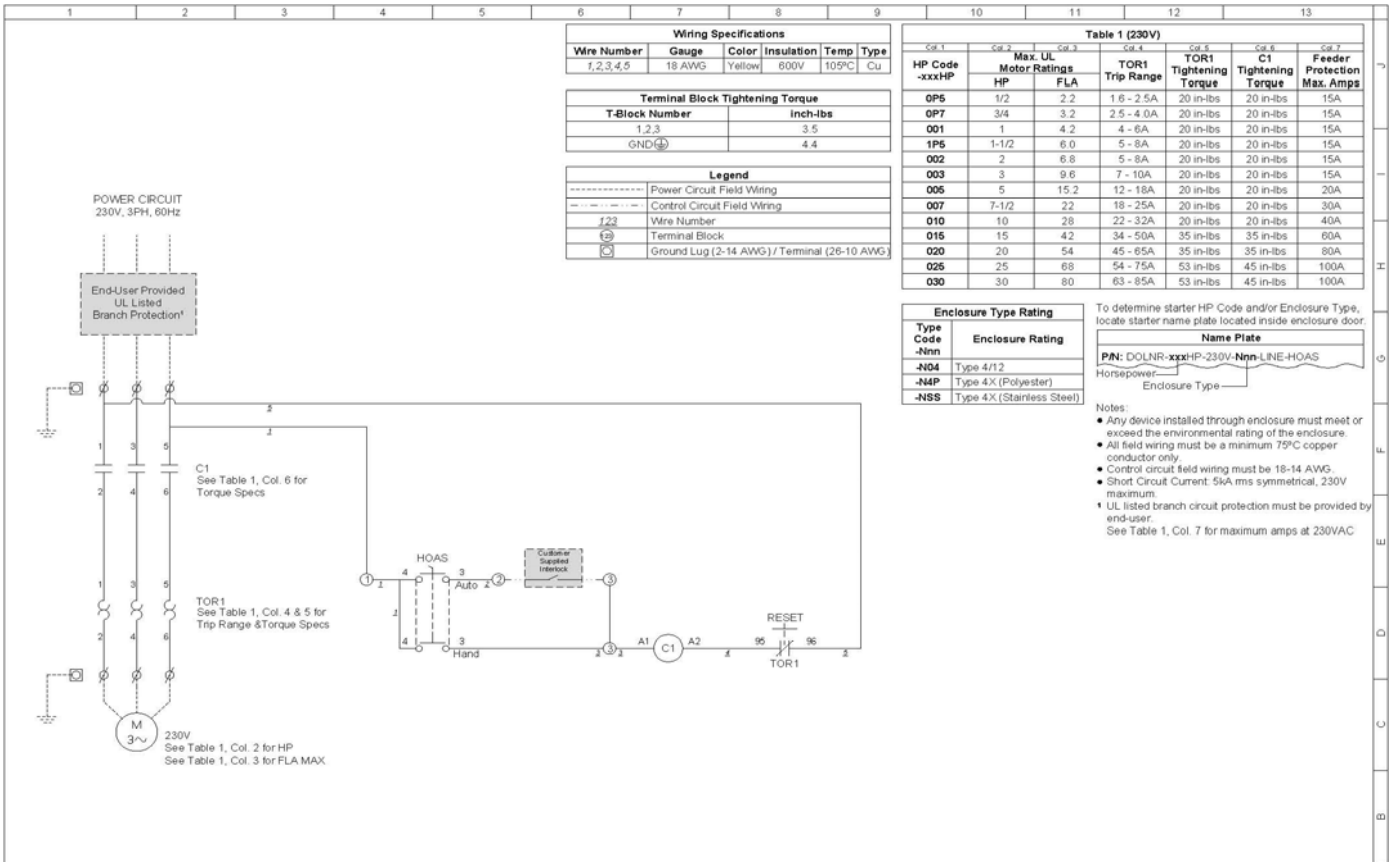
Fume-A-Vent Control Panel Wiring Diagram (230V 3 Phase)

Date 2/14	Part No. CBS-X-XXX-X	Control Panels	TAB 19-B-1

Fume-A-Vent Control Panel Enclosure Drawing. shown below. This shows our 230V, 3 Phase wiring diagram. This diagram is the same for all H.P. ratings we offer.

Additional information available upon request. Some Panels may vary if timers, additonal low voltage connections, or other hardware is added. Please consult our experts for more information, and for custom Control Panels.

A disconnect switch is normally required for 3 phase Control Panels for local/national codes.



Wiring Specifications					
Wire Number	Gauge	Color	Insulation	Temp	Type
1,2,3,4,5	18 AWG	Yellow	600V	105ºC	Cu

Terminal Block Tightening Torque	
T-Block Number	inch-lbs
1,2,3	3.5
GND⏚	4.4

Legend	
	Power Circuit Field Wiring
	Control Circuit Field Wiring
123	Wire Number
1⊟	Terminal Block
	Ground Lug (2-14 AWG) / Terminal (26-10 AWG)

Table 1 (230V)

HP Code -xxxHP	Max. UL Motor Ratings HP	Max. UL Motor Ratings FLA	TOR1 Trip Range	TOR1 Tightening Torque	C1 Tightening Torque	Feeder Protection Max. Amps
0P5	1/2	2.2	1.6 - 2.5A	20 in-lbs	20 in-lbs	15A
0P7	3/4	3.2	2.5 - 4.0A	20 in-lbs	20 in-lbs	15A
001	1	4.2	4 - 6A	20 in-lbs	20 in-lbs	15A
1P5	1-1/2	6.0	5 - 8A	20 in-lbs	20 in-lbs	15A
002	2	6.8	5 - 8A	20 in-lbs	20 in-lbs	15A
003	3	9.6	7 - 10A	20 in-lbs	20 in-lbs	15A
005	5	15.2	12 - 18A	20 in-lbs	20 in-lbs	20A
007	7-1/2	22	18 - 25A	20 in-lbs	20 in-lbs	30A
010	10	28	22 - 32A	20 in-lbs	20 in-lbs	40A
015	15	42	34 - 50A	35 in-lbs	35 in-lbs	60A
020	20	54	45 - 65A	35 in-lbs	35 in-lbs	80A
025	25	68	54 - 75A	53 in-lbs	45 in-lbs	100A
030	30	80	63 - 85A	53 in-lbs	45 in-lbs	100A

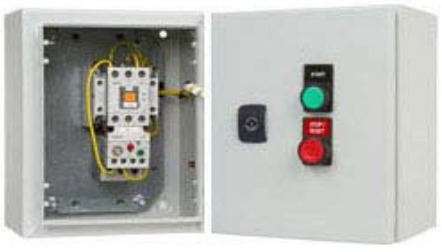
Enclosure Type Rating	
Type Code -Nnn	Enclosure Rating
-N04	Type 4/12
-N4P	Type 4X (Polyester)
-NSS	Type 4X (Stainless Steel)

To determine starter HP Code and/or Enclosure Type, locate starter name plate located inside enclosure door.

Name Plate
P/N: DOLNR-xxxHP-230V-Nnn-LINE-HOAS
Horsepower
Enclosure Type

Notes:
- Any device installed through enclosure must meet or exceed the environmental rating of the enclosure.
- All field wiring must be a minimum 75ºC copper conductor only.
- Control circuit field wiring must be 18-14 AWG.
- Short Circuit Current: 5kA rms symmetrical, 230V maximum.
- ⁴ UL listed branch circuit protection must be provided by end-user. See Table 1, Col. 7 for maximum amps at 230VAC

Shown: Standard 230V Control Panel with On/Off Switches.



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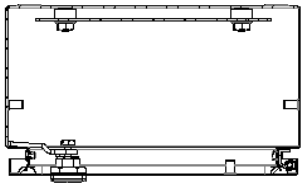
Fume-A-Vent Engine Sensor Control Panel Diagram 3 H.P.

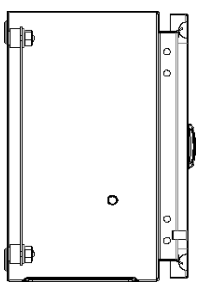
Date 2/14	Part No. CBS-X-XXX-X	Control Panels	TAB 19-C-1

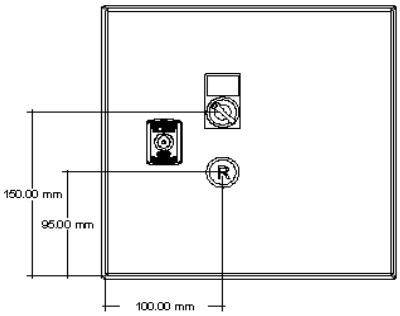
Fume-A-Vent Control Panel Enclosure Drawing. shown below. This drawing applies to all 230V Panels, up to 3 H.P. Our Control Panels come standard with 3-way (HAND-OFF-AUTO) switch and reset button, and low voltage landing terminals. Motor starts, contractor and thermal overloads also included.

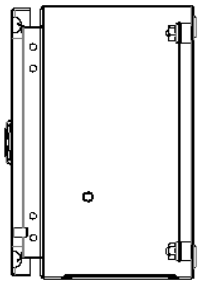
Standard Dimensions shown below, with orthographic drawing of the entire enclosure. More information available upon request. Please contact our experts for more information.

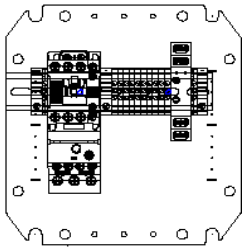
Final wiring and appearance may change once final layout and needs are decided upon.

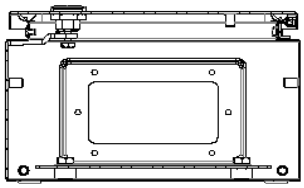












Standard Control Panel shown with on/off switch.

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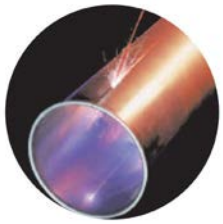
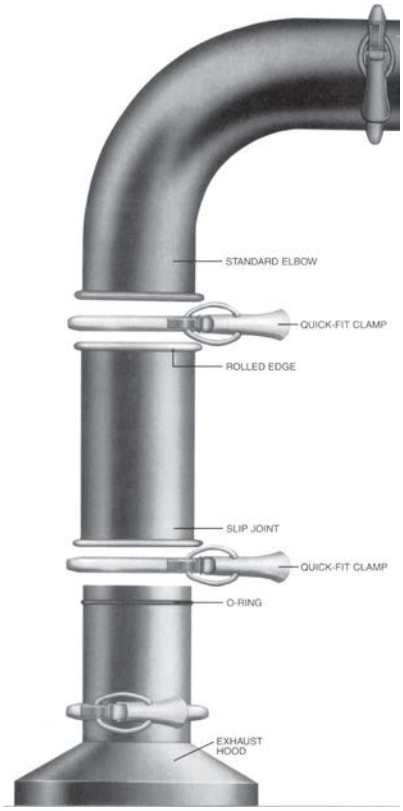
Q-F is easy to install, easy to align, and it's strong!

Q-F clamps are so easy to install, they almost install themselves. Simply place the clamp over the Q-F rolled lip ends and snap! The extraordinary strength of Q-F's specially machined double rolled lips provides a solid, straight run. The patented Q-F clamp connects the rolled ends. Snap the Q-F clamp and you have the strongest, safest, most re-usable dust-extraction piping available today. No special instructions or skills are needed to assemble a Q-F system. Install new lines, clean out lines or make changes to existing duct runs anytime you need to with Q-F.



LASER WELDED SEAM

Q-F adapts to your every need; connect to the old or bring in the new.



Q-F has everything you need in galvanized or stainless steel parts:

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* Elbows 30º, 45º, 60º, 90º
* Larger custom sizes and special adapters
* Blast Gates, Diverter Valves, Hoods, Manifolds.

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Planning to add, remove, or replace dust-extraction piping? Q-F's adjustable fittings slide together to create the precise length. No need for time wasted on exact measuring and precision cuts. Simply slide on and fit to your desired length, a few inches or a few feet. Need a different length for a new run? Just re-use your Q-F components and re-fit, again reducing your cutting and fabricating time.

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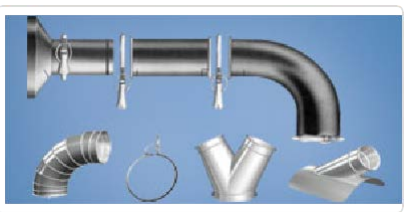
Quote #: Q012392

Customer #: RSA9950

Prepared for RSA Engineering, Inc.
Attn: Warren Williams | Quoted: 12/04/19

Item / Description	Price Ea.	Qty	Total
Fume-A-Vent 5" Simple Drop System With Stainless Steel & Rubber Tailpipe Adapter And Spring Clip Auto Release Nozzle. Includes 12' X 5" High Temperature Hose, 80" Mounting Bracket, Support Legs And Apparatus Tailpipe Modification Kit. Fume-A-Vent F.O.B. Fenton, MO SKU: SD-0512 □ Download Literature	1,300.00	x 2	2,600.00
 Fume-A-Vent Control Box Starter With Low Voltage Landing Terminals.Features A Mild-Steel NEMA 4 Enclosure With 3-Way (HAND-OFF-AUTO) Switch And Reset Button. For Use With A 230V, 3HP, 3PH Fan And Compatible 230V, 3PH Source. Includes An Off-Delay Timer. CDOLP-ES09809-230V-3PH-3HP-24XF-TIMER SKU: CBS-3-230-3-T □ Download Literature	1,486.00	x 1	1,486.00
 PB Series Cast Aluminum Pressure Blower 3 HP, 3 Phase, 1,222 CFM @ 4" W.G. Bottom Horizontal, 7" Inlet & 6" Outlet F.O.B. Minneapolis, MN SKU: PBT12-3-3-B □ Download Literature	1,588.33	x 1	1,588.33
Fume-A-Vent 6" Upblast Backdraft Damper 500152-01 SKU: BDD-06	200.00	x 1	200.00
 **Ducting Package** Nordfab Quick-Fit Laser Welded Clamp-Together Duct System QF Duct System For Fume-A-Vent. SKU: NF-FAV □ Download Literature □ Video	1,119.20	x 1	1,119.20

Lead Time: 1 - 2 Weeks plus transit.

Sub Total:	6,993.53
Freight Surcharge:	899.35
Total	$7,892.88

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End of Addendum

STATION 1 REPAIRS & VENTILATION UPGRADES

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CITY OF VALDEZ

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CITY OF VALDEZ
212 CHENEGA STREET
VALDEZ AK 99686
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NATE DUVAL

ARCHITECT
WOLF ARCHITECTURE, INC.
625 SOUTH COBB
PALMER AK 99645
907-746-6670
GARY WOLF

ENVIRONMENTAL CONSULTANT
ATC GROUP SERVICES
383 INDUSTRIAL WAY #300
ANCHORAGE AK 99501
907-258-8661
BRETT O'BRAY

ELECTRICAL ENGINEER
RSA ENGINEERS
670 W FIREWEED LN, #30
ANCHORAGE AK 99503
907-276-0521
CHANNING LILO

MECHANICAL ENGINEER
RSA ENGINEERS
670 W FIREWEED LN, #30
ANCHORAGE AK 99503
907-276-0521
BRIAN PEKAR

INDEX OF DRAWINGS

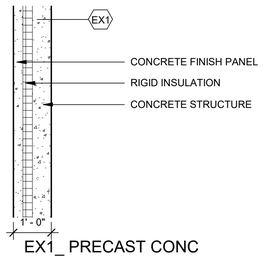
INDEX OF DRAWINGS

PROJECT INFORMATION

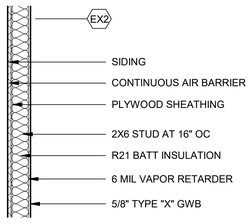
PROJECT NAME:	STATION 1 REPAIRS & VENTILATION UPGRADES		
PROJECT ADDRESS:	212 CHENEGA AVENUE, VALDEZ, AK 99686		
ARCHITECT:	WOLF ARCHITECTURE, INC.	CONTACT:	GARY WOLF
	625 SOUTH COBB	PHONE:	907-746-6670
	PALMER AK 99645	FAX:	907-746-6680
DESCRIPTION:	FIRE STATION REMEDIATION/VENTILATION REPAIR		
ZONING:	CITY OF VALDEZ CENTRAL BUS DIST		

12-12-2019 CONSTRUCTION DOCUMENTS

EXTERIOR WALL ASSEMBLIES--EXISTING

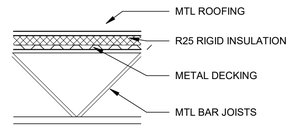


EX1_ PRECAST CONC

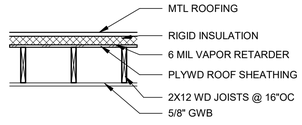


EX2_ 2X6 STUD

ROOF ASSEMBLIES--EXISTING



R1_ EX.SLOPED ROOF ASSEMBLY



R2_ EX. SLOPED ROOF ASSEMBLY

GENERAL NOTES

NOTES

1. INFORMATION TAKEN FROM OWNER-PROVIDED DRAWINGS AND NON-DESTRUCTIVE SITE OBSERVATIONS ONLY. CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS, EQUIPMENT, DIMENSIONS AND ASSEMBLIES PRIOR TO START OF WORK.
2. ALL INTERIOR STUD FRAMING AND FURRING IS 16" O.C. UNO.
3. PROVIDE R-11 ACOUSTIC INSULATION IN ALL REMODELED INTERIOR FRAMED WALLS. ACOUSTIC INSULATION SHOULD FILL DEPTH OF WALL CAVITY.
4. ALL GYPSUM BOARD TO BE TYPE "X" UNO. ALL GYPSUM BOARD IN "WET" ROOM WALLS (APPARATUS BAY, DECON ROOM) TO BE IMPACT, MOISTURE AND MOLD RESISTANT WITH FIBERGLASS MAT TYPE UNO, SEE SPEC.
5. ALL GYPSUM BOARD SURFACES TO BE PREPARED FOR PAINT GRADE FINISH UNO.
6. FOR FINISHES, REFER TO FINISH SCHEDULE AND INTERIOR ELEVATIONS.
7. WALL ASSEMBLY REFLECTS GENERAL WALL CONDITION, DETAILS & ELEVATIONS WILL INDICATE CHANGES.

HAZARDOUS MATERIAL NOTES

ASBESTOS REMOVAL AND DISPOSAL:

THE WORK REQUIRES THE DISTURBANCE, DEMOLITION, REMOVAL AND DISPOSAL OF THE FOLLOWING ASBESTOS-CONTAINING MATERIALS (ACM) AS SHOWN ON THE DEMOLITION DRAWINGS AND SPECIFIED HEREIN. SEE SPECIFICATIONS.

1. JOINT COMPOUND IN GYPSUM WALLBOARD SYSTEMS
2. THERMAL SYSTEMS INSULATION HARDFITTINGS (AS REQUIRED)
3. ASBESTOS CONTAINING DUST AND DEBRIS

LEAD REMOVAL AND DISTURBANCE:

A. THE WORK MAY REQUIRE THE DISTURBANCE (INCLUDING CLEANUP OF EXISTING LOOSE PAINT), DEMOLITION, OR REMOVAL, AND DISPOSAL OF LEAD PAINTED AND/OR LEAD-CONTAINING MATERIALS AS SPECIFIED HEREIN. SEE SPECIFICATIONS. ITEMS TO BE DISTURBED MAY INCLUDE, BUT ARE NOT LIMITED TO:

1. PAINTED INTERIOR BUILDING COMPONENTS

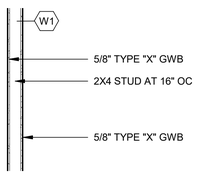
MOLD REMEDIATION:

THE WORK REQUIRES THE DISTURBANCE, DEMOLITION, REMOVAL AND DISPOSAL OF THE FOLLOWING MOLD CONTAMINATED BUILDING MATERIALS AND DECONTAMINATION OF BUILDING COMPONENTS AS SHOWN ON THE DEMOLITION DRAWINGS AND SPECIFIED HEREIN. SEE SPECIFICATIONS.

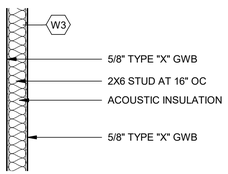
1. GYPSUM WALLBOARD SYSTEMS-WALLS AND CEILINGS
2. DECONTAMINATION OF ALL SURFACES

SEE BOOK SPECIFICATIONS FOR FULL REQUIREMENTS AND REFERENCES.

INTERIOR WALL ASSEMBLIES--EXISTING

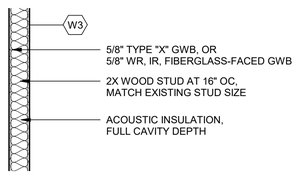


W1_ WALL - 2X4 STUD



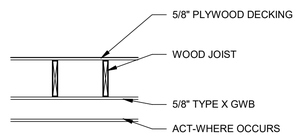
W2_ WALL - 2X6 STUD

NEW

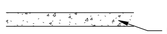


W3_ WALL INFILL - 2X STUD

FLOOR / CEILING ASSEMBLIES



C1_ EX. CEILING ASSEMBLY



F1_ EX. FLOOR ASSEMBLY

ARCHITECTURAL MATERIALS

GRID LINE

DOOR IDENTIFICATION

RELITE IDENTIFICATION

WINDOW TYPE

LOUVER TYPE

REVISION

MATCH LINE
Shaded area is side considered

WORK POINT, DATUM POINT, CONTROL POINT

DETAIL
Upper mark denotes drawing number
Lower mark denotes sheet

PARTIAL BUILDING SECTION

BUILDING CROSS SECTION

INTERIOR ELEVATION
Elevation number denoted in arrow
Sheet number denoted in box

ROOM IDENTIFICATION

CODED NOTE

WALL TYPE

EQUIPMENT IDENTIFICATION

DASHED LINE
Used to denote items hidden, overhead, not in contract (NIC), or to be removed

BREAK LINE
Material to continue

CENTER LINE, GRID LINES

PROPERTY LINE

EXISTING CONTOUR, DISTURBED

NEW CONTOUR

EXISTING CONTOUR, UNCHANGED

NEW FINISH GRADE

EXISTING GRADE

TOP OF FOOTING

TOP OF WALL

TOP OF CURB

TOP OF PAVEMENT

ARCHITECTURAL MATERIALS

DETAIL INDICATIONS

ACOUSTIC TILE OR BOARD

ASPHALT CONCRETE PAVING

ROOFING

BRICK

CONCRETE

PRECAST CONCRETE

CONCRETE MASONRY UNIT

EARTH / FINISH GRADE

GLASS

GRAVEL

GYPSUM BOARD

INSULATION, BATT

INSULATION, RIGID

MORTAR, PLASTER, SAND

MDF

PLYWOOD

WOOD, FINISH

WOOD FRAMING
Continuous member

WOOD FRAMING
Interrupted member

PLAN INDICATIONS

STUD WALL

BRICK

CONCRETE MASONRY UNIT

CONCRETE

ABBREVIATIONS

∠	ANGLE
℄	CENTERLINE
#	POUND OR NUMBER
&	AND
@	AT
°	DEGREE
±	PLUS / MINUS
Ø	DIAMETER
A/C	AIR CONDITIONING
AB	ANCHOR BOLT
AC	ASPHALT CONCRETE
ACOUS	ACOUSTICAL
AD	AREA DRAIN
ADDL	ADDITIONAL
ADJ	ADJUSTABLE
ADJT	ADJACENT
AFF	ABOVE FINISHED FLOOR
AGGR	AGGREGATE
AJ	ACCENT JOINT
AL	ALUMINUM
ALT	ALTERNATE
ANC	ANCHOR(AGE)
APC	ACOUSTICAL PANEL CEILING
APPD	APPROVED
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASB	ASBESTOS
ASPH	ASPHALT
AUTO	AUTOMATIC
AWP	ACOUSTICAL WALL PANEL
BD	BOARD
BET	BETWEEN
BITUM	BITUMINOUS
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BOF	BOTTOM OF FRAME
BOM	BOTTOM OF MASONRY
BOTT	BOTTOM
BRG	BEARING
BSMT	BASEMENT
BUR	BUILT UP ROOF
C	COURSES
CAB	CABINET
CB	CATCH BASIN, CHALKBOARD
CC	CUBICLE CURTAIN & TRACK
CEM	CEMENT
CER	CERAMIC
CG	CORNER GUARD
CI	CAST IRON
CIP	CAST-IN-PLACE CONCRETE
CJ	CONTROL JOINT
CLG	CEILING
CLKG	CAULKING
CLO	CLOSET
CLR	CLEAR, COLOR
CMU	CONCRETE MASONRY UNIT
CNTR	COUNTER
CO	CLEANOUT
COL	COLUMN
COMBO	COMBINATION TPD, SNR, & SCD
COMP	COMPOSITION, COMPOSITE
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
CORR	CORRIDOR
CPT	CARPET
CT	CERAMIC TILE
CTR	CENTER
CW	CURTAIN WALL
D	DEEP, DEPTH
DBL	DOUBLE
DEMO	DEMOLISH, DEMOLITION
DET	DETAIL
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DISP	DISPOSAL
DIV	DIVISION
DN	DOWN
DP	DAMPPROOF(ING)
DR	DOOR
DS	DOWNSPOUT
DSP	DRY STANDPIPE
DWG	DRAWING
DWR	DRAWER
E	EAST
EA	EACH
EHD	ELECTRIC HAND/ HAIR DRYER
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EM	ENTRY MAT
EMB	ENAMELIZED MARKING BOARD
EMER	EMERGENCY
ENCL	ENCLOSURE
EP	ELECTRICAL PANELBOARD, EPOXY PAINT
EPT	EPOXY PAINT
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EYEWASH
EWC	ELECTRIC WATER COOLER
EXC	EXCAVATE
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXPO	EXPOSED
EXT	EXTERIOR
FA	FIRE ALARM
FAB	FABRICATE
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET (RECESSED)
FEC-S	FIRE EXTINGUISHER CABINET (SEMI-RECESSED)
FF	FACTORY FINISHED
FFL	FINISHED FLOOR LINE
FHC	FIRE HOSE CABINET
FIN	FINISH
FLASH	FLASHING
FLR	FLOOR, FLOORING
FLUOR	FLUORESCENT
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FOSH	FACE OF SHEATHING
FP	FIREPROOF
FR	FIRE RESISTANT
FRMG	FRAMING
FRP	FIBER REINFORCED PLASTIC
FRTW	FIRE RETARDANT TREATED WOOD
FS	FLOOR SINK
FT	FOOT, FEET
FTG	FOOTING
FURR	FURRING
FUT	FUTURE
FWC	FABRIC WALL COVERING
GA	GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GEN	GENERAL
GI	GALVANIZED IRON
GL	GLASS
GLB	GLUE LAMINATED BEAM
GLZ	GLAZING
GMU	GLAZED MASONRY UNIT
GND	GROUND
GR	GRADE
GWB	GYPSUM WALL BOARD
GYP	GYPSUM BOARD (SCHEDULES ONLY)
GYP BD	GYPSUM BOARD
H	HIGH
HB	HOSE BIB
HC	HOLLOW CORE, HANDICAP (ACCESSIBLE)
HD	HEAD
HDW	HARDWARE
HDWD	HARDWOOD
HORIZ	HORIZONTAL
HSS	HOLLOW STEEL SECTION
HT	HEIGHT
HTG	HEATING
HVAC	HEATING/ VENTILATING/ AIR CONDITIONING
HWH(T)	HOT WATER HEATER (TANK)
I/S	INSIDE
ID	INSIDE DIAMETER (DIM)
INCL	INCLUDE
INFO	INFORMATION
INSUL	INSULATION
INT	INTERIOR
INTERCOM	INTERCOMMUNICATION
IR	IMPACT RESISTANT
JAN	JANITOR
JST	JOIST
JT	JOINT
KIT	KITCHEN
L	LENGTH, LONG
LAB	LABORATORY
LAM	LAMINATE
LAV	LAVATORY
LKR	LOCKER
LMS	LIQUID MARKING SURFACE
LN	LINOLEUM
LT	LIGHT, LEFT
LV	LOUVER
MACH	MACHINE
MATL	MATERIAL
MAX	MAXIMUM
MB	MARKING BOARD
MBR	MEMBER
MC	MEDICINE CABINET
MCSP	MINERAL COMPOSITE SCULPTURAL PANEL
MDF	MEDIUM DENSITY FIBERBOARD
MECH	MECHANICAL
MED	MEDIUM
MEMB	MEMBRANE
MEZZ	MEZZANINE
MFR	MANUFACTURER
MH	MANHOLE, MOP HOLDER
MIN	MINIMUM
MIR	MIRROR
MIR-S	MIRROR W/ SHELF
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MT(D)	MOUNT(ED)
MTL	METAL
MUL	MULLION
N	NORTH
NAT	NATURAL
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
O/S	OUTSIDE
OA	OVERALL
OBS	OBSCURE
OC	ON CENTER
OCC	OCCUPANT, OCCUPANCY
OD	OUTSIDE DIAMETER (DIM)
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFF	OFFICE
OFOI	OWNER FURNISHED OWNER INSTALLED
OH	OVERHEAD
OHD	OVERHEAD DOOR
OPNG	OPENING
OPP	OPPOSITE
ORIG	ORIGINAL
PAR	PARALLEL
PB	PEG BOARD
PC	PRECAST
PCC	PORTLAND CEMENT CONCRETE
PCD	PAPER CUP DISPENSER
PERF	PERFORATED
PERP	PERPENDICULAR
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLUMB	PLUMBING
PLYWD	PLYWOOD
PNL	PANEL
POS	POSITIVE
PR	PAIR
PREFAB	PREFABRICATE(D)
PREFIN	PREFINISH(ED)
PROJ	PROJECT
PS	PROJECTION SCREEN
PT	POINT, PAINT
PTD	PAPER TOWEL DISPENSER
PTDR	COMBINATION PAPER TOWEL DISPENSER & RECEPTACLE
PTN	PARTITION
PTR	PAPER TOWEL RECEPTACLE
PVMT	PAVEMENT
PWP	PLASTIC WALL PROTECTION
QT	QUARRY TILE
R	RISER, RADIUS
R&S	CLOSET ROD & SHELF
RAF	RESILIENT ATHLETIC FLOORING
RB	RUBBER BASE
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
RDO	ROOF DRAIN, OVERFLOW
REBAR	REINFORCING BAR
RECD	RECEIVED
REF	REFERENCE
REFL	REFLECTED
REFR	REFRIGERATOR
REINF	REINFORCE(D)(ING)
REQD	REQUIRED
RESIL	RESILIENT
RF	ROOF
RFT	RESILIENT FLOORING TILE
RH	ROBE HOOK
RM	ROOM
RO	ROUGH OPENING
RSD	RECESSED SOAP DISPENSER
RST	RUBBER STAIR TREAD
RT	RIGHT
RWL	RAIN WATER LEADER
S	SOUTH
SC	SOLID CORE
SCD	SEAT COVER DISPENSER
SCHED	SCHEDULE
SD	SOAP DISPENSER
SDG	SIDING
SECT	SECTION
SHR	SHOWER
SHT	SHEET
SHTG	SHEETING / SHEATHING
SIM	SIMILAR
SLR	SEALER
SND	SANITARY NAPKIN DISPENSER
SNR	SANITARY NAPKIN RECEPTACLE
SPEC	SPECIFICATION
SQ	SQUARE
SS	SOLID SURFACE
SSK	SERVICE SINK
SST	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STN	STAIN
STOR	STORAGE
STRFT	STOREFRONT
STRUCT	STRUCTURAL
SUB	SUBSTITUTE
SUSP	SUSPENDED
SV	SHEET VINYL
SWC	SANITARY WALL COVERING
SYM	SYMMETRICAL
SYS	SYSTEM
T	TREAD, TEE
TB	TOWEL BAR, TACK BOARD
TC	TOP OF CURB
TEL	TELEPHONE
TEMP	TEMPORARY
TERR	TERRAZZO
TF	TOP OF FOOTING
THK	THICK
THRU	THROUGH
TOF	TOP OF FRAME
TOM	TOP OF MASONRY
TP	TOP OF PAVEMENT
TPD	TOILET PAPER DISPENSER
TR	TOWEL RACK
TS	TUBE STEEL
TV	TELEVISION
TVB	TELEVISION BRACKET
TW	TOP OF WALL
TYP	TYPICAL
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UPT	UNGLAZED PORCELAIN TILE
UR	URINAL
USK	UTILITY SINK
VB	VAPOR BARRIER
VCT	VINYL COMPOSITION TILE
VENT	VENTILATE
VER	VERIFY
VERT	VERTICAL
VEST	VESTIBULE
VOL	VOLUME
VRB	VENTILATING RUBBER BASE
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W	WEST, WIDE, WIDTH
W/	WITH
W/D	WASHER/DRYER
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WH	WALL HUNG
WP	WATERPROOF, WALL PADS
WPTL	WOOD PRESERVATIVE TREATED LUMBER
WR	WATER RESISTANT
WS	WEATHER STRIPPING
WSCT	WAINSCOT
WT	WEIGHT
WTR	WATER
WWF	WELDED WIRE FABRIC

PROJ NO 1923
DRAWN JC
CHECKED GW
DATE 12-12-2019
FULL SIZE DRAWINGS: 22" x 34"

STATION 1 REPAIRS & VENTILATION UPGRADES
CONSTRUCTION DOCUMENTS
CITY OF VALDEZ
212 CHENEGA AVENUE, VALDEZ, AK 99686

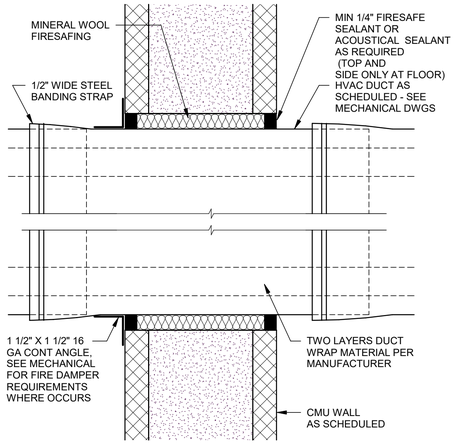
STATE OF ALASKA 49TH
Jason Patrick Collins
No.12059
REGISTERED PROFESSIONAL ENGINEER

625 S COBB ST
PALMER , AK
T: 907.746.6670
F: 907.746.6680
wolfarchitecture.com

Wolf ARCHITECTURE

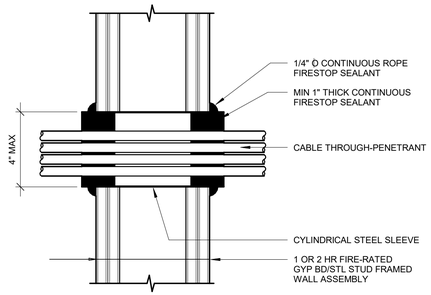
SHEET CONTENTS
ARCHITECTURAL SYMBOLS AND ABBREVIATIONS

G0.2



4 TYP METAL DUCT THROUGH CMU WALL OR FLOOR

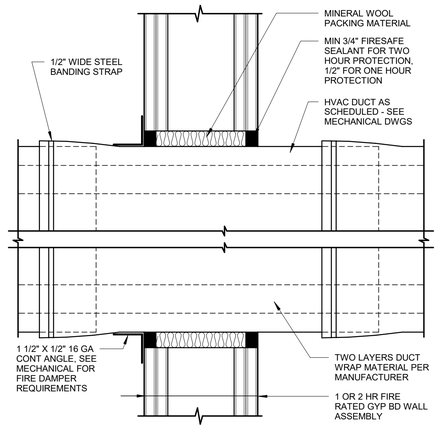
Scale: 3" = 1'-0"



NOTE: COMPLY WITH UL SYSTEM W-L-3031

1 TYP CABLE THROUGH WALL

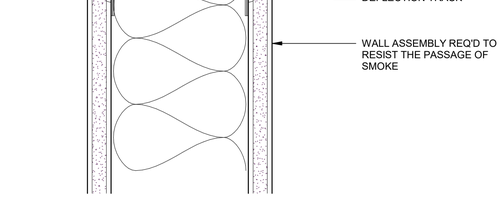
Scale: 3" = 1'-0"



NOTE: COMPLY WITH UL SYSTEM W-L-7008, WHEN OPENINGS EXCEED THE UL ALLOWABLE AREA, USE DYNAMIC FIRE DAMPERS APPROVED FOR THE REQUIRED AREA AND APPLY FIRESTOPPING TO THE INTERSTICIAL SPACE PER AS SHOWN IN THIS DETAIL

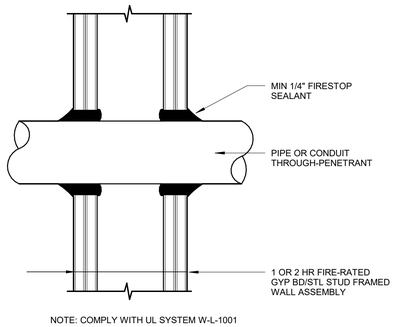
5 TYP METAL DUCT THROUGH WALL

Scale: 3" = 1'-0"



2 TYP DEFLECTION HEAD

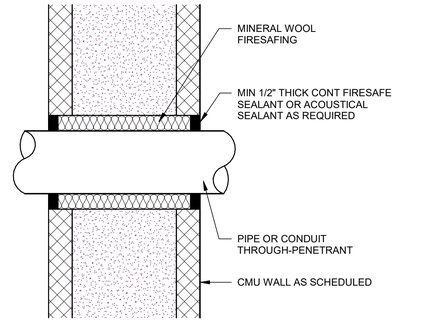
Scale: 6" = 1'-0"



NOTE: COMPLY WITH UL SYSTEM W-L-1001

6 TYP PIPE OR CONDUIT THROUGH WALL

Scale: 3" = 1'-0"



3 TYP PIPE OR CONDUIT THROUGH CMU WALL OR FLOOR

Scale: 3" = 1'-0"

NOTE: REFER TO SPECIFICATIONS FOR ABATEMENT/REMEDIATION ASSOCIATED WITH DISTURBENCE OF ANY ASSEMBLY THOUGHT TO CONTAIN ACM, LEAD OR MOLD.

PROJ NO 1923
DRAWN Author
CHECKED Checker
DATE 12-12-2019
FULL SIZE DRAWINGS: 22" x 34"

STATION 1 REPAIRS & VENTILATION UPGRADES

CONSTRUCTION DOCUMENTS

CITY OF VALDEZ

212 CHENEGA AVENUE, VALDEZ, AK 99686

STATE OF ALASKA 49TH
Jason Patrick Collins
No.12059
REGISTERED PROFESSIONAL ARCHITECT

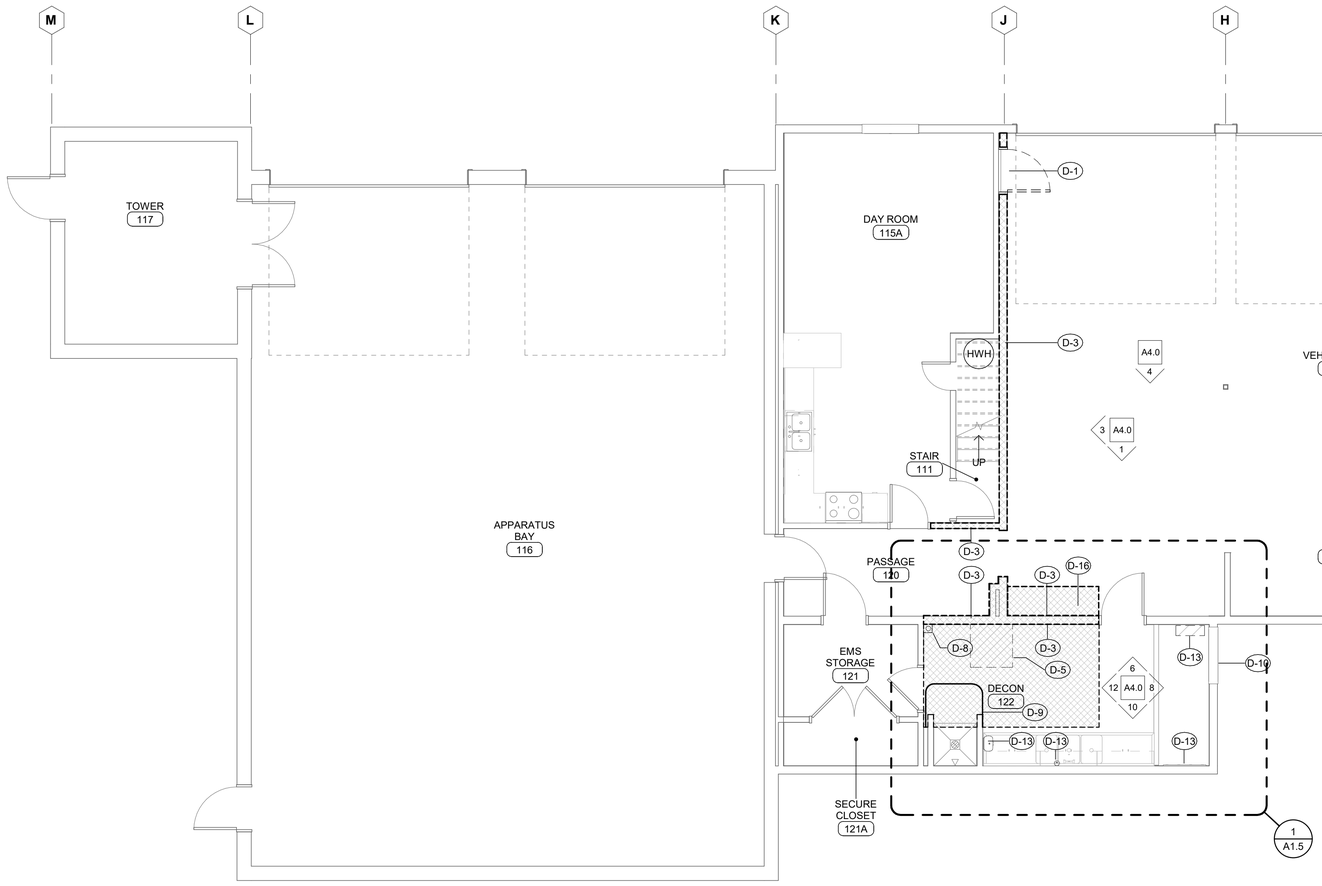
625 S COBB ST
PALMER , AK
T: 907.746.6670
F: 907.746.6680
wolfarchitecture.com

Wolf ARCHITECTURE

SHEET CONTENTS

PENETRATION DETAILS

G0.3



FIRST FLOOR PLAN-DEMO

Scale: 3/16" = 1'-0"

N

DEMOLITION GENERAL NOTES

1. INFORMATION SHOWN IS TAKEN FROM AS-BUILT DRAWINGS AND NON-DESTRUCTIVE WALK-THRU. THERE IS WARRANTY OR GUARANTEE AS TO THE ACCURACY OF THE INFORMATION CONTAINED HERE-IN. CONTRACTOR SHALL VISIT SITE TO FAMILIARIZE THEMSELVES WITH EXTENT OF REMOVAL/DEMOLITION.
2. LIMIT WORK TO SPACES INDICATED, PROTECT ALL ADJACENT ASSEMBLIES, FINISHES AND APPURTENANCES.
3. ALL ITEMS NOTED "SALVAGE" TO BE PROTECTED FOR REINSTALLATION OR PRESENTED TO OWNER AT A LOCATION OF THEIR CHOOSING.
4. ITEMS NOT NOTED AS "SALVAGE" BECOME CONTRATOR'S PROPERTY AND SHALL BE REMOVED FROM SITE.
5. DEMOLITION NOTES LISTED ARE INTENDED TO CONVEY A GENERAL DESCRIPTION OF THE DEMOLITION WORK THROUGH THE PROJECT. HOWEVER, THESE NOTES MAY NOT ADDRESS EVERY DEMOLITION CONDITION NECESSARY FOR THE SUCESSFUL COMPLETION OF THE PROJECT. THE CONTRACTOR IS RESPONSIBLE TO REMOVE AND OR DEMOLISH ANY EXISTING CONDITIONS REQUIRED FOR THE SUCCESSFUL REMEDIATION, RENOVATIONS AND INSTALLATION OF ANY NEW CONSTRUCTION IDENTIFIED IN THESE DOCUMENTS.
6. DASHED LINES INDICATE LOCATIONS OF DEMOLITION.
7. SEE MECHANICAL AND ELECTRICAL FOR SUB-TRADES EXTENT OF DEMOLITION; GENERAL CONTRACTOR TO ENSURE COORDINATION BETWEEN TRADES

KEYNOTES	
SYMBOL	NOTE
D-1	REMOVE DOOR AND FRAME
D-3	DEMO GWB TO CLG UNO, COORDINATE REMOVAL OF ELECT & MECH APPURTENANCES
D-5	DEMO ELEVATED SLAB, REINFORCEMENT, ATTACHMENTS; COORDINATE WITH MECH
D-8	DEMO MECH CHASE
D-9	REMOVE OH RAIL FOR CLEANING AND REINSTALLATION; REPLACE CURTAIN
D-10	WINDOW MAY BE REMOVED TO PROVIDE FOR REMEDIATION VENTILATION
D-13	REMOVE AND REPLACE, SEE SPEC.
D-16	DEMO GWB CLG

DEMOLITION LEGEND

AREAS OF WALL/CEILING REQUIRING MICROBIAL REMEDIATION

AREAS REQUIRING CLEANING DUST-FREE STATE; REPAIR ANY DAMAGED THERMAL INSULATION

LIMITS OF DEMOLITION

PROJ NO 1923
DRAWN CWE
CHECKED GW
DATE 12-12-2019
FULL SIZE DRAWINGS: 22" x 34"

STATION 1 REPAIRS & VENTILATION UPGRADES

CONSTRUCTION DOCUMENTS

CITY OF VALDEZ

212 CHENEGA AVENUE, VALDEZ, AK 99686

625 S COBB ST
PALMER , AK
T: 907.746.6670
F: 907.746.6680
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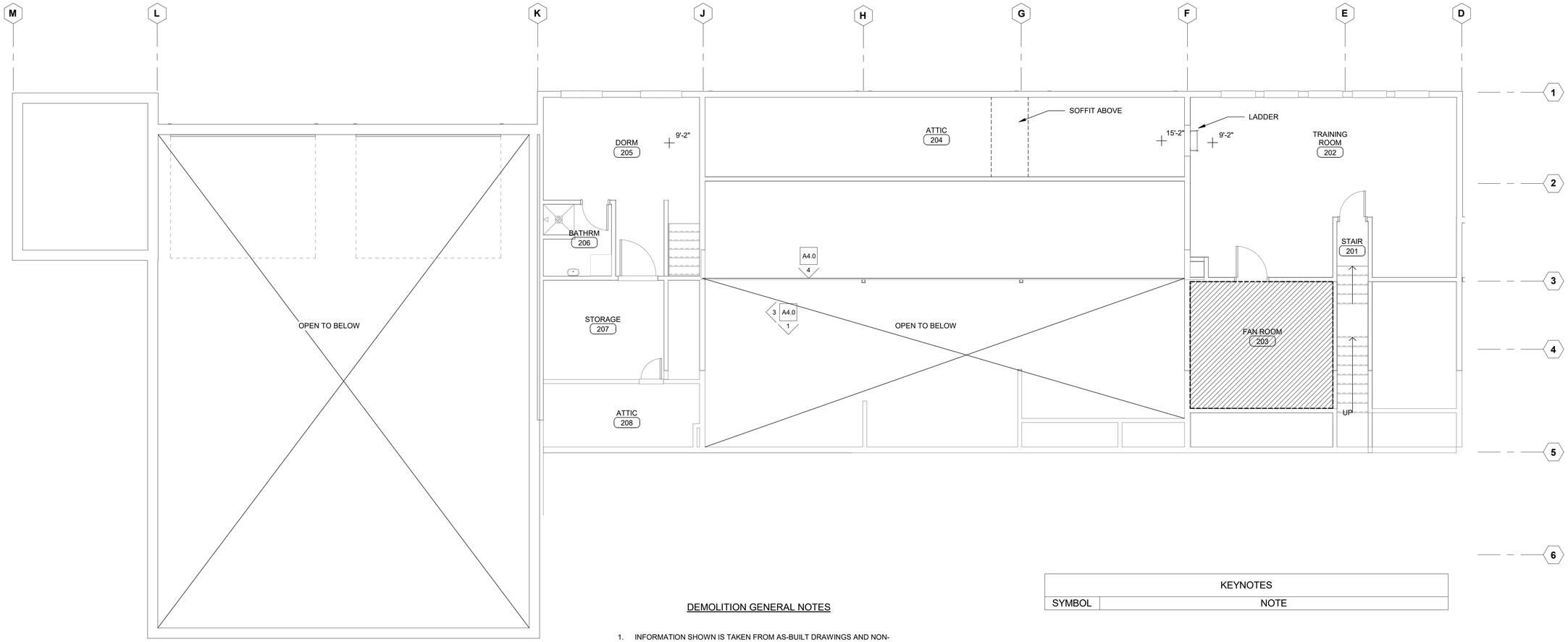
SHEET CONTENTS

FIRST FLOOR PLAN--DEMO

A1.1



SECOND FLOOR--DEMO

Scale: 3/16" = 1'-0"

N

DEMOLITION GENERAL NOTES

1. INFORMATION SHOWN IS TAKEN FROM AS-BUILT DRAWINGS AND NON-DESTRUCTIVE WALK-THRU. THERE IS WARRANTY OR GUARANTEE AS TO THE ACCURACY OF THE INFORMATION CONTAINED HERE-IN. CONTRACTOR SHALL VISIT SITE TO FAMILIARIZE THEMSELVES WITH EXTENT OF REMOVAL/DEMOLITION.
2. LIMIT WORK TO SPACES INDICATED. PROTECT ALL ADJACENT ASSEMBLIES, FINISHES AND APPURTENANCES.
3. ALL ITEMS NOTED "SALVAGE" TO BE PROTECTED FOR REINSTALLATION OR PRESENTED TO OWNER AT A LOCATION OF THEIR CHOOSING.
4. ITEMS NOT NOTED AS "SALVAGE" BECOME CONTRATOR'S PROPERTY AND SHALL BE REMOVED FROM SITE.
5. DEMOLITION NOTES LISTED ARE INTENDED TO CONVEY A GENERAL DESCRIPTION OF THE DEMOLITION WORK THROUGH THE PROJECT. HOWEVER, THESE NOTES MAY NOT ADDRESS EVERY DEMOLITION CONDITION NECESSARY FOR THE SUCESSFUL COMPLETION OF THE PROJECT. THE CONTRACTOR IS RESPONSIBLE TO REMOVE AND OR DEMOLISH ANY EXISTING CONDITIONS REQUIRED FOR THE SUCCESSFUL REMEDIATION, RENOVATIONS AND INSTALLATION OF ANY NEW CONSTRUCTION IDENTIFIED IN THESE DOCUMENTS.
6. DASHED LINES INDICATE LOCATIONS OF DEMOLITION.
7. SEE MECHANICAL AND ELECTRICAL FOR SUB-TRADES EXTENT OF DEMOLITION; GENERAL CONTRACTOR TO ENSURE COORDINATION BETWEEN TRADES

KEYNOTES	
SYMBOL	NOTE

DEMOLITION LEGEND

- AREAS OF WALL/CEILING REQUIRING MICROBIAL REMEDIATION
- AREAS REQUIRING CLEANING DUST-FREE STATE; REPAIR ANY DAMAGED THERMAL INSULATION
- LIMITS OF DEMOLITION

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FULL SIZE DRAWINGS: 22" x 34"

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STATE OF ALASKA 49 TH
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No.12059
REGISTERED PROFESSIONAL ARCHITECT

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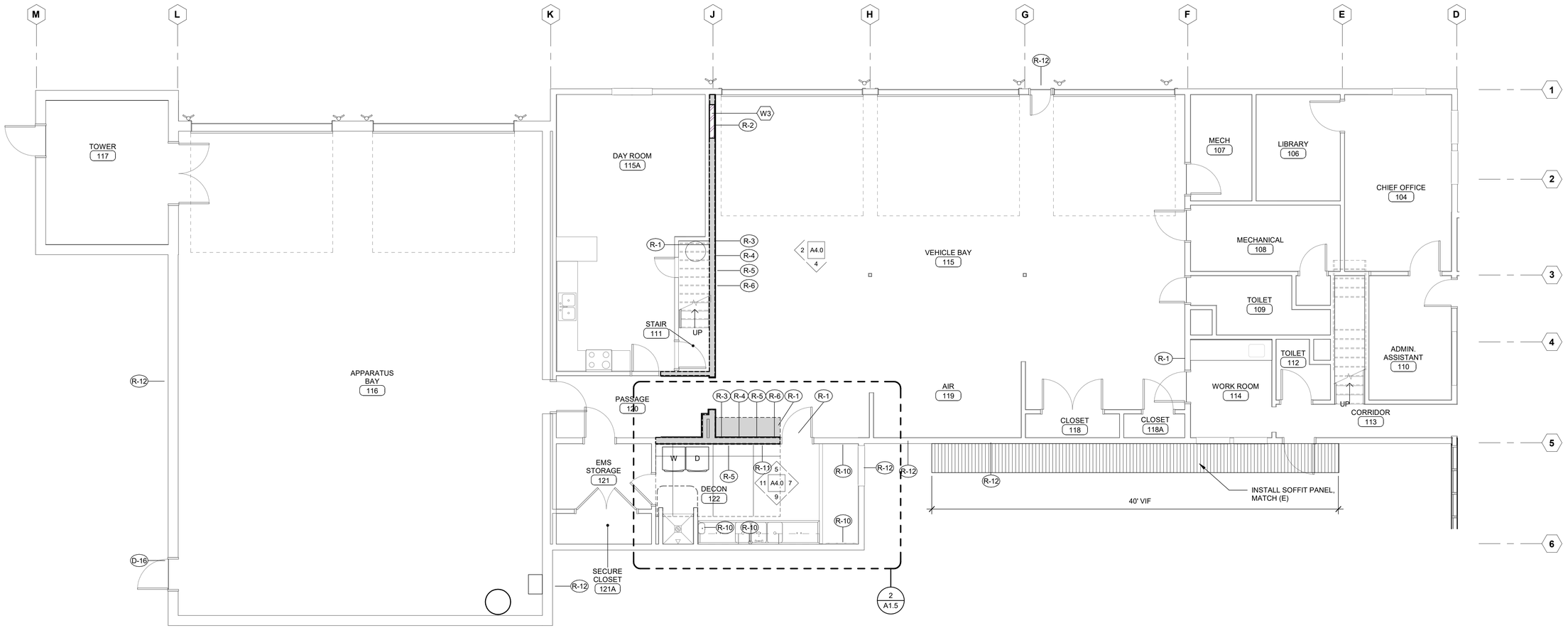
SECOND FLOOR PLAN--DEMO

A1.2



FIRST FLOOR PLAN-RENO

Scale: 3/16" = 1'-0"

N

RENOVATION LEGEND

- FRP OVER GWB, TYPE X, WR/IR
- GWB, TYPE X, WR/IR, FINISH TO MATCH EXISTING
- WALL INFILL, MATCH (E)
- METAL SOFFIT PANEL MATCH (E)

KEYNOTES	
SYMBOL	NOTE
D-16	DEMO GWB CLG
R-1	PATCH GWB, FINISH TO MATCH, REFER TO MECH.
R-2	INFILL OPENING, FINISH TO MATCH, NEW RUBBER BASE
R-3	REPLACE DAMAGED SILL PLATE AS NECESSARY, SECURE TO SLAB WITH 3/8" ANCHORS @24" O.C.
R-4	INSPECT AND REPLACE DAMAGED PORTIONS OF STUDS, SECURE TO EXIST FRAMING AND SILL
R-5	NEW 5/8" WR/IR TYPE X GWB, FINISH TO MATCH EXIST.
R-6	NEW RUBBER BASE
R-10	INSTALL NEW EQUIPMENT, SEE MECH/SPECIFICATION
R-11	REINSTALL EXIST. GUARD OVER HYDRONICS
R-12	PROVIDE ESCUTCHEON, FLASHING &/OR PATCH EXTERIOR FINISH TO MATCH, SEE MECH.

PROJ NO 1923
DRAWN Author
CHECKED Checker
DATE 12-12-2019
FULL SIZE DRAWINGS: 22" x 34"

STATION 1 REPAIRS & VENTILATION UPGRADES

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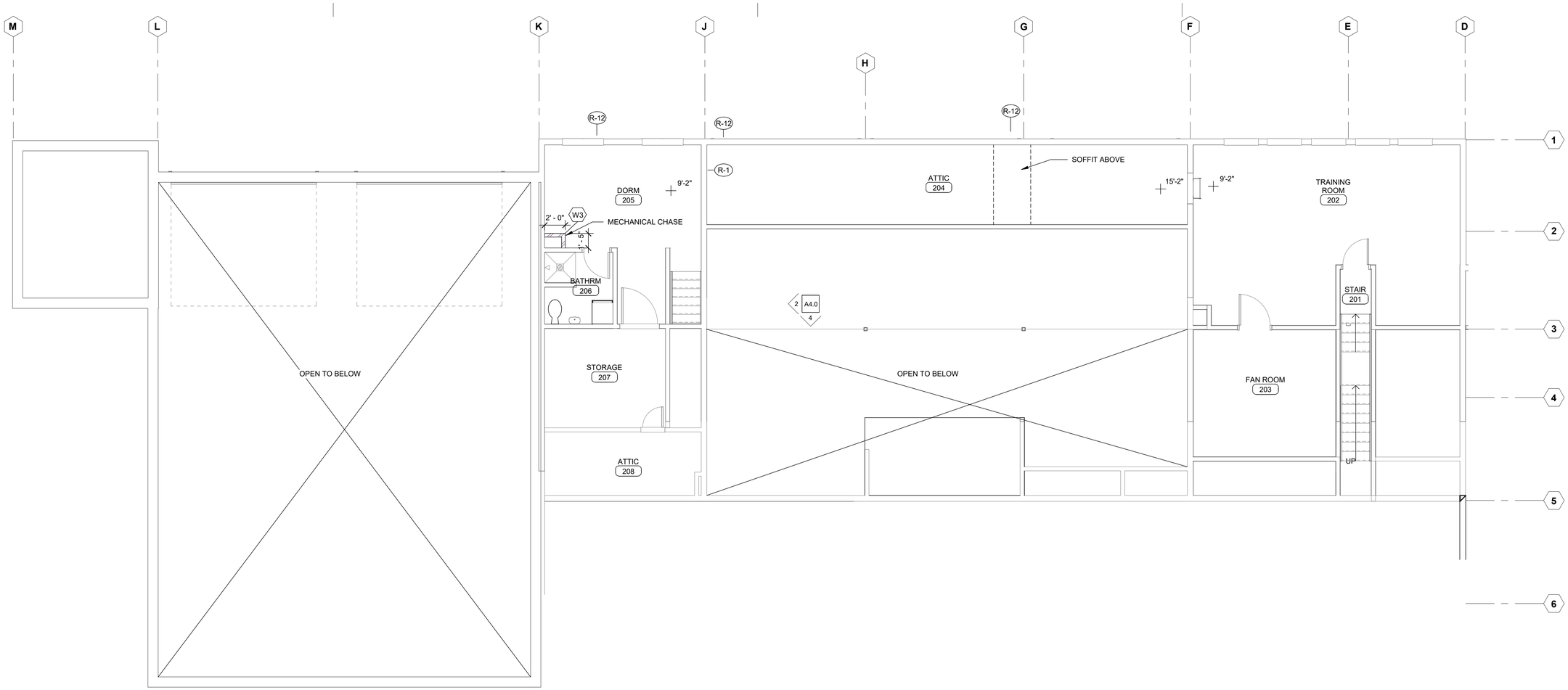
FIRST FLOOR PLAN–RENO

A1.3



SECOND FLOOR--RENO

Scale: 3/16" = 1'-0"

N

RENOVATION LEGEND

- FRP OVER GWB, TYPE X, WR/IR
- GWB, TYPE X, WR/IR, FINISH TO MATCH EXISTING
- WALL INFILL, MATCH (E)
- METAL SOFFIT PANEL MATCH (E)

KEYNOTES	
SYMBOL	NOTE
R-1	PATCH GWB, FINISH TO MATCH, REFER TO MECH.
R-12	PROVIDE ESCUTCHEON, FLASHING &/OR PATCH EXTERIOR FINISH TO MATCH, SEE MECH.

PROJ NO 1923
DRAWN Author
CHECKED Checker
DATE 12-12-2019
FULL SIZE DRAWINGS: 22" x 34"

STATION 1 REPAIRS & VENTILATION UPGRADES

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PALMER , AK
T: 907.746.6670
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SECOND FLOOR PLAN--RENO

A1.4

DEMOLITION GENERAL NOTES

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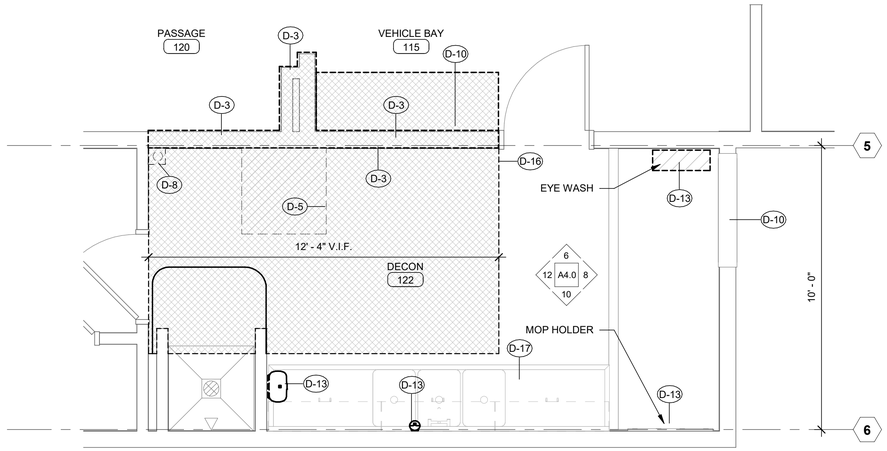
DEMOLITION LEGEND

- AREAS OF WALL/CEILING REQUIRING MICROBIAL REMEDIATION
- AREAS REQUIRING CLEANING DUST-FREE STATE; REPAIR ANY DAMAGED THERMAL INSULATION
- LIMITS OF DEMOLITION

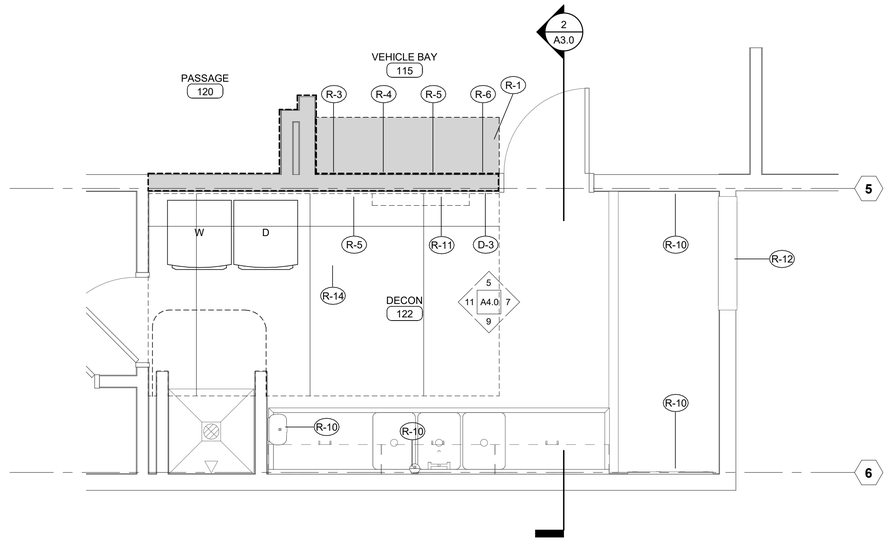


1 ENLARGED PLAN - DEMO
Scale: 3/8" = 1'-0"

KEYNOTES	
SYMBOL	NOTE
D-3	DEMO GWB TO CLG UNO, COORDINATE REMOVAL OF ELECT & MECH APPURTENANCES
D-5	DEMO ELEVATED SLAB, REINFORCEMENT, ATTACHMENTS; COORDINATE WITH MECH
D-8	DEMO MECH CHASE
D-10	WINDOW MAY BE REMOVED TO PROVIDE FOR REMEDIATION VENTILATION
D-13	REMOVE AND REPLACE, SEE SPEC.
D-16	DEMO GWB CLG
D-17	CLEAN PER REMEDIATION SPEC.
R-1	PATCH GWB, FINISH TO MATCH, REFER TO MECH.
R-3	REPLACE DAMAGED SILL PLATE AS NECESSARY, SECURE TO SLAB WITH 3/8" ANCHORS @24" O.C.
R-4	INSPECT AND REPLACE DAMAGED PORTIONS OF STUDS, SECURE TO EXIST FRAMING AND SILL
R-5	NEW 5/8" WR/IR TYPE X GWB, FINISH TO MATCH EXIST.
R-6	NEW RUBBER BASE
R-10	INSTALL NEW EQUIPMENT, SEE MECH/SPECIFICATION
R-11	REINSTALL EXIST. GUARD OVER HYDRONICS
R-12	PROVIDE ESCUTCHEON, FLASHING &/OR PATCH EXTERIOR FINISH TO MATCH, SEE MECH.
R-14	PATCH HOLES AND IMPERFECTIONS IN SLAB, PROVIDE SEALED FINISH

RENOVATION LEGEND

- FRP OVER GWB, TYPE X, WR/IR
- GWB, TYPE X, WR/IR, FINISH TO MATCH EXISTING
- WALL INFILL, MATCH (E)
- METAL SOFFIT PANEL MATCH (E)



2 ENLARGED PLAN - RENO
Scale: 3/8" = 1'-0"

PROJ NO 1923
DRAWN CWE
CHECKED JC
DATE 12-12-2019
FULL SIZE DRAWINGS: 22" x 34"

STATION 1 REPAIRS & VENTILATION UPGRADES

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No.12059
REGISTERED PROFESSIONAL ARCHITECT

625 S COBB ST
PALMER , AK
T: 907.746.6670
F: 907.746.6680
wolfarchitecture.com

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ENLARGED PLANS/DETAILS

A1.5

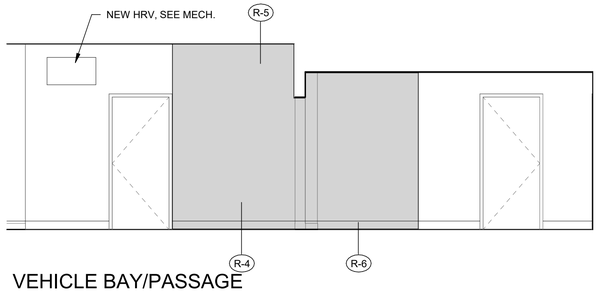
KEYNOTES	
SYMBOL	NOTE
D-1	REMOVE DOOR AND FRAME
D-2	DEMO WALL BASE
D-3	DEMO GWB TO CLG UNO, COORDINATE REMOVAL OF ELECT & MECH APPURTENANCES
D-4	DEMO SOFFIT AND DUCTWORK, SEE MECH.
D-5	DEMO ELEVATED SLAB, REINFORCEMENT, ATTACHMENTS; COORDINATE WITH MECH
D-6	DEMO WALL BASE, FRP & WALL SHEATHING TO EXPOSE STUDS
D-7	DEMO FRP & CEILING ASSEMBLY TO EXPOSE FRAMING
D-8	DEMO MECH CHASE
D-9	REMOVE OH RAIL FOR CLEANING AND REINSTALLATION; REPLACE CURTAIN
D-10	WINDOW MAY BE REMOVED TO PROVIDE FOR REMEDIATION VENTILATION
D-13	REMOVE AND REPLACE, SEE SPEC.
D-15	DEMO EQUIPMENT, SEE MECH.
R-2	INFILL OPENING, FINISH TO MATCH, NEW RUBBER BASE
R-3	REPLACE DAMAGED SILL PLATE AS NECESSARY, SECURE TO SLAB WITH 3/8" ANCHORS @24" O.C.
R-4	INSPECT AND REPLACE DAMAGED PORTIONS OF STUDS, SECURE TO EXIST FRAMING AND SILL
R-5	NEW 5/8" WR/IR TYPE X GWB, FINISH TO MATCH EXIST.
R-6	NEW RUBBER BASE
R-7	REPLACE CEILING FRAMING; INSTALL 6MIL VAPOR BARRIER, GWB & FRP TO MATCH
R-8	REINSTALL OWNER APPLIANCES, SEE MECH/ELEC
R-9	REINSTALL SHOWER CURTAIN TRACK
R-10	INSTALL NEW EQUIPMENT, SEE MECH/SPECIFICATION

RENOVATION LEGEND

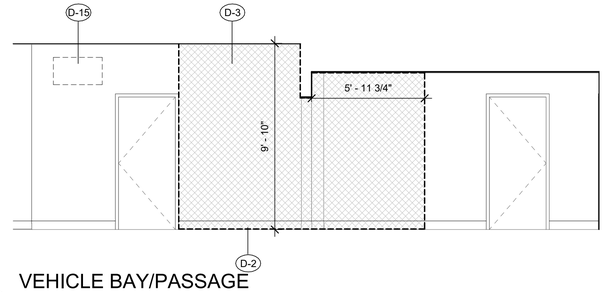
- FRP OVER GWB, TYPE X, WR/IR
- GWB, TYPE X, WR/IR, FINISH TO MATCH EXISTING
- WALL INFILL, MATCH (E)
- METAL SOFFIT PANEL MATCH (E)

DEMOLITION LEGEND

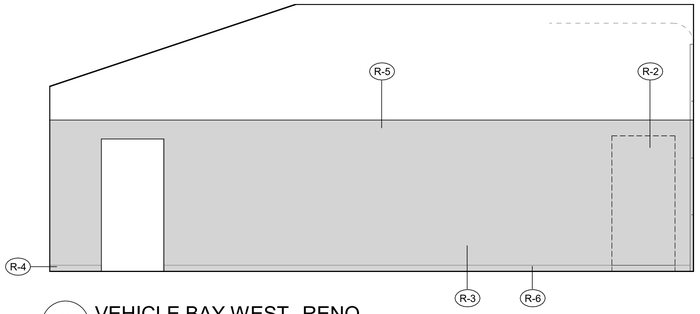
- AREAS OF WALL/CEILING REQUIRING MICROBIAL REMEDIATION
- AREAS REQUIRING CLEANING DUST-FREE STATE; REPAIR ANY DAMAGED THERMAL INSULATION
- LIMITS OF DEMOLITION



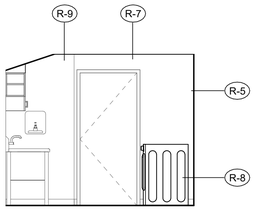
4 VEHICLE BAY/PASSAGE SOUTH--RENO
Scale: 1/4" = 1'-0"



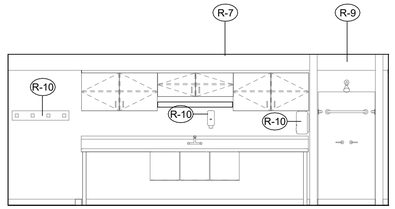
1 VEHICLE BAY/PASSAGE SOUTH--DEMO
Scale: 1/4" = 1'-0"



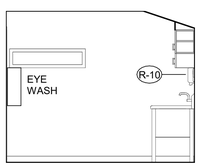
2 VEHICLE BAY WEST--RENO
Scale: 1/4" = 1'-0"



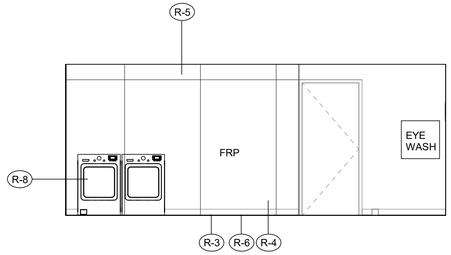
11 RM122 W-RENO
Scale: 1/4" = 1'-0"



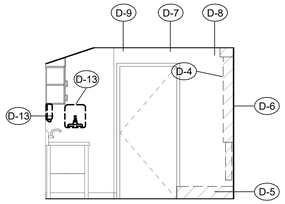
9 RM122 S-RENO
Scale: 1/4" = 1'-0"



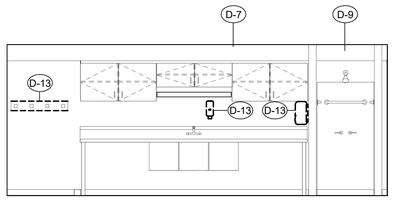
7 RM122 E-RENO
Scale: 1/4" = 1'-0"



5 RM122-N-RENO
Scale: 1/4" = 1'-0"



12 RM122-W-DEMO
Scale: 1/4" = 1'-0"



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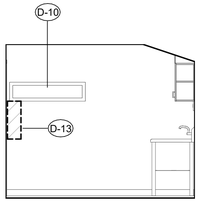
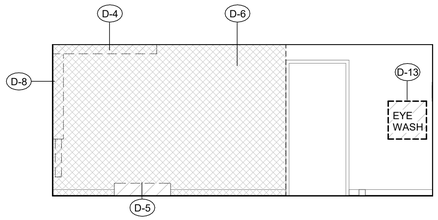
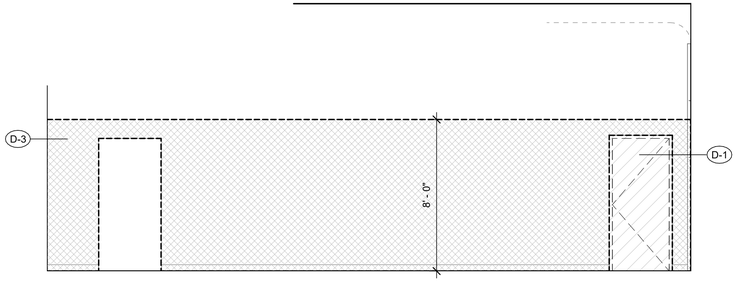


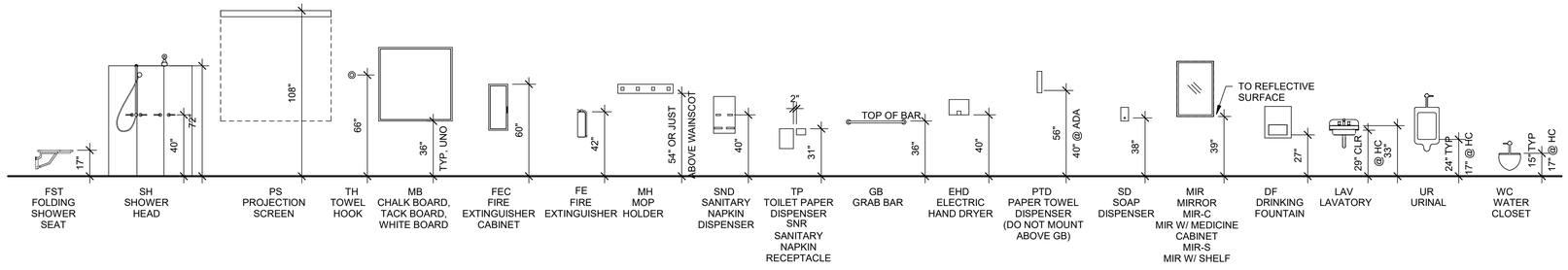
8 RM122-E-DEMO
Scale: 1/4" = 1'-0"



6 RM122-N-DEMO
Scale: 1/4" = 1'-0"



3 VEHICLE BAY WEST--DEMO
Scale: 1/4" = 1'-0"



13 MOUNTING HEIGHTS
Scale: 1/4" = 1'-0"

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SHEET CONTENTS

INTERIOR ELEVATIONS

A4.0

LEGEND

- SANITARY SEWER
- XXX — SEE ABBREVIATIONS
- PLUMBING VENT PIPING
- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- HOT WATER RECIRCULATING
- PIPE UP
- PIPE DOWN
- TEE UP
- TEE DOWN
- BALL VALVE
- CAP
- UNION
- DIRECTION OF FLOW
- WATER HAMMER ARRESTOR
- CD — CONENSATE
- SUPPLY / COMBUSTION AIR
- RETURN AIR
- EXHAUST AIR
- ROUND DUCT
- VOLUME DAMPER
- MOTORIZED CONTROL DAMPER
- 12/24 — DUCT SIZE
- TURNING VANES
- POINT OF CONNECTION
- 5 / M2 — DETAIL NUMBER, SHEET LOCATED ON
- DIRECTION OF VIEW
- 5 / M2 — SECTION NUMBER, SHEET LOCATED ON
- TAG — SHEET NOTES
- X / CFM — CONNECTION: NECK SIZE, CFM, DIFFUSER OR GRILLE TYPE
- FLOOR OR YARD CLEANOUT
- FLOOR DRAIN
- T — THERMOSTAT

PLUMBING FIXTURES

SYMBOL	BASIS OF DESIGN	MODEL	DESCRIPTION	MOUNTING	CW	HW	WASTE	VENT	TRAP	COLOR	TRIM/REMARKS
P-1	OATEY	QUADTRO	CLOTHES WASHER	WALL	3/4	3/4	2	1-1/2	2	WHITE	THERMOPLASTIC BOX, SINGLE LEVER VALVE WITH WATER HAMMER ARRESTORS.

LOUVERS

SYMBOL	BASIS OF DESIGN	MODEL	SERVICE	MATERIAL	FINISH	SIZE	REMARKS
L-1	RUSKIN	ELF6375DX	INTAKE/EXHAUST	ALUMINUM	KYNAR	18"x18"	3/4" ALUMINUM BIRDSCREEN, HYLAR 5000 FINISH, COLOR SELECTED BY ARCHITECT.

AIR INLET & OUTLETS

SYMBOL	BASIS OF DESIGN	MODEL	TYPE	USE	MATERIAL	FINISH	CFM	CONNECTION SIZE	THROW	REMARKS
A	ALDES	ALGRILLES	ROUND	S/A	PLASTIC	WHITE	PER PLANS	PER PLANS	ADJUSTABLE	
B	ALDES	ALGRILLES	ROUND	R/A	PLASTIC	WHITE	PER PLANS	PER PLANS	ADJUSTABLE	
C	TITUS	30R	BAR RETURN	E/A	STEEL	WHITE	400	10"x10"	N/A	SURFACE MOUNT, PROVIDE OPPOSED BLADE NECK MOUNTED DAMPER.

FANS

SYMBOL	BASIS OF DESIGN	MODEL	SERVES	CFM	STATIC PRESSURE	DRIVE	HP	POWER	LABEL	REMARKS
EF-1	GREENHECK	SQ-120-VG	3-BAY APPARATUS BAY	1,600	0.5"	DIRECT	1/2	120/60/1	UL	IN-LINE, WALL MOUNT, VIBRATION ISOLATORS, NEMA-1 DISCONNECT, O/A DAMPER.
EF-2	GREENHECK	CUE-121-VG	2-BAY APPARATUS BAY	1,800	0.375"	DIRECT	1/2	120/60/1	UL	WALL MOUNT, STAINLESS HARDWARE, ALUMINUM SCREEN, NEMA-3 TOGGLE DISCONNECT.
WB-1	WALL BOX	DB-480	DECON CLOTHES DRYER	—	—	—	—	—	—	CONTRACTOR SHALL REVIEW DRYER SPECS. TO DETERMINE MOUNTING HEIGHT REQUIRED.

HEAT RECOVER VENTILATORS

SYMBOL	BASIS OF DESIGN	MODEL	SERVES	NET SUPPLY AIRFLOW	EXTERNAL STATIC	AMPS	POWER	WEIGHT	REMARKS
HRV-1	LIEFBREATH	155 MAX	DECON ROOM	132 CFM	0.5	1.4	120/60/1	73 LBS	99-DET01 CONTROLLER, 99-186 6" DIA. ALUMINUM WALL CAPS WITH 12" WALL SLEEVE, RECIRC DEFROST.
HRV-2	LIFEBREATH	205 MAX	DAY ROOM	175 CFM	0.4"	1.4	120/60/1	67 LBS	99-DET01 CONTROLLER, 8" DIA. ALUMINUM WALL CAPS, RECIRC DEFROST.

SOURCE CAPTURE DIESEL FUME EXTRACTION SYSTEM

SYMBOL	BASIS OF DESIGN	PART NUMBER	COMPONENT
DS-1	FUME-A-VENT	SD-0512	5" DIAMETER SIMPLE DROP SYSTEM WITH STAINLESS STEEL & RUBBER TAILPIPE ADAPTER AND SPRING CLIP AUTO RELEASE NOZZLE. INCLUDES 12' X 5" HIGH TEMPERATURE H
			OSE, 80" MOUNTING BRACKET, SUPPORT LEGS AND APPARATUS TAILPIPE MODIFICATION KITS.
PB-1	FUME-A-VENT	PB12-3-3-R	PB SERIES PRESSURE BLOWER, CAST ALUMINUM CONST., 3 HP, 208/60/3, 1,222 CFM @ 4" W.G., BOTTOM HORIZONTAL, 7" INLET & 6" OUTLET.
CB-1	FUME-A-VENT	CBS-3-230-E-T	CONTROL BOX STARTER WITH LOW VOLTAGE LANDING TERMINALS.FEATURES A MILD-STEEL NEMA 4 ENCLOSURE WITH 3-WAY (HAND-OFF-AUTO) SWITCH AND RESET BUTTON.
			FOR USE WITH A 230V, 3HP, 3 PHASE FAN AND COMPATIBLE 230V, 3PH SOURCE. INCLUDES AN OFF-DELAY TIMER MODEL CDOLP-ES09809-230V-3PH-3HP-24XF-TIMER.

LIFT PUMP

SYMBOL	BASIS OF DESIGN	MODEL	SERVES	HP	FLA	POWER	MAX. FLOW	LIFT HEAD	SHUT-OFF FEET	REMARKS
LP-1	LITTLE GIANT	VCMA-15UL	HRV-2	1/50	1	120/60/1	25 GPM	10'	15'	6' CORD, 3/8" BARBED DISCHARGE, INTEGRAL FLOAT CONTROLS.

ABBREVIATIONS

AAV	AUTOMATIC AIR VENT
ABV	ABOVE
AC-X	AIR CONDITIONER DESIGNATOR
ADA	AMERICANS WITH DISABILITIES ACT
AD	ACCESS DOOR
AF	AIR FOIL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHAP	AS HIGH AS POSSIBLE
AHU-X	AIR HANDLING UNIT DESIGNATOR
AL	ALUMINUM
ALUM	ALUMINUM
AMPS	AMPERES
APD	AIR PRESSURE DROP
ARCH	ARCHITECTURAL
BDD	BACKDRAFT DAMPER
BLDG	BUILDING
BI	BLACK IRON
BFC	BELOW FINSHED CEILING
BOD	BOTTOM OF DUCT
BTUH	BRITISH THERMAL UNIT/HOUR
CA	COMBUSTION AIR
CD	CONDENSATE
CAP	CAPACITY
CF-X	CARBON FILTER DESIGNATOR
CFM	CUBIC FEET PER MINUTE
CIRC	CIRCULATING
CLG	CEILING
CONT	CONTINUED
CO	CLEANOUT
CP-X	CIRCULATION PUMP DESIGNATOR
CUH-X	CABINET UNIT HEATER
CU	COPPER
CW	COLD WATER
DIA	DIAMETER
dB	DECIBELS
DEG	DEGREE
DIM	DIMENSION
DN	DOWN
DWG	DRAWING
E/A	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EFF	EFFICIENCY
EF-X	EXHAUST FAN DESIGNATOR
ET-X	EXPANSION TANK DESIGNATOR
EXH	EXHAUST
EWT	ENTERING WATER TEMPERATURE
ESP	EXTERNAL STATIC PRESSURE
EGT	ENTERING GLYCOL TEMPERATURE
ENT	ENTERING
FLA	FULL LOADED AMPS
FT	FEET
FT-X	FINNED TUBE RADIATION
FPM	FEET PER MINUTE
FPF	FINS PER FOOT
FC	FORWARD CURVE
F	FAHRENHEIT
FCO	FLOOR CLEANOUT
FD	FIRE DAMPER
FD-X	FLOOR DRAIN DESIGNATOR
FDC	FIRE DEPARTMENT CONNECTION
FOT-X	FUEL OIL STORAGE TANK DESIGNATOR
FLR	FLOOR
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
GA	GAUGE
GALV.	GALVANIZED
GPH	GALLONS PER HOUR
GAL	GALLONS
GPM	GALLONS PER MINUTE
GWB	GYPSUM WALL BOARD
HB-X	HOSE BIBB DESIGNATOR
HD	HEAD
HOA	HAND-OFF-AUTO
HW	HOT WATER
HWG-X	HOT WATER GENERATOR
HWS	HEATING HOT WATER SUPPLY
HWR	HEATING HOT WATER RETURN
HP	HORSEPOWER
IN	INCHES
IBC	INTERNATIONAL BUILDING CODE
IFC	INTERNATIONAL FIRE CODE
IFGC	INTERNATIONAL FUEL GAS CODE
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LF	LINEAL FEET
LGT	LEAVING GLYCOL TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTUH
MCA	MAXIMUM CIRCUIT AMPACITY
MFGR	MANUFACTURER
MFS	MAXIMUM FUSE SIZE
MIN	MINIMUM
MUA-X	MAKEUP AIR UNIT DESIGNATOR
MU	BOILER MAKEUP WATER
MOD	MOTOR OPERATED DAMPER
MTD	MOUNTED
NC	NOISE CRITERIA
N.C.	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION ASSOC.
NO.	NUMBER
N.O.	NORMALLY OPEN
NTS	NOT TO SCALE
O/A	OUTSIDE AIR
OC	ON CENTER
ON	OVERFLOW NOZZLE
OSV	OIL SAFETY VALVE
OW	OILY WASTE
P-X	PLUMBING FIXTURE DESIGNATOR
PCP-X	PLUMBING CIRCULATION PUMP
PCT-X	PLUMBING COMPRESSION TANK
PD	PRESSURE DROP
PE	POLYETHYLENE PIPE
PF-X	PRE-FILTER DESIGNATOR
PG	PROPYLENE GLYCOL
PH	PHASE
PSI	POUND PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
R/A	RETURN AIR
RP	REFRIGERATION PIPING
RPM	REVOLUTIONS PER MINUTE
S/A	SUPPLY AIR
SCFM	STANDARD CUBIC FEET PER MINUTE
SP	STATIC PRESSURE
SQ	SQUARE
SS	SANITARY SEWER
TEF-X	TOILET EXHAUST FAN DESIGNATOR
TEMP	TEMPERATURE
TOD	TOP OF DUCT
TOS	TOP OF SLAB
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
TTL	TOTAL
TV-X	TEMPERING VALVE DESIGNATOR
TW	TEMPERED WATER
TWC	TEMPERED WATER CIRCULATED
TYP.	TYPICAL
UH-X	UNIT HEATER DESIGNATOR
UPC	UNIFORM PLUMBING CODE
V	VENT
VAC	VOLT-AC
VDC	VOLT-DC
VEL	VELOCITY
VF-X	VENTILATION FAN DESIGNATOR
V.T.R.	VENT THRU ROOF
W/	WITH
W/O	WITHOUT
W	WASTE (SANITARY SEWER)
WC	WATER COLUMN
W.C.O.	WALL CLEAN OUT
WG	WATER GAUGE
WHA	WATER HAMMER ARRESTOR
WPD	WATER PRESSURE DROP

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212 CHENEGA AVENUE, VALDEZ, AK 99686

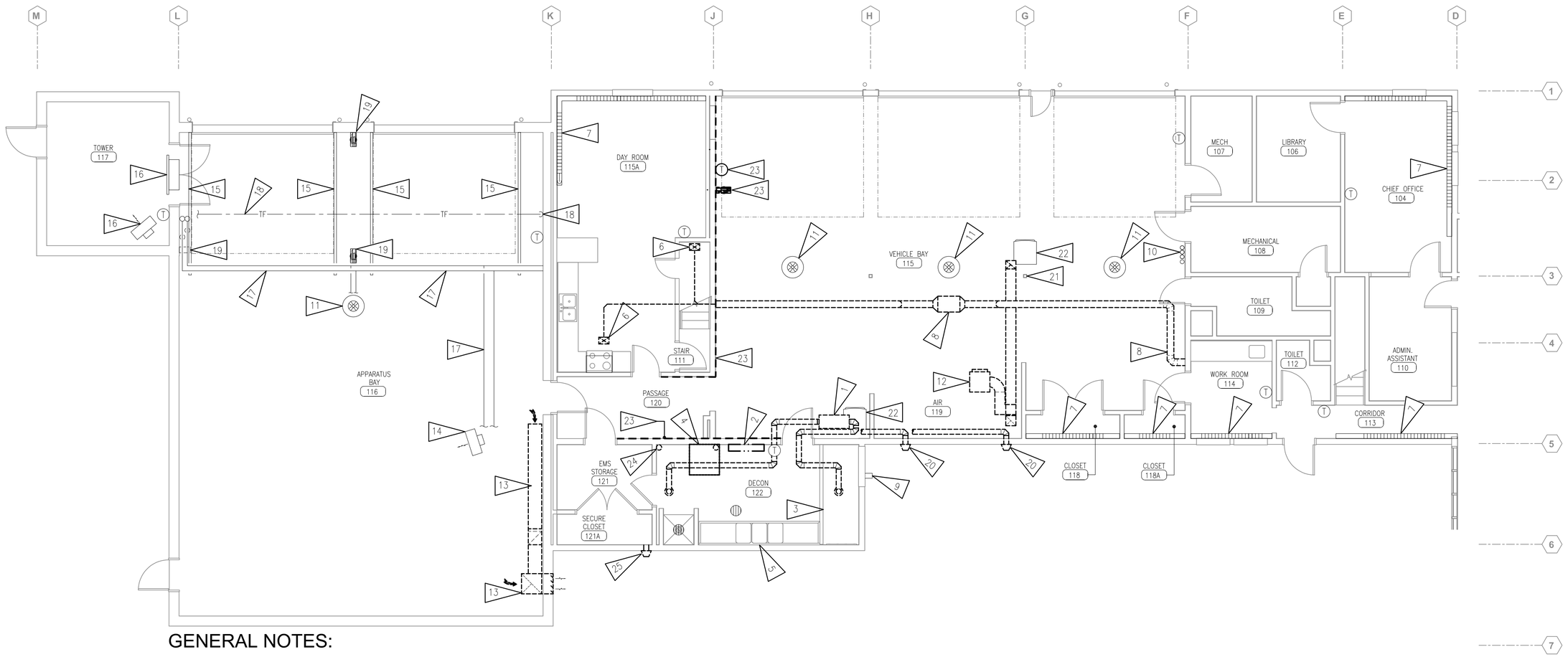
STATE OF ALASKA
BRIAN P. PEKAR
ME-11249
12/12/2019
REGISTERED PROFESSIONAL ENGINEER

RSA
Mechanical and Electrical Consulting Engineers
670 West Fireweed Lane, Suite 200
Anchorage, AK 99503
(907)276-5521
Corporate No: AECC542

Wolf ARCHITECTURE

SHEET CONTENTS
LEGEND, ABBREVIATIONS AND EQUIPMENT SCHEDULES

M0.1



GENERAL NOTES:

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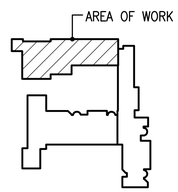
B. CONTRACTOR TO COORDINATE PATCHING ALL ASSEMBLIES AND FINISHES IN AREAS WHERE MECHANICAL EQUIPMENT HAS BEEN REMOVED.

DEMOLITION NOTES:

1. DEMOLISH EXISTING HRV AND ASSOCIATED DUCTWORK, DIFFUSER, WALL CAPS AND CONTROLS. EXISTING CONDENSATE DRAIN TO BE REUSED.
2. EXISTING RADIANT HEATING MANIFOLD, PIPING, PUMP AND CONTROLS SERVING DECON ROOM, EXISTING 3/4" HWS/HWR BRANCH PIPING SHALL REMAIN.
3. EXISTING CURBED DRAIN ENCLOSURE SHALL REMAIN.
4. SAW CUT AND DEMOLISH EXISTING HOUSEKEEPING PAD AS REQUIRED TO ACCOMMODATE NEW WORK, REFER TO ARCHITECTURAL DEMOLITION PLAN.
5. EXISTING PLUMBING FIXTURES IN THE DECON ROOM SHALL REMAIN.
6. DEMOLISH EXISTING SUPPLY AIR DIFFUSER AND ALL ABOVE CEILING DUCTWORK TO THE GREATEST EXTENT POSSIBLE, FIELD VERIFY PRIOR TO DEMOLITION.
7. EXISTING FINTUBE RADIATION AND ASSOCIATED CONTROLS SHALL REMAIN.
8. DEMOLISH EXISTING INLINE BOOSTER FAN, CONTROLS AND ASSOCIATED DUCTWORK IN ITS ENTIRETY BACK INTO SECOND FLOOR FAN ROOM. CAP DUCTWORK AT TAKE–OFF.
9. EXISTING SIDE WALL PLUMBING VENT SHALL REMAIN.
10. EXISTING HYDRONIC AND DOMESTIC WATER PIPING ROUTED THROUGH APPARATUS BAY SHALL REMAIN.
11. EXISTING HYDRONIC UNIT HEATER, PIPING AND ASSOCIATED CONTROLS SHALL REMAIN.
12. DEMOLISH EXISTING SOFFIT MOUNTED EXHAUST FAN, DUCTWORK AND ASSOCIATED CONTROLS IN THEIR ENTIRETY.
13. DEMOLISH EXISTING INLINE EXHAUST FAN, DUCTWORK, CONTROLS AND BACKDRAFT DAMPER.
14. EXISTING HORIZONTAL HYDRONIC UNIT HEATER SHALL REMAIN.
15. EXISTING OVERHEAD DOOR RAILS @ 12'–8'' A.F.F.
16. EXISTING HOSE TOWER VENTILATION AND HYDRONIC HEATER SHALL REMAIN.
17. EXISTING HYDRONIC PIPING SHALL REMAIN.
18. EXISTING TRUCK FILL PIPING SHALL REMAIN.
19. EXISTING HOSE REEL SHALL REMAIN.
20. DEMOLISH EXISTING WALL CAP AND ASSOCIATED DUCTWORK.
21. RELOCATE CW PIPING AND VALVE TO SIDE OF COLUMN TO ACCOMMODATE NEW EXHAUST DUCTWORK.
22. EXISTING WASHER/DRYER TO BE RELOCATED, REFER TO ARCHITECTURAL.
23. ALL MECHANICAL DEVICES, EQUIPMENT, PIPING, HOSE REELS, DUCTWORK AND ASSOCIATED APPURTENANCES ON THIS WALL UP TO 8'–0" A.F.F. SHALL BE TEMPORARILY REMOVED TO FACILITATE REMEDIATION.
24. DEMOLISH EXISTING CLOTHES DRYER EXHAUST DUCTWORK IN ITS ENTIRETY.

1 DEMOLITION PLAN - FIRST FLOOR
3/16" = 1'-0"

N



KEY PLAN
NO SCALE

RSA PROJ NO: L9157.00
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CHECKED: AJS
DATE: 12-12-2019
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CONSTRUCTION DOCUMENTS
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212 CHENEGA AVENUE, VALDEZ, AK 99686

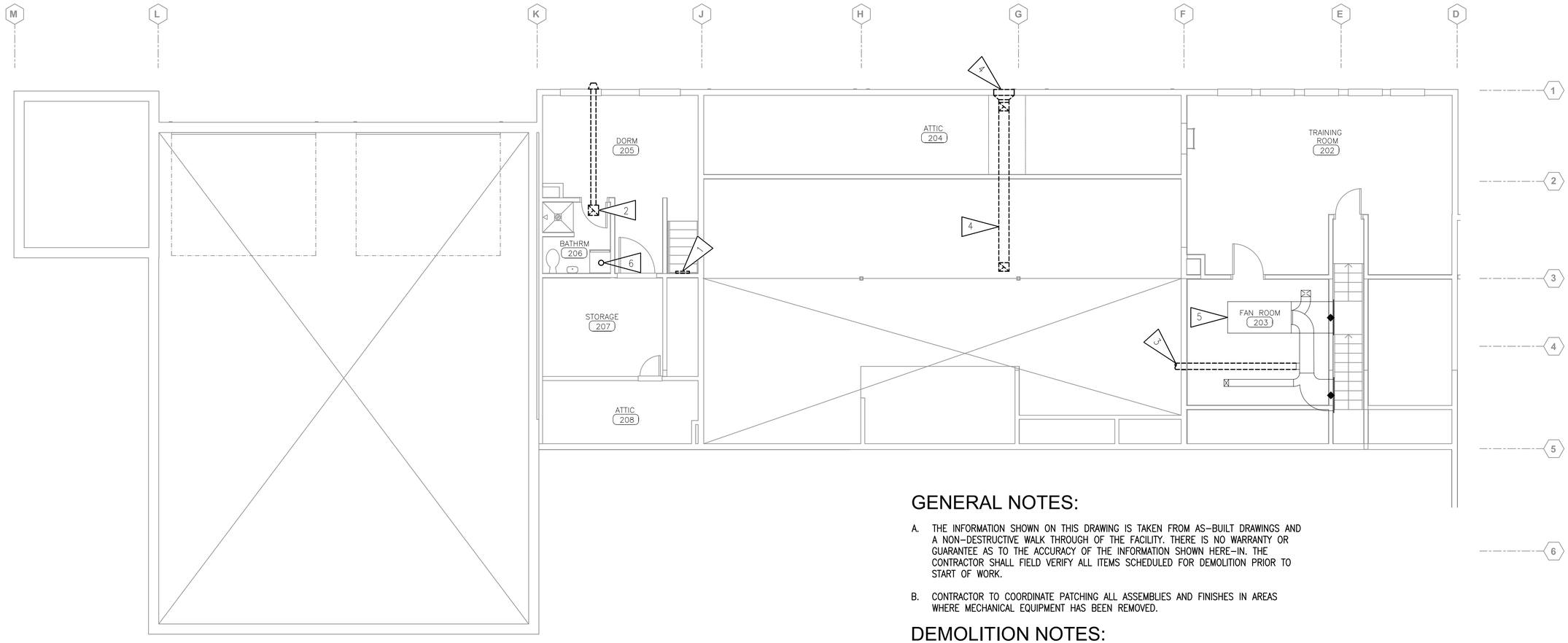
STATE OF ALASKA
14 DEC 19
BRIAN P. PEKAR
ME–11249
EXPIRES: 12/31/2020
REGISTERED PROFESSIONAL ENGINEER

RSA Mechanical and Electrical Consulting Engineers
670 West Fireweed Lane, Suite 200
Anchorage, AK 99503
(907)276-0521
Corporate No.: AECC542

Wolf ARCHITECTURE

SHEET CONTENTS
FIRST FLOOR
DEMOLITION PLAN

M1.1



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B. CONTRACTOR TO COORDINATE PATCHING ALL ASSEMBLIES AND FINISHES IN AREAS WHERE MECHANICAL EQUIPMENT HAS BEEN REMOVED.

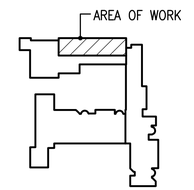
DEMOLITION NOTES:

1. DEMOLISH EXISTING SIDEWALL SUPPLY AIR GRILLE AND ALL ASSOCIATED DUCTWORK.
2. DEMOLISH EXISTING TOILET EXHAUST FAN ASSOCIATED DUCTWORK AND WALL CAP.
3. DEMOLISH EXISTING SUPPLY AIR DUCTWORK BACK TO MAIN AND CAP.
4. DEMOLISH EXISTING LOUVER AND ASSOCIATED DUCTWORK IN ITS ENTIRETY.
5. EXISTING AIR HANDLER SHALL REMAIN.
6. EXISTING LAVATORY TAILPIECE TO BE REPLACED WITH NEW CONDENSATE TAILPIECE.

1 DEMOLITION PLAN - SECOND FLOOR

3/16" = 1'-0"

N



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212 CHENEGA AVENUE, VALDEZ, AK 99686

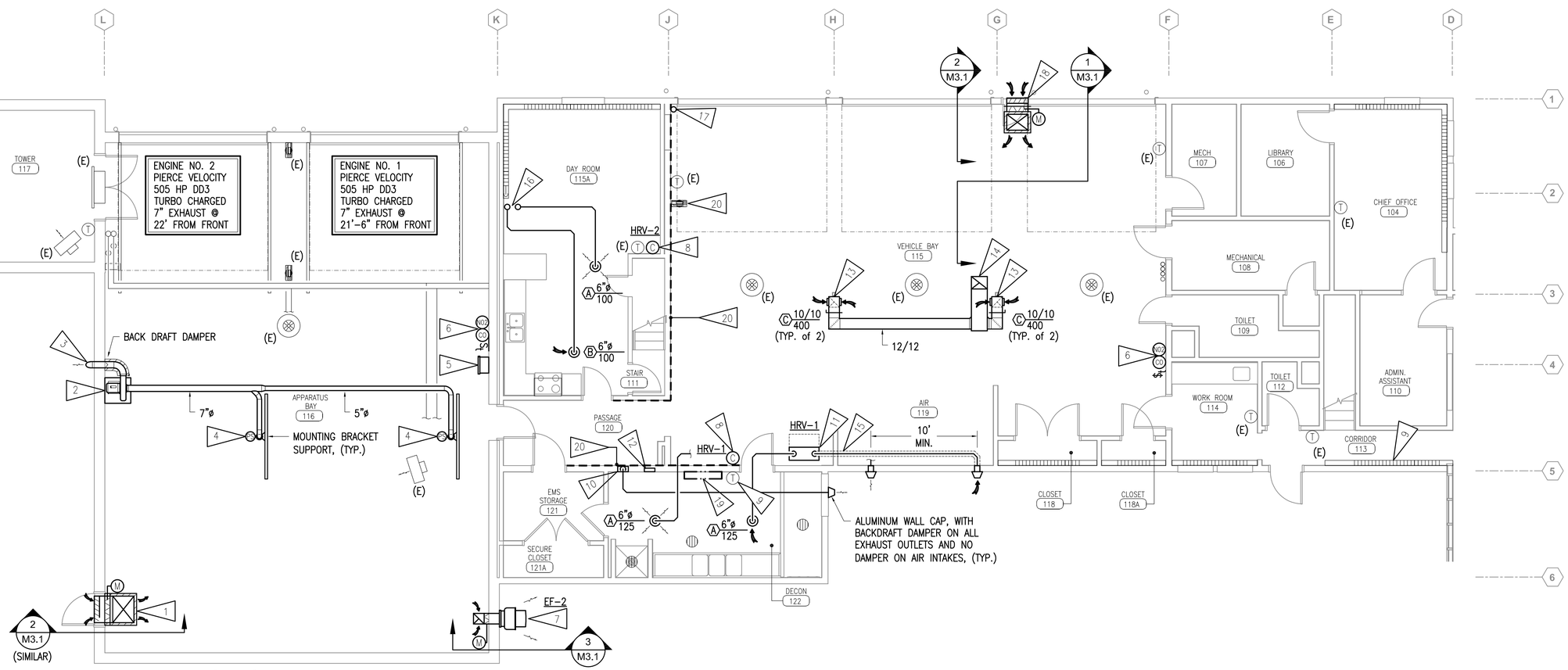
STATE OF ALASKA
49TH
BRIAN P. PEKAR
ME-11249
REGISTERED PROFESSIONAL ENGINEER

RSA
Mechanical and Electrical Consulting Engineers
670 West Fireweed Lane, Suite 200
Anchorage, AK 99503
(907)276-5521
Corporate No.: AECC542

Wolf ARCHITECTURE

SHEET CONTENTS
SECOND FLOOR
DEMOLITION PLAN

M1.2



GENERAL NOTES:

A. THE CONTRACTOR SHALL COORDINATE WITH THE REMEDIATION CONTRACTOR FOR ANY PENETRATION INTO GWB ASSEMBLIES.

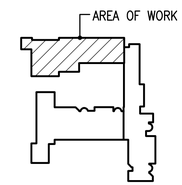
B. CONTRACTOR TO COORDINATE LOCATION OF ALL NEW PENETRATIONS TO MAKE BEST USE OF EXISTING ROUTING AND/OR TO AVOID CONFLICTS WITH EXISTING FIXTURES AND APPURTENANCES.

REMODEL NOTES:

1. 30/30 MAKE-UP AIR LOUVER, L-1 WITH INSULATED 30/24 UPTURNED ELBOW COMPLETE WITH MOTORIZED CONTROL DAMPER.
2. PRESSURE BLOWER, PB-1 SUSPENDED FROM STRUCTURE WITH VIBRATION ISOLATORS.
3. 6"ø E/A THROUGH WALL, SLEEVE AND SEAL WALL PENETRATION, TERMINATE WITH 45° FITTING AND 3/4" STAINLESS STEEL MESH SCREEN. EXTERIOR PORTION SHALL BE STAINLESS STEEL.
4. 5"ø E/A SIMPLE DROP SYSTEM, DS-1.
5. SOURCE CAPTURE DIESEL FUME EXTRACTION SYSTEM CONTROL PANEL.
6. CO/NOX GAS DETECTOR CONTROL PANEL AND 0-60 MINUTE SPRING WOUND TIMER.
7. WALL MOUNTED EXHAUST FAN EF-2 WITH MOTORIZED DAMPER ASSEMBLY.
8. NEW WALL MOUNTED HRV CONTROLLER.
9. EXISTING THERMOSTAT FOR RADIANT SLAB HEATING.
10. 4"ø CLOTHES DRYER VENT DOWN IN WALL TO DRYER WALL BOX, WB-1.
11. HEAT RECOVERY VENTILATOR HRV-1 SUSPENDED FROM STRUCTURE, INSTALL PER THE MANUFACTURES INSTRUCTIONS. CONNECT CONDENSATE DRAIN TO EXISTING.
12. NEW WASHER ROUGH-IN BOX P-1 TO SERVICE DOMESTIC CLOTHES WASHER.
13. 12/12 E/A DOWN TO 12" A.F.F., PROVIDE TURNING VANES AND VOLUME DAMPER.
14. 18/14 E/A UP.
15. INSULATED 6"ø O/A INTAKE AND 6"ø EXHAUST AIR DUCTWORK AND WALL CAPS.
16. 6"ø S/A & R/A DUCTWORK UP TO SECOND FLOOR CEILING SPACE IN NEW ARCHITECTURAL CHASE, FIRE STOP FLOOR PENETRATION.
17. 1/2" CONDENSATE PIPE UP TO HRV-2 AND DOWN TO 1" A.F.F.
18. 24/24 MAKE-UP AIR LOUVER, L-1 CENTERED OVER DOOR WITH INSULATED 24/18 UPTURNED ELBOW UP TO 12" B.F.C. COMPLETE WITH MOTORIZED CONTROL DAMPER.
19. REINSTALL EXISTING METAL MESH GUARD OVER RADIANT FLOOR HEATING MANIFOLD.
20. REINSTALL ALL MECHANICAL DEVICES, EQUIPMENT, PIPING, HOSE REELS, DUCTWORK AND ASSOCIATED APPURTENANCES ON THIS WALL REMOVED TO FACILITATE REMEDIATION.

1 REMODEL PLAN - FIRST FLOOR

3/16" = 1'-0"



KEY PLAN
NO SCALE

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STATION 1 REPAIRS & VENTILATION UPGRADES

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212 CHENEGA AVENUE, VALDEZ, AK 99686

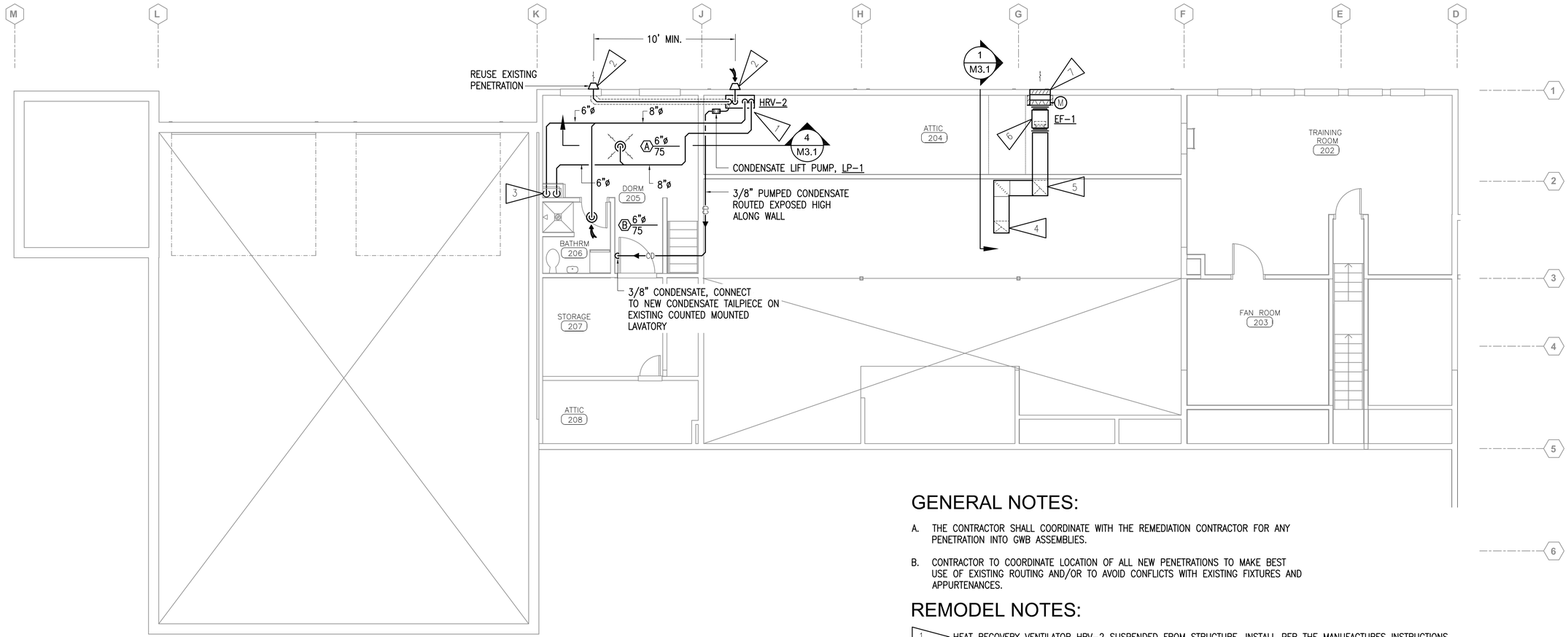
STATE OF ALASKA
BRIAN P. PEKAR
ME-11249
REGISTERED PROFESSIONAL ENGINEER

RSA
Mechanical and Electrical Consulting Engineers
670 West Fireweed Lane, Suite 200
Anchorage, AK 99503
(907)276-0521
Corporate No.: AECC542

Wolf ARCHITECTURE

SHEET CONTENTS
FIRST FLOOR
REMODEL PLAN

M2.1



GENERAL NOTES:

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B. CONTRACTOR TO COORDINATE LOCATION OF ALL NEW PENETRATIONS TO MAKE BEST USE OF EXISTING ROUTING AND/OR TO AVOID CONFLICTS WITH EXISTING FIXTURES AND APPURTENANCES.

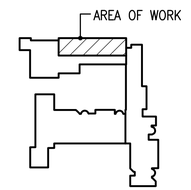
REMODEL NOTES:

1. HEAT RECOVERY VENTILATOR HRV-2 SUSPENDED FROM STRUCTURE, INSTALL PER THE MANUFACTURES INSTRUCTIONS. ROUTE 3/8" CONDENSATE DRAIN FROM LP-1 TO NEW CONDENSATE TAILPIECE ON EXISTING LAVATORY IN BATHROOM 206.
2. INSULATED 8"ø INTAKE AND EXHAUST AIR DUCTWORK AND WALL CAPS.
3. 6"ø S/A & R/A DOWN IN CHASE WITH 22"x12" CLEAR INSIDE DIMENSION TO DAY ROOM, SLEEVE AND SEAL FLOOR PENETRATION. COORDINATE WITH ARCHITECTURAL.
4. 18/14 E/A DOWN.
5. 18/14 E/A ROUTED THROUGH ATTIC SPACE, FIELD VERIFY ROUTING.
6. INLINE FAN, EF-4, SUSPENDED FROM STRUCTURE.
7. 24/24 LOUVER, L-1.

1 REMODEL PLAN - SECOND FLOOR

3/16" = 1'-0"

N



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BRIAN P. PEKAR
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REGISTERED PROFESSIONAL ENGINEER

RSA
Mechanical and Electrical Consulting Engineers
670 West Fireweed Lane, Suite 200
Anchorage, AK 99503
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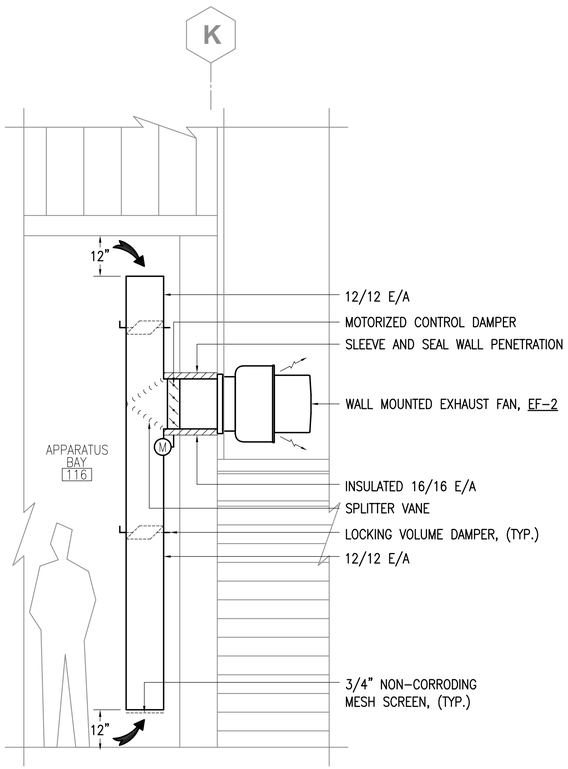
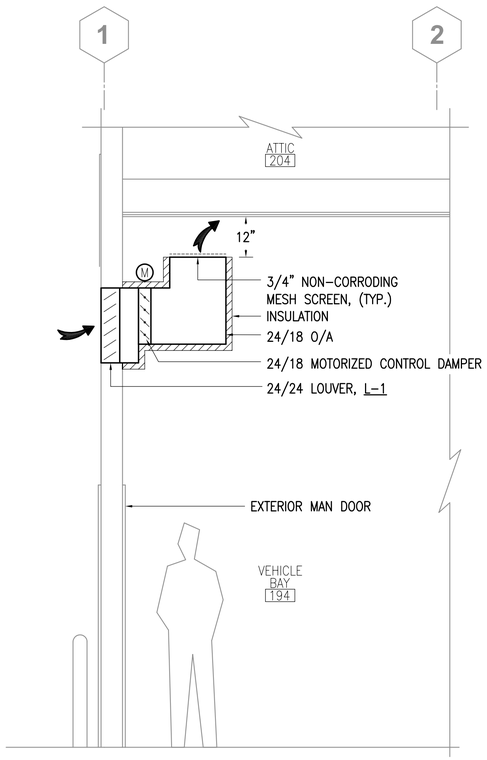
Wolf ARCHITECTURE

SHEET CONTENTS
SECOND FLOOR REMODEL PLAN

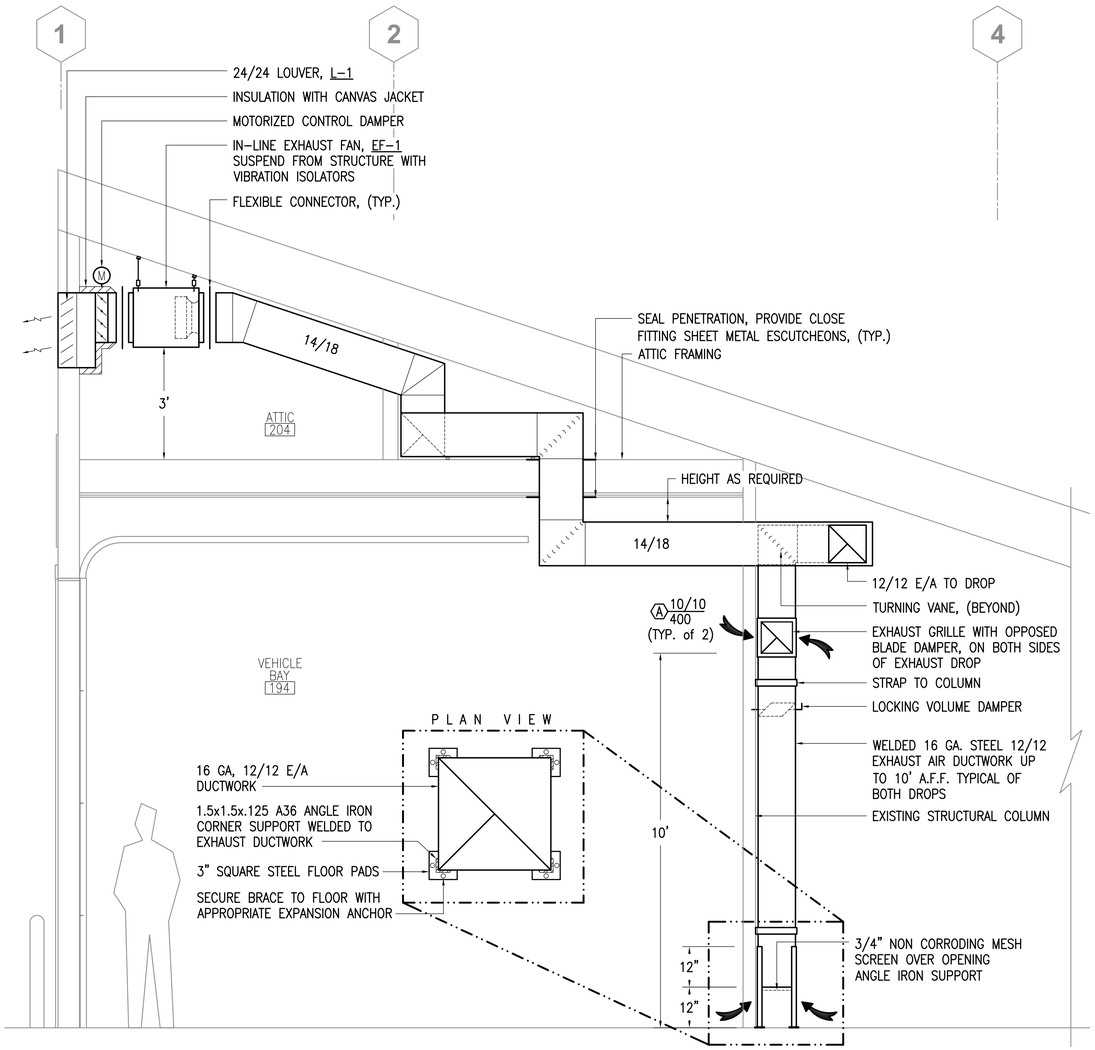
M2.2



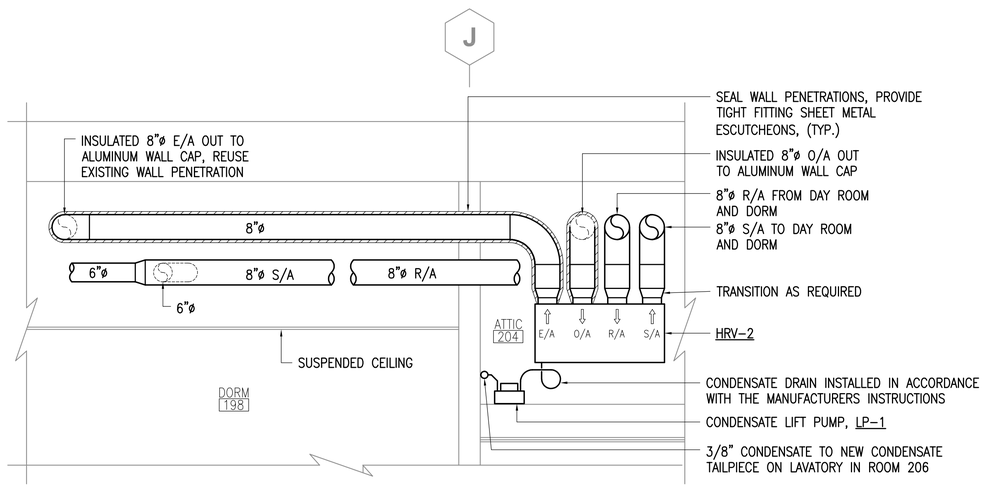
3 SECTION
1/2" = 1'-0"



2 SECTION
1/2" = 1'-0"



1 SECTION
1/2" = 1'-0"



4 SECTION
1/2" = 1'-0"

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STATE OF ALASKA
49TH
BRIAN P. PEKAR
ME-11249
12/20/19
REGISTERED PROFESSIONAL ENGINEER

RSA
Mechanical and Electrical Consulting Engineers
670 West Fireweed Lane, Suite 200
Anchorage, AK 99503
(907)276-0521
Corporate Mbr. AEC/CS42

Wolf ARCHITECTURE

SHEET CONTENTS
SECOND FLOOR REMODEL PLAN

M3.1

LEGEND

○	ROUND LIGHT FIXTURE – PENDANT OR SURFACE MTD CLG		TELECOMMUNICATIONS OUTLET (COMBINATION TELEPHONE & DATA)
	EMERGENCY LIGHT		P.A. SPEAKER
	LINEAR LIGHT FIXTURE – WALL MTD	, $_{C}$	FIRE ALARM HORN/STROBE LIGHT (WALL, CLG MOUNTED)
	STRIPLIGHT – PENDANT OR SURFACE MTD CLG		DUCT TYPE PHOTOELECTRIC SMOKE DETECTOR
A	FIXTURE TAG (LETTER INDICATES TYPE)		DUPLEX RECEPTACLE TO BE REMOVED (DASHED OR DOTTED LINES INDICATE ITEMS TO BE REMOVED TYPICAL)
$	SINGLE POLE SWITCH	1	NOTE TAG (No. INDICATES NOTE)
$$_{a}$$	SINGLE POLE SWITCH (LOWERCASE LETTER INDICATES SWITCHING)	AFF	ABOVE FINISHED FLOOR
$$_{3}$$, $$_{4}$$	THREE WAY SWITCH, FOUR WAY SWITCH	AFG	ABOVE FINISHED GRADE
	CONDUIT, CONCEALED	C	CONDUIT
#10	NUMBER AND SIZE OF WIRES (NO MARKS = 3 #12)	E	DENOTES EXISTING ITEM
A–2	HOMERUN TO PANEL (PANEL AND CIRCUIT No.)	EM	DENOTES EMERGENCY POWER
SR	SURFACE RACEWAY	GFCI	GROUND FAULT CIRCUIT INTERRUPTER
	PANEL	K	KELVIN
	DUPLEX RECEPTACLE	LED	LIGHT EMITTING DIODE
	DUPLEX RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTER	LM	LUMENS
	QUADRAPLEX RECEPTACLE	MCB	MAIN CIRCUIT BREAKER
	SPECIAL PURPOSE OUTLET	MLO	MAIN LUGS ONLY
	JUNCTION BOX	NEC	NATIONAL ELECTRICAL CODE
	MOTOR (SIZED AS NOTED)	NTS	NOT TO SCALE
$$_{F}$$	FRACTIONAL HORSEPOWER MOTOR STARTER	R	DENOTES EXISTING ITEM THAT HAS BEEN RELOCATED
	DISCONNECT SWITCH	TTB	TELEPHONE TERMINAL BACKBOARD
	DISCONNECT SWITCH (FUSED)	TYP	TYPICAL
	COMBINATION DISCONNECT/MAGNETIC MOTOR STARTER	UON	UNLESS OTHERWISE NOTED

LIGHT FIXTURE SCHEDULE

TYPE	LOCATION	MANUFACTURER AND CATALOG NUMBER (OR APPROVED EQUAL)	LUMINAIRE DESCRIPTION	MOUNTING		LAMPS	BALLAST/DRIVER	TOTAL INPUT WATTS
				TYPE	HEIGHT			
A	DECON ROOM	LITHONIA #FEM L48 6000LM LPAFL MD MVOLT GZ10 40K 80CRI	4' NOMINAL LED ENCLOSED AND GASKETED FIXTURE, WET LOCATION LISTED, LOW PROFILE ACRYLIC FROSTED LENS AND WHITE FINISH.	SURFACE	CEILING	4000K 6275LM	120/277V LED 0–10V DIMMABLE	45
E	DECON ROOM	EVENLITE #IPXN22 MR16LED	LED EMERGENCY LIGHT, WET LOCATION LISTED, NICKEL CADMIUM BATTERY, DUAL 6V 5W LAMP HEADS.	SURFACE WALL	MATCH EXISTING	LED	120V LED	10

LOAD CALCULATION

EXISTING PEAK DEMAND (CVEA NOVEMBER, 2016):	90.0	KW
ASSUMED POWER FACTOR OF 0.90	100	KVA
125% PER NEC 220.87	125	KVA
AMPERAGE @ 120/208V, 3ø, 4W:	347.4	A
REMOVED LOADS (REFERENCE E1 SERIES PLANS):		
MECHANICAL EQUIPMENT	(2.83)	KVA
LIGHTING	(0.31)	KVA
ADDED LOADS (REFERENCE E2 SERIES PLANS):		
MECHANICAL EQUIPMENT	6.8	KVA
LIGHTING	0.15	KVA
TOTAL = EXISTING – REMOVED + ADDED:	128.8	KVA
AMPERAGE @ 120/208V, 3ø, 4W:	358	A

EXISTING 800A SERVICE HAS ADEQUATE CAPACITY FOR NEW AND EXISTING LOADS. NOTE, WASHER AND DRYER ARE (E) IN THE BUILDING AND BEING RELOCATED UNDER THIS PROJECT, THUS NO LAUNDRY LOADS ARE ADDED TO THE SERVICE.

RSA PROJ NO L9157.00
DRAWN DB
CHECKED DB
DATE 12-12-2019
FULL SIZE DRAWINGS 22" x 34"

STATION 1 REPAIRS & VENTILATION UPGRADES

CONSTRUCTION DOCUMENTS

CITY OF VALDEZ

212 CHENEGA AVENUE, VALDEZ, AK 99686

STATE OF ALASKA
DAVIN K. BLUBAUGH
EE–13893
12/23/19
REGISTERED PROFESSIONAL ENGINEER

RSA
Mechanical and Electrical Consulting Engineers
670 West Fireweed Lane, Suite 200
Anchorage, AK 99503
(907)276-0521
Corporate Lic.: AECC542

Wolf ARCHITECTURE

SHEET CONTENTS
LEGEND AND SCHEDULES

E0.1

GENERAL NOTES:

A. THE INFORMATION SHOWN ON THIS DRAWING IS TAKEN FROM AS–BUILT DRAWINGS AND A NON–DESTRUCTIVE WALK THROUGH OF THE FACILITY. THERE IS NO WARRANTY OR GUARANTEE AS TO THE ACCURACY OF THE INFORMATION SHOWN HERE–IN. THE CONTRACTOR SHALL FIELD VERIFY ALL ITEMS SCHEDULED FOR DEMOLITION PRIOR TO START OF WORK.

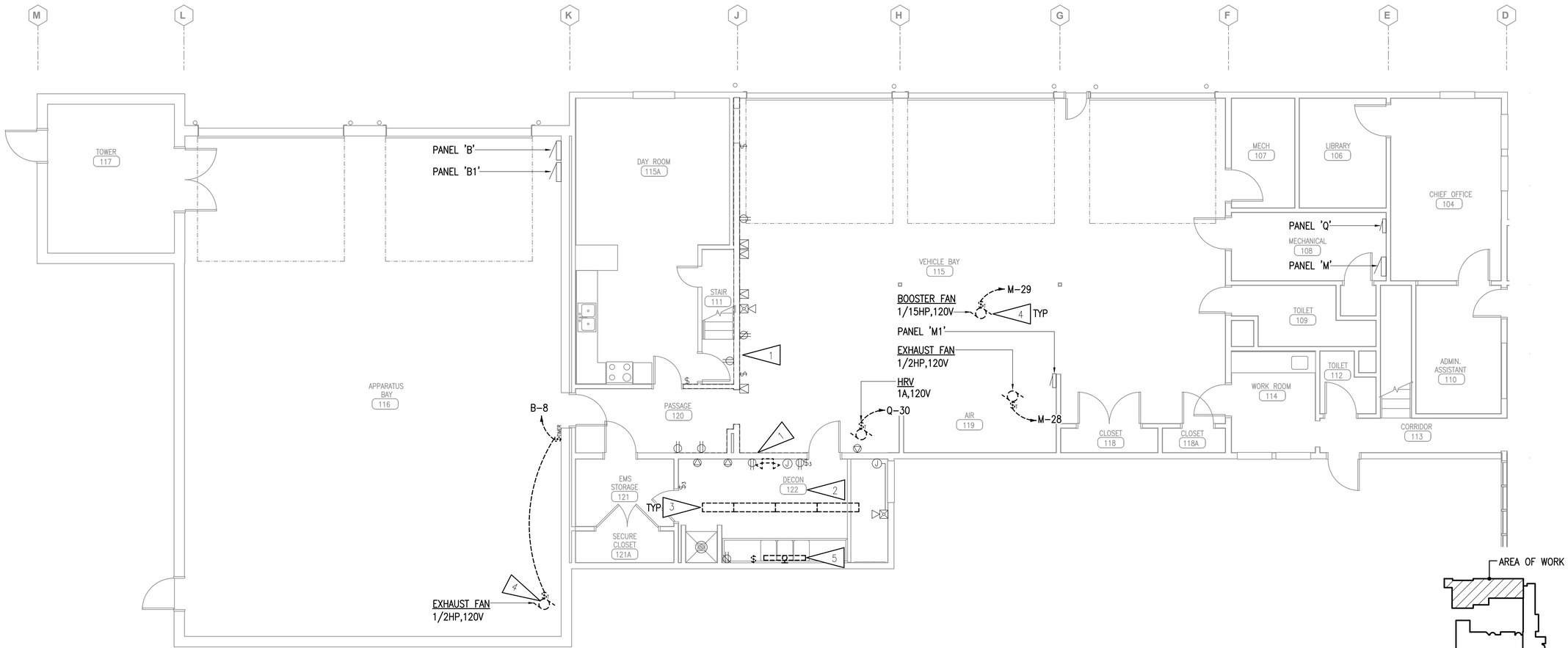
B. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL SALVAGEABLE MATERIALS. THE CONTRACTOR SHALL DELIVER SALVAGED MATERIALS TO A WAREHOUSE AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL DISPOSE OF, OFF SITE, ALL UNWANTED MATERIALS.

C. DASHED OR DOTTED LINES INDICATE ITEMS TO BE REMOVED. SOLID LINES INDICATE EXISTING ITEMS TO REMAIN.

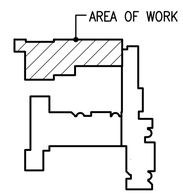
D. CONTRACTOR SHALL COORDINATE WITH REMEDIATION CONTRACTOR FOR ANY PENETRATIONS AND/OR PATCHING/REPAIRING OF ANY GYPSUM WALL BOARD ASSEMBLIES.

SHEET NOTES:

1. ALL ELECTRICAL DEVICES, EQUIPMENT, CONDUIT, WIRING, ETC. ON NOTED WALLS UP TO 8'–0" AFF SHALL BE TEMPORARILY REMOVED TO FACILITATE REMEDIATION. COORDINATE WITH REMEDIATION CONTRACTOR FOR CLEANING OF ALL EXISTING TO REMAIN ITEMS PRIOR TO REINSTALLATION.
2. ALL ELECTRICAL DEVICES, EQUIPMENT, CONDUIT, WIRING, ETC. WITHIN DECON ROOM 122 SHALL BE TEMPORARILY REMOVED TO FACILITATE REMEDIATION. COORDINATE WITH REMEDIATION CONTRACTOR FOR CLEANING OF ALL EXISTING TO REMAIN ITEMS PRIOR TO REINSTALLATION.
3. DEMOLISH FIXTURES. SALVAGE CIRCUIT FOR REUSE.
4. DEMOLISH CONNECTIONS TO MECHANICAL EQUIPMENT. DEMOLISH ALL ASSOCIATED MOTOR STARTERS, DISCONNECTS, CONTROL DEVICES, ETC. DEMOLISH CONDUIT AND WIRE BACK TO SOURCE OR NEAREST JUNCTION BOX REQUIRED TO REMAIN.
5. DEMOLISH WALL MOUNTED FIXTURE AND ASSOCIATED SWITCH. DEMOLISH WIRING BACK TO SOURCE PANEL OR NEAREST JUNCTION BOX REQUIRED TO REMAIN.



1 FIRST FLOOR DEMOLITION PLAN
3/16" = 1'-0"



KEY PLAN
NO SCALE

RSA PROJ NO L91157.00
DRAWN DB
CHECKED DB
DATE 12-12-2019
FULL SIZE DRAWINGS 22" x 34"

STATION 1 REPAIRS & VENTILATION UPGRADES
CONSTRUCTION DOCUMENTS
CITY OF VALDEZ
212 CHENEGA AVENUE, VALDEZ, AK 99686

STATE OF ALASKA
DAVIN K. BLUBAUGH
EE–13893
12/23/19
REGISTERED PROFESSIONAL ENGINEER

RSA
Mechanical and Electrical Consulting Engineers
670 West Fireweed Lane, Suite 200
Anchorage, AK 99503
(907)276-0521
Corporate No.: AECC542

Wolf ARCHITECTURE

SHEET CONTENTS
FIRST FLOOR DEMOLITION PLAN

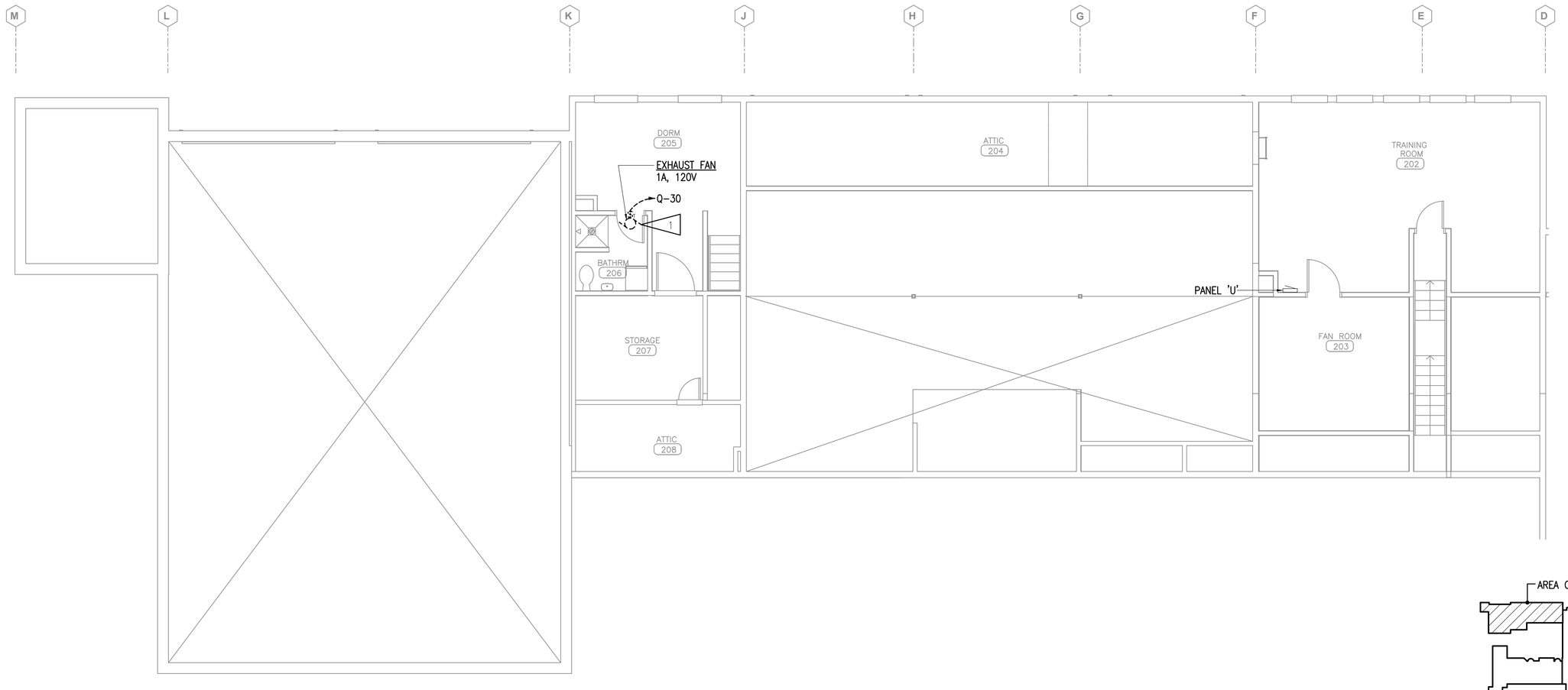
E1.1

GENERAL NOTES:

A. SEE E1.1 FOR GENERAL NOTES.

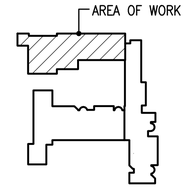
SHEET NOTES:

1. DEMOLISH CONNECTIONS TO MECHANICAL EQUIPMENT. DEMOLISH ALL ASSOCIATED MOTOR STARTERS, DISCONNECTS, CONTROL DEVICES, ETC. DEMOLISH CONDUIT AND WIRE BACK TO SOURCE OR NEAREST JUNCTION BOX REQUIRED TO REMAIN.



1 SECOND FLOOR DEMOLITION PLAN

3/16" = 1'-0"



KEY PLAN

NO SCALE

RSA PROJ NO L9157.00
DRAWN DB
CHECKED DB
DATE 12-12-2019
FULL SIZE DRAWINGS 22" x 34"

STATION 1 REPAIRS & VENTILATION UPGRADES

CONSTRUCTION DOCUMENTS

CITY OF VALDEZ

212 CHENEGA AVENUE, VALDEZ, AK 99686

STATE OF ALASKA
DAVIN K. BLUBAUGH
EE-13893
12/20/19
REGISTERED PROFESSIONAL ENGINEER

RSA
Mechanical and Electrical Consulting Engineers
670 West Fireweed Lane, Suite 200
Anchorage, AK 99503
(907)276-6021
Corporate Lic.: AECC542

Wolf ARCHITECTURE

SHEET CONTENTS
SECOND FLOOR DEMOLITION PLAN

E1.2

GENERAL NOTES:

A. THE INFORMATION SHOWN ON THIS DRAWING IS TAKEN FROM AS-BUILT DRAWINGS AND A NON-DESTRUCTIVE WALK THROUGH OF THE FACILITY. THERE IS NO WARRANTY OR GUARANTEE AS TO THE ACCURACY OF THE INFORMATION SHOWN HERE-IN.

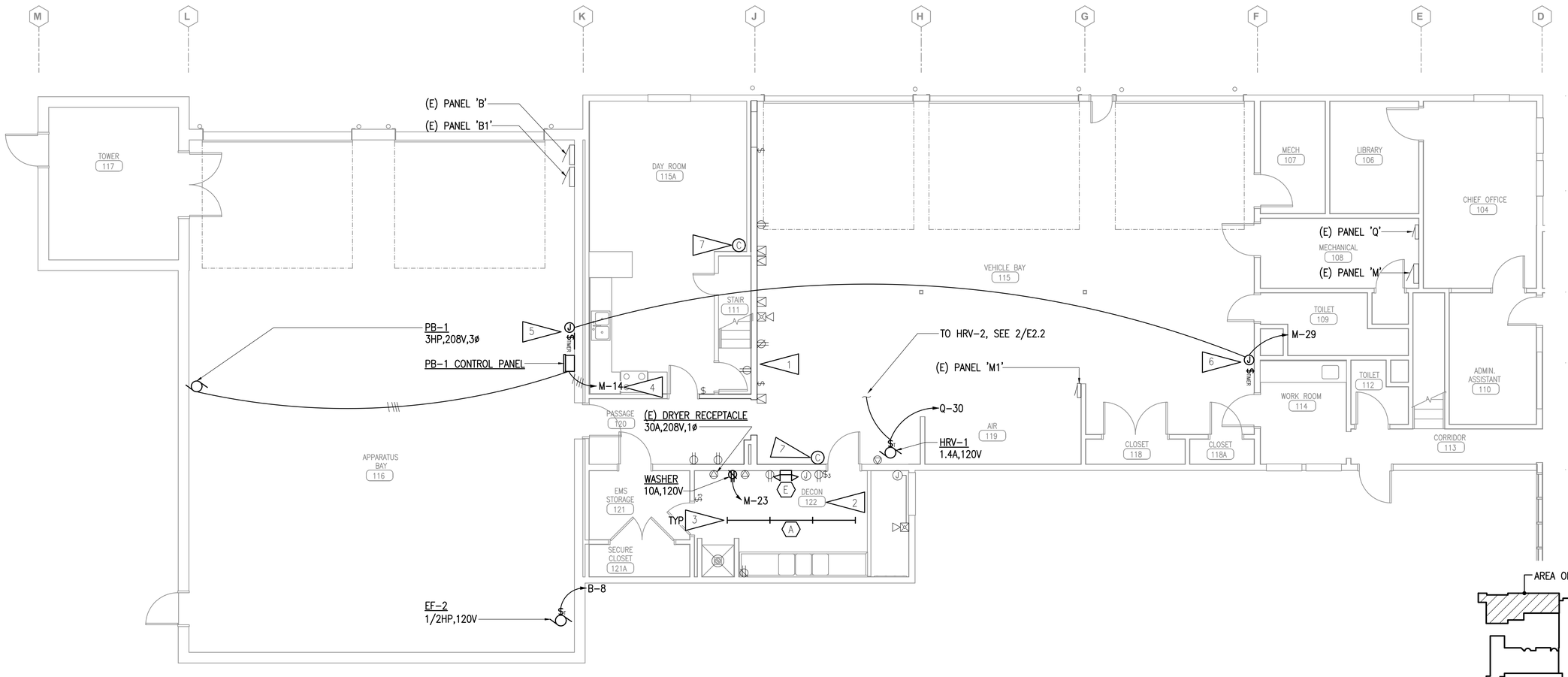
B. COORDINATE WITH MECHANICAL EQUIPMENT TO PROVIDE ALL NECESSARY INTERLOCKING CONDUIT AND WIRING FOR PROPER CONTROL OF MECHANICAL EQUIPMENT.

C. CONTRACTOR SHALL COORDINATE WITH REMEDIATION CONTRACTOR FOR ANY PENETRATIONS AND/OR PATCHING/REPAIRING OF ANY GYPSUM WALL BOARD ASSEMBLIES.

D. CONNECT NEW EQUIPMENT TO EXISTING BREAKERS WITHIN EXISTING PANELS, UNLESS OTHERWISE NOTED. PROVIDE UPDATED TYPED PANEL SCHEDULES DENOTING ALL CHANGES UNDER THIS PROJECT.

SHEET NOTES:

1. REINSTALL ALL EXISTING TO REMAIN ELECTRICAL DEVICES, EQUIPMENT, CONDUIT, WIRING, ETC. ON NOTED WALLS. COORDINATE WITH REMEDIATION CONTRACTOR FOR CLEANING OF ALL ITEMS PRIOR TO REINSTALLATION.
2. REINSTALL ALL EXISTING TO REMAIN ELECTRICAL DEVICES, EQUIPMENT, CONDUIT, WIRING, ETC. WITHIN DECON ROOM 122. COORDINATE WITH REMEDIATION CONTRACTOR FOR CLEANING OF ALL ITEMS PRIOR TO REINSTALLATION.
3. CONNECT NEW FIXTURES TO EXISTING SALVAGED CIRCUIT. EXTEND EXISTING CIRCUIT AS REQUIRED TO ACCOMMODATE NEW FIXTURE(S).
4. PROVIDE NEW 20A, 3-POLE BREAKER WITHIN (E) PANEL 'M' FOR PB-1. BREAKER SHALL BE LISETD FOR USE WITHIN (E) SQUARE D TYPE NQOB PANELBORD. REMOVE (E) 3-POLE BREAKER IN SPACES 14/16/18 TO ACCOMMODATE NEW BREAKER.
5. COMBINATION NOX/CO SENSOR/MONITOR AND TIMER SPECIFIED BY MECHANICAL. PROVIDE POWER CONNECTION AS SHOWN. PROVIDE ADDITIONAL CONTROL CONNECTIONS AS REQUIRED START/STOP EF-2 AS REQUIRED BY MECHANICAL SEQUENCE OF OPERATIONS.
6. COMBINATION NOX/CO SENSOR/MONITOR AND TIMER SPECIFIED BY MECHANICAL. PROVIDE POWER CONNECTION AS SHOWN. PROVIDE ADDITIONAL CONTROL CONNECTIONS AS REQUIRED START/STOP EF-1 AS REQUIRED BY MECHANICAL SEQUENCE OF OPERATIONS. SEE 1/E2.2 FOR LOCATION OF EF-1.
7. WALL MOUNTED CONTROLLER FOR HRV SPECIFIED BY MECHANICAL. PROVIDE CONTROL CONNECTIONS AS REQUIRED TO CONTROL HRV PER MECHANICAL SEQUENCE OF OPERATIONS.



1 FIRST FLOOR REMODEL PLAN
3/16" = 1'-0"

N

KEY PLAN
NO SCALE

RSA PROJ NO L91570.00
DRAWN DB
CHECKED DB
DATE 12-12-2019
FULL SIZE DRAWINGS: 22" x 34"

STATION 1 REPAIRS & VENTILATION UPGRADES
CONSTRUCTION DOCUMENTS
CITY OF VALDEZ
212 CHENEGA AVENUE, VALDEZ, AK 99686

STATE OF ALASKA
DAWN K. BLUBAUGH
EE-13893
12/09/19
REGISTERED PROFESSIONAL ENGINEER

RSA Mechanical and Electrical Consulting Engineers
670 Vlasf Firewood Lane, Suite 200
Anchorage, AK 99503
(907)276-0521
Corporate No.: AECC542

Wolf ARCHITECTURE

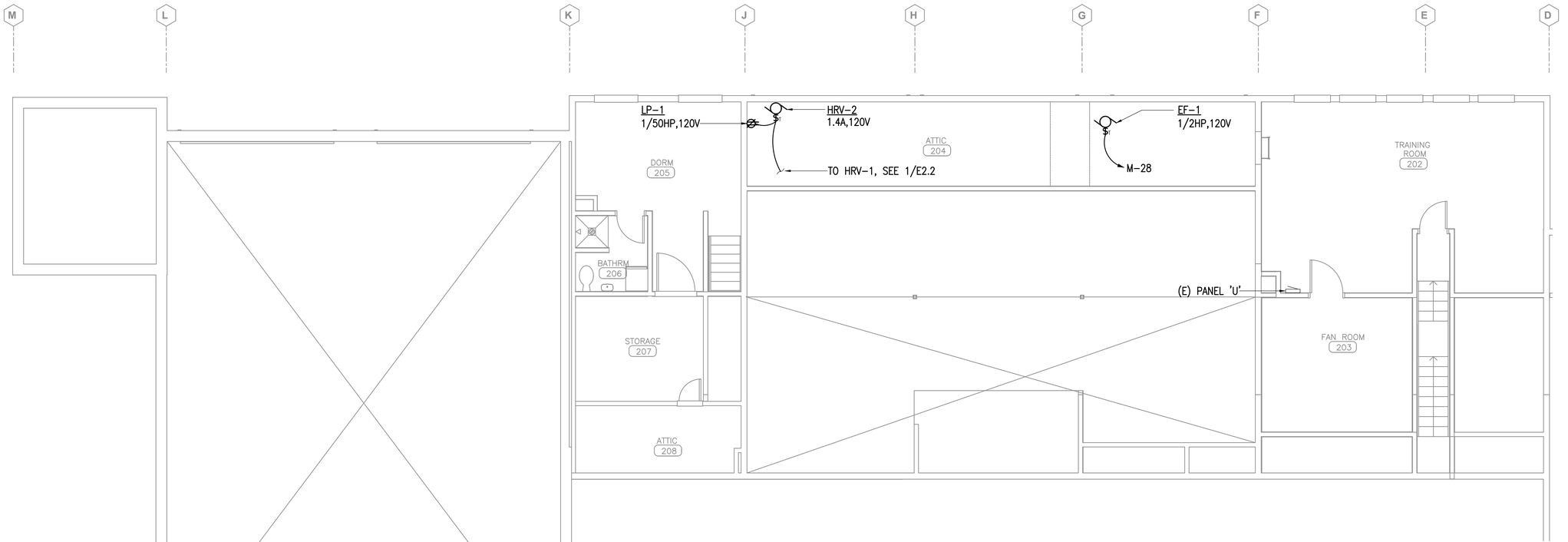
SHEET CONTENTS
FIRST FLOOR
REMODEL PLAN

E2.1

GENERAL NOTES:

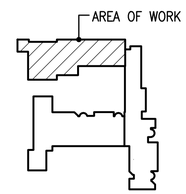
A. SEE E2.1 FOR GENERAL NOTES.

B. SEE E2.1 FOR CONTROL REQUIREMENTS FOR MECHANICAL EQUIPMENT.



1 SECOND FLOOR REMODEL PLAN

3/16" = 1'-0"



N

KEY PLAN

NO SCALE

RSA PROJ NO L9157.00
DRAWN DB
CHECKED DB
DATE 12-12-2019
FULL SIZE DRAWINGS: 22" x 34"

STATION 1 REPAIRS & VENTILATION UPGRADES

CONSTRUCTION DOCUMENTS

CITY OF VALDEZ

212 CHENEGA AVENUE, VALDEZ, AK 99686

STATE OF ALASKA
DAVIN K. BLUBAUGH
EE-13893
12/31/19
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RSA
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Wolf ARCHITECTURE

SHEET CONTENTS
SECOND FLOOR REMODEL PLAN

E2.2

CITY OF VALDEZ
CAPITAL FACILITIES

VALDEZ, ALASKA
Construction Documents

FOR

Valdez Fire Station 1
Remediation and Ventilation Upgrades

December 12, 2019

CITY OF VALDEZ
FIRE STATION 1 – REMEDIATION & VENTILATION UPGRADES

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DIVISION 6 - WOOD AND PLASTICS

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

DIVISION 9 – FINISHES

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ELECTRICAL

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END OF SECTION

SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

B. City of Valdez General Conditions take precedence if conflicts occur.

1.2 SUMMARY

A. This Section includes the following:
- **1.** Work covered by the Contract Documents.
- **2.** Contractor Qualifications
- **3.** Type of the Contract.
- **4.** Owner-furnished products.
- **5.** Excessive Noise
- **6.** Products ordered in advance.
- **7.** Use of premises.
- **8.** Owner's occupancy requirements.
- **9.** Work restrictions.
- **10.** Specification formats and conventions.

B. Related Sections include the following:
- **1.** Section 01500 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.
- **2.** Section 01230, Alternates
- **3.** Section 011770, Closeout Procedures

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: **Valdez Fire Station 1 Remediation & Ventilation Upgrades**
- **1.** Project Location: **212 Chenega Ave., Valdez, Alaska 99686**

B. Owner: City of Valdez, 212 Chenega Ave., Valdez, Alaska
- **1.** Owner's Representative: Mr. Brad Sontag, Project Manager, 300 Airport Rd. Ste 201, Valdez, Alaska

C. Architect: Wolf Architecture, 625 South Cobb St. Ste. 200, Palmer, Alaska

WORK COVERED BY CONTRACT DOCUMENTS

A. The Work includes provisions for all supplies, tools, equipment, scaffolding, transportation, utilities, services, superintendence, and labor, and the furnishing of all materials, items, and accessories needed for the total construction of the project in strict conformance with the Contract Documents and to deliver to Owner a complete, operating facility suitable for occupancy and use as a public safety building.

B. The Work consists of remediating hazardous materials, upgrading ventilation, installing direct capture vehicle exhaust system and associated renovations of the existing Valdez Fire Station 1 located on north end of the Valdez Municipal Complex.

1. All Architectural, Hazardous Materials Abatement and Remediation, Mechanical, and Electrical work required to complete the Building Project of the renovations of the Fire Station for the Valdez Emergency Services Department.

2. The Contractor shall understand that this work includes remediation of identified microbial spores in building assemblies (Decon Rm and Vehicle Bay) and on equipment, casework, fixtures and other surfaces (limited to Decon Rm). Asbestos containing materials are known to be present in some affected assemblies, requiring prescriptive abatement and associated clearances for the project to be considered complete.

3. Work is required to be done without disruption of emergency services operations. Contractor required to propose and have Owner-approved plan for any disruption of access or use.

4. Coordination/cooperation with other contractors/owner's agents

C. The intent of the Contract Documents is that the Contractor will produce a complete renovated building for the facility known as Valdez Fire Station 1 including all architectural, remediation, mechanical, electrical and finish improvements, with all materials and equipment in place and all systems operative as defined by the contract documents.

D. Work includes, but is not limited to:

1. Remediation of microbial infestation and abatement of associated hazardous materials in areas as identified.
2. Cleaning of areas containing hazardous materials as identified.

Contractor is responsible for collecting, handling and disposal of all hazardous materials generated by project according to all governmental requirements.

3. Reconstruction/installation of damaged assemblies and finishes
4. Replacement of existing ventilation system serving Decontamination Room.
5. Installation of new HRV ventilation system to serve Dayroom and Sleeping Quarters
6. Installation of direct capture Vehicle Exhaust System (Alternate 1).
7. Coordination/cooperation with other contractors which may or may not be working concurrently on the site on related projects not delineated within the bounds of this contract.

8. Providing for and accommodating the safe use and occupation of space and access not held by the contractor during the course of construction.

1.05 WORK SEQUENCE

A. The schedule below contains certain specific dates. Completion dates shall be adhered to and are the last acceptable dates, unless modified by mutual agreement between the Contractor and the Owner. All dates indicate midnight, unless otherwise stipulated. The only exceptions to this schedule are defined in the General Conditions, Section 8.3 Delays and Extensions of Time.

1. Notice to Proceed (NTP)	On or near January 30, 2020
2. Substantial Completion:	April 1, 2020
3. Final Completion:	April 15, 2020

1.06 CONTRACTOR'S USE OF PREMISES

A. Work Rules:

Note: The Owner reserves the right to direct the Contractor to immediately remove any individual that the Owner determines has violated these rules or constitutes a danger to COV Staff or Employees.

1. Behavior:
- **a.** The Owner's Representative will not tolerate inappropriate behavior by any worker on a job site toward COV staff or employee.
- **b**. The Contractor shall not allow obscene, offensive or otherwise inappropriate material to be displayed in job offices, trailers or on the project site or building under construction. If such material is displayed it shall be immediately re-

moved by the Contractor and/or when requested by the Owner's Representative.

2. Fire Safety:

a. Where significant or continued non-compliance with fire safety is noted, Owner's Representative reserves the right to stop the work at no extra cost or extension of time, pending remedial action. Reimburse Owner as appropriate, for any fines or penalties levied by the local fire department.

b. Report all construction fires and/or hazardous spills immediately via 911 and to Owner's Representative.

c. Outdoor storage and staging operations may not impede egress, restrict fire fighting access, or present a fire exposure to new construction. Provide adequate separation between buildings and construction trailers.

3. Use of the Site:

a. Limit use of the premises to the work in areas indicated. Use of the site allows limited use of adjacent public property immediately to the east of the Fire Station, on grass and in parking lot as identified in drawings or in pre-bid conference.

b. Fire and Emergency operations shall not be impeded in any way during contract period without the written consent of the Owner.

4. Temporary Enclosures:

a. Security: Protect Work, stored products, and construction equipment from theft and vandalism; and protect premises from entry by unauthorized persons. At the end of work day, close temporary enclosures and lock exterior doors and/or gate. Secure all openings at any time site is left unoccupied.

5. Noise Control:

a. Outdoor Vehicle and Internal Combustion Engine Noise: The noise level of each piece of equipment shall not be greater than 85 DB(A) at a distance of 50 feet as measured under noisiest operating conditions. Rubber-tired equipment will be used whenever possible instead of equipment with metal tracks. Construction traffic plan shall be approved by the Owner's Representative. Routing should be through the nearest campus exit, subject to approval of Owner's Representative.

b. Air Compressors: Equip air compressors with silencing packages. Electric-driven preferred. Coordinate with Owner's Representative prior to installation and use.

c. Jack Hammers and Roto Hammers: May be used where no other alternative is available if permitted by the Owner's Representative. The use of core-drilling or saw cutting equipment or electric driven drills preferred. Time of use subject to approval by Owner's Representative.

6. Limits: Construction staging will be allowed on a portion of the larger parcel immediately adjacent to the east to the construction site. The

Contractor is to define the needed staging area and obtain permission from the COV Project Manager.

1.07 CONSTRUCTION WORK HOURS

The hours of construction shall be limited to days between the hours of 7:00 a.m. and 10:00 p.m. unless otherwise permitted by the COV Project Manager.

1.09 RELATED WORK BY OWNER OR OTHERS

A. NIC, OFOI Items: Items designated on the Drawings and/or described in the Specifications as "NIC" (Not in Contract) or "OFOI" (Owner Furnished/Owner Installed) are not included in the Contract. Owner provided equipment may arrive on site prior to Final Completion and the Contractor must make accommodation for the equipment within the facility.
- **a.** Shower Curtain. Contractor to dispose of existing curtain.
- **b.** Owner Furnished Equipment (Lockers, Etc.)

B. Contractor's Responsibilities:

1. Designate delivery date for each portion of the Work in the Progress Schedule.

2. Storage of products if requested.

3. Coordinate installation with the Progress Schedule.

4. Provide all preparatory work necessary for proper installation including blocking and backing and finish work including caulking, grouting, furring, preparation of subfloors for finish flooring materials, and painting adjacent surfaces as required for NIC or OFOI equipment.

1.10 OWNER-FURNISHED PRODUCTS

A. OFCI Items: Items designated on project Drawings and/or described as "OFCI" (Furnished by Owner and installed by Contractor).
- **a.** Washer and Dryer
- **b.** Paper Towel Dispenser
- **c.** Hand wash soap dispenser
- **d.** Eye Wash

e. Radiant Heat equipment shield

B. Contractor's Responsibilities:

a. Designate submittals and delivery date for each product in Progress Schedule.

b. Review shop drawings, product data, samples, and other submittals. Submit to Architect with notification of any observed discrepancies or problems anticipated due to non-conformance with Contract Documents.

c. Receive and unload products at site.

d. Inspect deliveries jointly with Owner, record shortages and damaged or defective items.

e. Handle products at site, including uncrating and storage.

f. Protect products from damage and from exposure to elements.

g. Assemble, install, connect, adjust, and finish products as stipulated in respective specifications sections.

h. Provide installation inspections required by public authorities.

i. Clean, repair, or replace items damaged by Contractor.

j. Remove and dispose of crating and packing materials for Owner-furnished materials and equipment delivered to the site.

1.11 CONTRACTOR DESIGNED ELEMENTS

A. Where work of this Contract requires Contractor design, Contractor shall comply with following requirements.

1. Submit Shop Drawings and calculations to Architect for design team review.

2. All Shop Drawings and calculations shall be stamped by a registered architect or engineer licensed in State of Alaska.

1.13 EXISTING UTILITIES

A. Contractor may use power provided by Owner as is conveniently available. No cords or appurtenances may obstruct normal use and safe operation of the Fire Station unless approved by the COV Project Manager.

B. Water is available in the Decon. Room.

C. Contractor to provide temporary, portable toilet facilities for workers.

1.15 TYPE OF CONTRACT

A. Project will be constructed under a single prime contract.

1.16 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 50-division format and CSI/CSC's "MasterFormat" numbering system.

1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.

2. Division 1: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.

2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 23 00

ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. One (1) – Direct Capture Exhaust System

1. Refer to Mechanical and Electrical Drawings and Specifications for extent of work for the Alternate.

2. Complete all demolition and relocation of required equipment to accommodate system.

3. Provide and install all equipment for exhaust system as indicated on mechanical drawings

4. Provide and install all electrical power connections as indicated on electrical drawings.

5. Submit shop drawings, operations and maintenance instructions and record drawings of system as installed.

6. Provide warranty for system and installation.

END OF SECTION 01 23 00

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections include the following:
1. Division 1 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue through the City of Valdez Project Manager supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: The COV Project Manager, or the Architect at the request of the COV Project Manager, will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
1. Proposal Requests issued by the Architect or Project Manager are for information only. Proposal Requests are not to be considered as instructions either to stop work in progress or to execute the proposed change.
2. Within 20 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change must be made.
a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
c. Include costs of labor and supervision directly attributable to the change.
d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
e. The Contractor is required to notify Owner in writing as soon as possible if it determined that an estimated cost cannot be determined and state the reason why an estimate cannot be given. The inability to provide a cost will not be considered as a basis of delay by the Contractor.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to the Architect and Project Manager.
1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

C. Proposal Request Form: Use forms provided by Owner. The use of any other form is prohibited and will not be considered as valid by the Matanuska Susitna Borough.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, the Owner’s Project Manager will issue a Change Order for signatures of Owner and Contractor.

B. The Owners Project Managers signature does not authorize the change order, as this requires assembly approval.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 26 00

SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMEwNTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections include the following:

1. Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
2. Division 1 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule. A cost-loaded CPM Schedule may serve to satisfy requirements for the Schedule of Values.

1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

a. Application for Payment forms with Continuation Sheets.
b. Submittals Schedule.

c. Contractor's Construction Schedule.

2. Submit the Schedule of Values to Architect through the Project Manager at the earliest possible date but no later than fourteen days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the Schedule of Values:

a. Project name and location.
b. Name of Architect.
c. Architect's project number.
d. Contractor's name and address.
e. Date of submittal.

2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:

a. Related Specification Section or Division.
b. Description of the Work.
c. Name of subcontractor.
d. Name of manufacturer or fabricator.
e. Change Orders (numbers) that affect value.
f. Dollar value.

1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate. Include separate line items under required principal subcontracts for operation and maintenance manuals, punch list activities, Project Record Documents, and demonstration and training in the amount of 5 percent of the Contract Sum.

4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.

6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

7. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.

9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and Project Manager and paid for by Owner.

1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Forms: Use forms provided by Owner for Applications for Payment. Sample copies are included at end of this Section.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect or Project Manager will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.

2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

3. Indicate percentage complete for work complete for each item listed on pay request.

E. Transmittal: Submit three, (3) signed and notarized original copies of each Application for Payment to the Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of Values.
3. Contractor's Construction Schedule (preliminary if not final).
4. Products list.
5. Schedule of unit prices.
6. Submittals Schedule (preliminary if not final).
7. Copies of building permits.
8. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
9. Certificates of insurance and insurance policies.
10. Performance and payment bonds.

H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
- **1.** Coordination Drawings.
- **2.** Administrative and supervisory personnel.
- **3.** Project meetings.
- **4.** Requests for Interpretation (RFIs), which are referred to as Field Memos (FMs) by the Owner and to follow a standardized form. These may be issued by Owner, Contractor or Architect.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.

C. Related Sections include the following:
- **1.** Division 1 Section "Construction Progress Documentation" for preparing and submitting Contractor's Construction Schedule.
- **2.** Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
- **3.** Division 1 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

1.4 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work.

Coordinate construction operations, included in different sections, which depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
5. Contractor is required to plan for **rough in** and **substantial inspections** by the Owner. Contractor is to coordinate and schedule these inspections and notify the Architect one week in advance of the inspections.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-installation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.5 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components

or if coordination is required for installation of products and materials fabricated by separate entities.

1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
   a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
   b. Indicate required installation sequences.
   c. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

2. Sheet Size: At least 8-1/2 by 11 inches(215 by 280 mm) but no larger than 30 by 42 inches.

3. Number of Copies: Submit drawings in PDF format and post on project internet based posting site.

4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.

B. Key Personnel Names: Within fifteen (15) days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.6 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1.7 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than fifteen (15)

days after execution of the Agreement. Hold the conference at Project site. Conduct the meeting to review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Owner, Architect and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Discuss items of significance that could affect progress, including the following:

- **a.** Tentative construction schedule.
- **b.** Phasing.
- **c.** Critical work sequencing and long-lead items.
- **d.** Designation of key personnel and their duties.
- **e.** Procedures for processing field decisions and Change Orders.
- **f.** Procedures for RFIs.
- **g.** Procedures for testing and inspecting.
- **h.** Procedures for processing Applications for Payment.
- **i.** Distribution of the Contract Documents.
- **j.** Submittal procedures.
- **k.** Preparation of Record Documents.
- **l.** Use of the premises and existing building.
- **m.** Work restrictions.
- **n.** Owner's occupancy requirements.
- **o.** Responsibility for temporary facilities and controls.
- **p.** Construction waste management and recycling.
- **q.** Parking availability.
- **r.** Office, work, and storage areas.
- **s.** Equipment deliveries and priorities.
- **t.** First aid.
- **u.** Security.
- **v.** Progress cleaning.
- **w.** Working hours.

C. Pre-installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect, Owner and Construction Manager of scheduled meeting dates.

2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

- **a.** The Contract Documents.
- **b.** Options.
- **c.** Related RFIs.

d. Related Change Orders.
e. Purchases.
f. Deliveries.
g. Submittals.
h. Owner Access.
i. Disruption plan and possible conflicts.
j. Time schedules.
k. Weather limitations.
l. Manufacturer's written recommendations.
m. Warranty requirements.
n. Compatibility of materials.
o. Acceptability of substrates.
p. Temporary facilities and controls.
q. Space and access limitations.
r. Regulations of authorities having jurisdiction.
s. Testing and inspecting requirements.
t. Installation procedures.
u. Coordination with other work.
v. Required performance results.
w. Protection of adjacent work.
x. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.

4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of Owner, Construction Manager, and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Contractor shall record progress meeting minutes and have meeting minutes reviewed by all involved. Once reviewed and agreed upon, the contractor is to distribute the meeting minutes to all involved.

3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how

construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.

b. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site utilization.
8) Temporary facilities and controls.
9) Work hours.
10) Hazards and risks.
11) Progress cleaning.
12) Quality and work standards.
13) Status of correction of deficient items.
14) Field observations.
15) RFIs.
16) Status of proposal requests.
17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests.
21) Field Memos (FM-O # for requested by owner to contractor for proposals)

4. Minutes: Architect will record and distribute to Contractor and Owner the meeting minutes.

5. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

1.8 REQUESTS FOR INTERPRETATION

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.

1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.

2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
1. Project name.
2. Date.
3. Name of Contractor.
4. Name of Architect and Construction Manager.
5. RFI number, numbered sequentially.
6. Specification Section number and title and related paragraphs, as appropriate.
7. Drawing number and detail references, as appropriate.
8. Field dimensions and conditions, as appropriate.
9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
10. Contractor's signature.
11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.

C. Hard-Copy RFIs:
1. Identify each page of attachments with the RFI number and sequential page number.

D. Software-Generated RFIs: Software-generated form with precisely the same content as indicated above.
1. Attachments shall be electronic files in Adobe Acrobat PDF format.

E. Architect's and Construction Manager's Action: Architect and Construction Manager will review each RFI, determine action required, and return it. Allow seven (7) working days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs will be returned without action:
a. Requests for approval of submittals.
b. Requests for approval of substitutions.
c. Requests for coordination information already indicated in the Contract Documents.
d. Requests for adjustments in the Contract Time or the Contract Sum.
e. Requests for interpretation of Architect's actions on submittals.
f. Incomplete RFIs or RFIs with numerous errors.
2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.

3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 1 Section "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Construction Manager in writing within ten (7) days of receipt of the RFI response. The 7 day timeframe referenced above will be included within the timeframe allowed for Proposal Requested outlined in Specification Section 01250. If the Contractor requires additional time to determine costs for a particular proposal, notification must be given to the MSB within 14 days.

F. On receipt of Architect's and Construction Manager's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect and Construction Manager within seven (7) days if Contractor disagrees with response.

END OF SECTION 01 31 00

SECTION 01 32 00

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
1. Contractor's Construction Schedule.
2. Submittals Schedule.

B. Related Sections include the following:
1. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
3. Division 1 Section "Submittal Procedures" for submitting schedules and reports.
4. Division 1 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
1. Predecessor Activity: An activity that precedes another activity in the network.
2. Successor Activity: An activity that follows another activity in the network.

B. Event: The starting or ending point of an activity.

C. Float: The measure of leeway in starting and completing an activity.
1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.

3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

D. Major Area: A story of construction, a separate building, or a similar significant construction element.

E. Milestone: A key or critical point in time for reference or measurement.

1.4 SUBMITTALS

A. Submittals Schedule: Submit digital PDF file of schedule. Arrange the following information in a tabular format:
1. Scheduled date for first submittal.
2. Specification Section number and title.
3. Submittal category (action or informational).
4. Name of subcontractor.
5. Description of the Work covered.
6. Scheduled date for Architect's and Construction Manager's final release or approval.

B. Contractor's Construction Schedule: Submit an electronic copy of schedule, in PDF Format, and labeled to comply with requirements for submittals. Include type of schedule (Initial or Updated) and date on label.

1.5 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
1. Secure time commitments for performing critical elements of the Work from parties involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
  1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
  2. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."

B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.
  1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
  1. Activity Duration: Define activities so no activity is longer than twenty (20) days, unless specifically allowed by Architect.
  2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
  3. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
  4. Startup and Testing Time: Include not less than 20 days for startup and testing.
  5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's and Construction Manager's administrative procedures necessary for certification of Substantial Completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
  1. Phasing: Arrange list of activities on schedule by phase.
  2. Provide specific timetable for mechanical and electrical work associated with the renovation and replacement of existing systems. Specifically detail downtime associated with replacement of existing boilers and associated equipment.
  3. Indicate amount of time projected in which the facility will be operating off a temporary generator related to the work on the existing electrical system.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

F. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.

1. Refer to Division 1 Section "Payment Procedures" for cost reporting and payment procedures.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within thirty (30) days of date established for the Notice to Proceed. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in ten (10) percent increments within time bar.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Architect**,** Construction Manager**,** Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.

2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have

completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01 32 00

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Sections include the following:

1. Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
3. Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
4. Division 1 Section "Quality Requirements" for submitting test and inspection reports.
5. Division 1 Section "Closeout Procedures" for submitting warranties.
6. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
7. Division 1 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
8. Division 1 Section "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of Owner's personnel.
9. Divisions 2 through 50 Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's and Construction Manager's responsive action.

B. Informational Submittals: Written information that does not require Architect's and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. General: Electronic copies of base drawings utilized as the basis of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow fifteen (15) days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.

2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.

3. Resubmittal Review: Allow fifteen (15) days for review of each resubmittal.

4. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow fifteen (15) days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.

E. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.

2. Provide a space approximately 6 by 8 inches(150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect and Construction Manager.

3. Include the following information on label for processing and recording action taken:
- **a.** Project name.
- **b.** Date.
- **c.** Name and address of Architect.
- **d.** Name and address of Contractor.
- **e.** Name and address of subcontractor.
- **f.** Name and address of supplier.
- **g.** Name of manufacturer.
- **h.** Submittal number or other unique identifier, including revision identifier.
  - **1)** Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).
- **i.** Number and title of appropriate Specification Section.
- **j.** Drawing number and detail references, as appropriate.
- **k.** Location(s) where product is to be installed, as appropriate.
- **l.** Other necessary identification.

F. Deviations: Highlight, encircle or otherwise specifically identify deviations from the Contract Documents on submittals.

G. Additional Copies: Unless additional copies are required for final submittal, and unless Architect or Construction Manager observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect and Construction Manager.
2. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.

H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect and Construction Manager will return submittals, without review, received from sources other than Contractor.
1. Transmittal Form: Use AIA Document G810 or CSI Form 12.1A.
2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect and Construction Manager on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same label information as related submittal.

I. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.

3. Resubmit submittals until they are marked with approval notation from Architect's (and Construction Manager's) action stamp.

J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

K. Use for Construction: Use only final submittals with mark indicating approval notation from Architect's and Construction Manager's action stamp taken by Architect and Construction Manager.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

1. Contractor is submit via a secure electronic file transfer/storage site for transmittal of project documents including but not limited to submittals. Site access is required to be secure and access limited to Contractor, Owner, and Architect, and Engineers.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable.

3. Include the following information, as applicable:

a. Manufacturer's written recommendations.
b. Manufacturer's product specifications.
c. Manufacturer's installation instructions.
d. Standard color charts.
e. Manufacturer's catalog cuts.
f. Wiring diagrams showing factory-installed wiring.
g. Printed performance curves.
h. Operational range diagrams.
i. Mill reports.
j. Standard product operation and maintenance manuals.
k. Compliance with specified referenced standards.
l. Testing by recognized testing agency.
m. Application of testing agency labels and seals.
n. Notation of coordination requirements.

4. Submit Product Data before or concurrent with Samples.

5. Number of Copies: Submit one (1) PDF copy of data, unless otherwise indicated. Architect will return through Construction Manager. Mark up and retain one returned copy as a Project Record Document.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. Submittal of Architect's CAD Drawings is not permitted as a formal submittal.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

a. Dimensions.
b. Identification of products.
c. Fabrication and installation drawings.
d. Roughing-in and setting diagrams.
e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
f. Shop work manufacturing instructions.
g. Templates and patterns.
h. Schedules.
i. Design calculations.
j. Compliance with specified standards.
k. Notation of coordination requirements.
l. Notation of dimensions established by field measurement.
m. Relationship to adjoining construction clearly indicated.
n. Seal and signature of professional engineer if specified.
o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches(215 by 280 mm) but no larger than 30 by 42 inches.

3. Number of Copies: Submit digital PDF of each submittal, unless copies are required for operation and maintenance manuals. Submit Two (2) copies where copies are required for operation and maintenance manuals. Construction Manager will retain One (1) copies; remainder will be returned. Mark up and retain one returned copy as a Project Record Drawing**.**

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

2. Identification: Attach label on unexposed side of Samples that includes the following:

a. Generic description of Sample.
b. Product name and name of manufacturer.
c. Sample source.
d. Number and title of appropriate Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit Two (2) full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect, through Construction Manager will return submittal with options selected.

5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a. Number of Samples: Submit two (2) sets of Samples. Architect and Construction Manager will retain one (1) Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least Two (2) sets of paired units that show approximate limits of variations.

E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
   1. Type of product. Include unique identifier for each product.
   2. Number and name of room or space.
   3. Location within room or space.
   4. Number of Copies: Submit digital PDF file of product schedule or list, unless otherwise indicated. Architect, through Construction Manager**,** will review and return.
      a. Mark up and retain one returned copy as a Project Record Document.

F. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation" for Construction Manager's action.

G. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

H. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."

I. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."

J. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.
4. Number of Copies: Submit subcontractor list through document electronic document service Architect.
a. Mark up and retain one returned copy as a Project Record Document.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit digital PDF file of each submittal, unless otherwise indicated. Architect and Construction Manager will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
3. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."

B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of

Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

L. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."

M. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

N. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests

performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

O. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."

Q. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

R. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

S. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

T. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

U. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Architect**,** except as required in "Action Submittals" Article.

1. Architect will not review submittals that include MSDSs and will return the entire submittal for resubmittal.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect and Construction Manager.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S AND CONSTRUCTION MANAGER'S / ACTION

A. General: Architect and Construction Manager will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect and Construction Manager will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect and Construction Manager will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

C. Informational Submittals: Architect and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect and Construction Manager will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered non-responsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01 33 00

SECTION 01 35 16

SPECIAL INSPECTION, DELEGATED DESIGN & DEFERRED SUBMITTAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Section includes requirements for Deferred Submittals and Delegated Design responsibility of the Contractor

1. Detailed requirements and design criteria for Deferred Submittals and Delegated Design responsibilities are specified in other Sections.

1.3 RELATED SECTIONS

A. Related Sections Include:

1. SECTION 013300 – SUBMITTAL PROCEDURES, for general submittal requirements.

2. SECTIONS 014000 – QUALITY REQUIREMENTS, for special inspection requirements provided by Owner.

1.4 DEFINITIONS

A. Deferred Submittal: Submittal information pertaining to products, systems, or components requiring plan review and approval by Authorities Having Jurisdiction, but impacted by Contractor selection or decisions after contract award and receipt of building permits.

B. Delegated Design: Product, system, or component design performance specified in Contract Documents and requiring professional design services, or certifications by a licensed design professional as part of Contractor requirements

C. Action Submittals: Written and graphic information and physical samples that require Architects responsive action. Action submittals are those submittals indicated in individual Specification Sections as “action submittals”.

D. Information Submittals: Written and graphic information and physical samples that do not require Architects responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in the individual Specifications Sections as “Information submittals.”

1.5 ADMINISTRATIVE & ENGINEERING REQUIREMENTS

A. Deferred Submittal: Where Drawings or specifications Sections call for Deferred Submittals Contractor shall provide technical and engineering submittal information to verify compliance with contract and applicable code requirements.

1. In addition to submittal procedures in Section 013300 “Submittal Procedures”, Contractor shall submit information to the Architect for review and approval prior to submitting to the Authority Having Jurisdiction for required review and approval. Contractor shall pay for all required review and permit fees of the Authority Having Jurisdiction.

B. Delegated Design: Where Drawings or specification Sections indicate Delegated Design. Contactor shall provide the services of a licensed professional engineer to design such systems or components.

1. In addition to submittal procedures specified in Section 013300 “Submittal Produces”, Contractor shall submit Delegated Design information to the Authority Having Jurisdiction, for required review and approval. Contractor shall pay for all required review and permit fees of the Authority Having Jurisdiction.

C. Special Inspection: Code-required special inspections apply to some products, systems and components included in specific Deferred Submittals and Delegated Design systems. A summary of required Special Inspections in included in this Section.

1.6 ACTION SUBMITTALS

A. Deferred Submittals: Deferred Submittals are in addition to other submittals required for products, systems, and components in other sections. If submitted

item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to Authority Having Jurisdiction.

B. Coordination: Coordinate preparation process of Deferred Submittals with Architects review process to ensure prompt execution of construction activities.

1. Coordinate each Deferred Submittal and Architects submittal review to ensure approvals are received proper to fabrication, purchasing, testing delivery, other submittals and related activities that require sequential activity.

1.7 INFORMATION SUBMITTALS

A. Qualification Data: For Professional design engineer preparing Delegated Design services.

1.8 QUALITY ASSURANCE

A. Professional Design Engineer: Unless Specifically approved by Authority Having Jurisdiction, Engineer providing Delegated Design Services shall be licensed in the State of Alaska

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Provide products and procedures necessary to prepare Deferred Submittals and Delegated Design service and to obtain necessary permits and approvals. Although other Sections may specify some requirements that contribute to delegated design services, the Contractor shall determine additional material and procedures necessary to obtain required permits and approvals.

2.2 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design service or certifications by a design professional are specifically required of contractor by the Contract Documents, Provide Products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to preform services or certification required, submit a written request for additional information to Owners Representative.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electric field and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the contract documents. Include list of codes, loads and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Information Submittals: Review each submittal and check for coordination with other Work of the Contract and for Compliance with the Contract Documents. Note corrections and felid dimensions. Mark with approval stamp before submitting to Architect or Authority Having Jurisdiction.

3.2 DEFFERED SUBMITTALS

A. Deferred submittals required by the Contactor include but may not be limited to the follow:

1. Section 23 – Direct Capture Vehicle Exhaust System

3.3 DELEGATED DESIGN

A. Delegated Design requirements to be provided by the contractor include, but may not be limited to the following:

1. Seismic Restraint: Contractor shall provide engineered seismic restraint of architectural mechanical and electrical components, in accordance with the IBC provisions and Chapter 7 of the ASCE 7, Components requiring engineered restraint include but are not limited to the following:

a) Partitions: all partitions over 6 feet in height.
b) Suspending Ceilings: Suspended acoustical ceiling systems.

c) HVAC Ductwork: Bracing is required for all components necessary for continued operation of the facility (1p=1.5). For non-essential ductwork (1p=1.0), brace ducts with cross section area greater than 6 s.f.

d) Piping Systems: Bracing is required for all components necessary for continued operation of the facility (1p=1.5), including pipes farther than 1-inch in diameter. For non-essential piping (1p=1.0), bracing is required for all components greater than 3-inches in diameter.

2. Section 23 05 00 Common Work Results for HVAC Systems: Vibration and Seismic Controls for Mechanical Piping and Equipment: Contractor shall provide engineered seismic restraint for the following mechanical equipment:

a) Air Handling Units, HRV-1 & 2

b) Direct Capture Vehicle Exhaust System

END OF SECTION 01 35 16

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance, and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.

3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Construction Manager**,** or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections include the following:

1. Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.

2. Division 1 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.

3. Divisions 2 through 16 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect or Construction Manager.

C. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

D. Rough-In Inspection: Inspection performed by Owner, Architect, Engineers, and/or other authorized individual to verify the products and materials incorporated into the work has been done in accordance with design standards and specifications prior to work being enclosed or otherwise obscured from view.

E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

F. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Substantial Inspection: Inspection performed by Owner, Architect, Engineers, and/or other authorized individual to verify the products and materials incorporated into the work have been done in accordance with design standards and specifications.

J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.

K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five (5) previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 SUBMITTALS

A. Qualification Data:

1.6 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.7 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.

B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
   a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
2. Notify testing agencies at least twenty four (24) hours in advance of time when Work that requires testing or inspecting will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 Section "Submittal Procedures."

D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with Architect**,** Construction Manager**,** and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect, Construction Manager**,** and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Does not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.

F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.
2. Schedule times for Owner Rough-In and Substantial Inspections of all mechanical and electrical systems one week prior to inspection.

H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within thirty (30) days of date established for the Notice to Proceed.

1. Distribution: Distribute schedule to Owner, Architect, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.8 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Conducted by a qualified testing agency or special inspector as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.

2. Notifying Architect, Construction Manager, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.

3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect, through Construction Manager, with copy to Contractor and to authorities having jurisdiction.

4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.

5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.

6. Retesting and re-inspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.

2. Description of the Work tested or inspected.

3. Date test or inspection results were transmitted to Architect.

4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's and Construction Manager's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

2. Comply with the Contract Document requirements for Division 1 Section "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities. Refer to Division 2 Abatement and Remediation sections for additional containment facilities.

1.3 ON SITE AVAILABILITY

A. General: The following utilities are available for Contractor use at no charge contingent upon existing circuits and appurtenances. At no time may use of on site utilities impact Fire Station personnel or equipment. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, Owner's on-site project representative**,** testing agencies, and authorities having jurisdiction.

B. Work Area: The Contractor may use one bay of the Vehicle Bay as a work area following remediation and under the conditions that Owner will have access between

C. Sewer Service: Available at no charge in Decon Room. Contractor may not dispose of any construction materials or waste products that do not meet DEC standards for municipal sewer system.

D. Water Service: On site water available at no charge in Decon Rm and Vehicle Bay.

E. Electric Power Service: Contractor may use on site power at no charge as long as doing so does not overload circuits or create any operational conflicts with Emergency Service personnel or equipment.

1.4 SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing (if needed): Minimum 2-inch(50-mm), 0.148-inch-(3.76-mm-) thick, galvanized steel, chain-link fabric fencing; minimum 6 feet(1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch-(60-mm-) OD line posts and 2-7/8-inch-(73-mm-) OD corner and pull posts.

2.2 TEMPORARY FACILITIES

A. Availability for parking and storage of equipment and materials is limited to an area directly east of the Apron and Fire Station Entrance. Contractor at no time may impede access to Fire Station or EMS operations.

B. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
- **1.** Store combustible materials apart from building.
- **2.** Semi Trailers are an acceptable alternative to constructed storage and fabrication sheds.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
  1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
  2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
  1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
  1. Provide non-combustible construction for offices, shops, and sheds located within construction area or within 40 feet of building lines. Comply with NFPA 241.
  2. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Parking: Provide temporary parking areas for construction personnel on the east or south sides of the construction area on the site. At no time may personnel park in front of Apparatus or Vehicle Bays unless approved by the Project Manager or Fire Chief.

C. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from demolition/construction operations. Comply with requirements of

authorities having jurisdiction. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements. Comply with Division 2 sections related to disposal of hazardous materials.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
1. Comply with work restrictions specified in Division 1 Section "Summary."

B. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
1. Where heating is needed and permanent enclosure is not complete, insulate temporary enclosures.

C. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
2. Insulate partitions to provide noise protection to occupied areas.
3. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
4. Protect air-handling equipment.
5. Weather strip openings.
6. Provide walk-off mats at each entrance through temporary partition.

D. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
1. Prohibit smoking in construction areas.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.
1. Maintain operation of temporary enclosures, heating, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."

END OF SECTION 01 50 00

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

B. Related Sections include the following:
- **1.** Division 1 Section "Allowances" for products selected under an allowance.
- **2.** Division 1 Section "Alternates" for products selected under an alternate.
- **3.** Division 1 Section "References" for applicable industry standards for products specified.
- **4.** Division 1 Section "Closeout Procedures" for submitting warranties for Contract closeout.
- **5.** Divisions 2 through 26 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
- **1.** Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
- **2.** New Products: Items that have not previously been incorporated into another project or facility Products salvaged or recycled from other projects are not considered new products.
- **3.** Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the

indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

1.4 SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Request from Owner.

2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified material or product cannot be provided.

b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.

c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated. Highlight the changes between the specified product and the proposed substitution.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

e. Samples, where applicable or requested.

f. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

g. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.

h. Cost information, including a proposal of change, if any, in the Contract Sum.

i. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.

j. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within **10** days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or **10** days of receipt of additional information or documentation, whichever is later.

B. Comparable Product Requests: Submit one .PDF copy of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

a. Form of Approval: As specified in Division 1 Section "Submittal Procedures."

b. Use product specified if Architect cannot make a decision on use of a comparable product request within time allocated.

C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:
1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.

3. Refer to Divisions 2 through 26 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

4. Where products are accompanied by the term "as selected," Architect will make selection.

5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.

6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.

B. Product Selection Procedures:

1. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.

2. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Architect will consider requests for substitution if received within 15 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.

B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.

2. Requested substitution does not require extensive revisions to the Contract Documents.

3. Requested substitution is consistent with the Contract Documents and will produce indicated results.

4. Substitution request is fully documented and properly submitted.

5. Requested substitution will not adversely affect Contractor's Construction Schedule.

6. Requested substitution is compatible with other portions of the Work.

7. Requested substitution has been coordinated with other portions of the Work.

8. Requested substitution provides specified warranty.

2.3 COMPARABLE PRODUCTS

A. Conditions: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.

2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

3. Evidence that proposed product provides specified warranty.

4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.

5. Samples, if requested.

END OF SECTION 01 60 00

SECTION 01 70 00

EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
- **1.** Construction layout.
- **2.** Field engineering and surveying.
- **3.** General installation of products.
- **4.** Coordination of Owner-installed products.
- **5.** Progress cleaning.
- **6.** Starting and adjusting.
- **7.** Protection of installed construction.
- **8.** Correction of the Work.

B. Related Sections include the following:
- **1.** Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
- **2.** Division 1 Section "Submittal Procedures" for submitting surveys.
- **3.** Division 1 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
- **4.** Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 SUBMITTALS

A. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: Information contained in drawings was gathered from as-built drawings and non-destructive walk through of the facililty. There is no warranty or guarantee as to the accuracy of the information shown here-in. Before beginning work, the Contractor shall investigate and field verify all items scheduled for demolition prior to start of the Work.

1. Before construction, verify the location and points of connection of utility services.

B. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

4. Coordinate rough in with placement of interior or exterior finishes, casework, and/or amenities.

5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. "Request for Interpretation."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect and Construction Manager promptly.

B. General:
- **1.** Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
- **2.** Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
- **3.** Inform installers of lines and levels to which they must comply.
- **4.** Check the location, level and plumb, of every major element as the Work progresses.
- **5.** Notify Architect and Project Manager when deviations from required lines and levels exceed allowable tolerances.

C. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect and Construction Manager.

3.4 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
- **1.** Make vertical work plumb and make horizontal work level.
- **2.** Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
- **3.** Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- **4.** Maintain minimum headroom clearance of **7 feet** in spaces without a suspended ceiling.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.

2. Allow for building movement, including thermal expansion and contraction.

3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.

3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  1. Remove liquid spills promptly.
  2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
  3. Coordinate areas of Work that may have Owner occupants present. Ensure all such areas are kept free from debris, dust, tools and equipment.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.6 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.7 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.8 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Cutting and Patching."

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 70 00

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Warranties.
3. Final cleaning.

B. Related Sections include the following:

1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
2. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
3. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
4. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
5. Divisions 2 through 26 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.

3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems.
9. Submit test/adjust/balance records.
10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The

certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit one PDF copy of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest room number to highest room number.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
    a. Project name.
    b. Date.
    c. Name of Architect
    d. Name of Contractor.
    e. Page number.
4. A re-inspection will be performed by the Architect and Owner.

1.6 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

c. Remove tools, construction equipment, machinery, and surplus material from Project site.

d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

e. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

f. Sweep concrete floors broom clean in unoccupied spaces.

g. Remove labels that are not permanent.

h. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

i. Wipe surfaces of mechanical and electrical equipment, and food service equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

j. Replace parts subject to unusual operating conditions.

k. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

l. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

m. Clean ducts, blowers, and coils if units were operated without filters during construction.

n. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

o. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01 77 00

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
- **1.** Operation manuals for systems, subsystems, and equipment.
- **2.** Maintenance manuals for the care and maintenance of products, materials, finishes, systems and equipment.

B. Related Sections include the following:
- **1.** Division 1 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
- **2.** Division 1 Section "Closeout Procedures" for submitting operation and maintenance manuals.
- **3.** Division 1 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
- **4.** Divisions 2 through 26 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS

A. Initial Submittal: Submit three (3) draft copies of each manual at least fifteen (15) days before requesting inspection for Substantial Completion prior to training. Include a

complete operation and maintenance directory. Architect will return one copy of draft and mark whether general scope and content of manual are acceptable.

B. Final Submittal: Submit three (3) copies of each manual in final form at least fifteen (15) days before final inspection. Architect will return copy with comments within fifteen (15) days after final inspection.
- **1.** Correct or modify each manual to comply with Architect's/Engineers comments. Submit three (3) copies of each corrected manual within fifteen (15) days of receipt of Architect's comments.
- **2.** Submit one full copy of O&M manual in PDF Format and post on Project web based data storage site (if applicable).

1.5 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
- **1.** Title page.
- **2.** Table of contents.
- **3.** Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
- **1.** Subject matter included in manual.
- **2.** Name and address of Project.
- **3.** Name and address of Owner.
- **4.** Date of submittal.
- **5.** Name, address, and telephone number of Contractor.
- **6.** Name and address of Architect.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch(215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.

b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.

4. Supplementary Text: Prepared on 8-1/2-by-11-inch(215-by-280-mm) white bond paper.

5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.

b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. Operating standards.

2. Operating procedures.

3. Operating logs.

4. Wiring diagrams.

5. Control diagrams.

6. Sequence of Operations
  a. Include drawing coordinating system components
7. Precautions against improper use.
8. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:
1. Product name and model number.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.3 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:
1. Product name and model number.

2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

2.4 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
1. Standard printed maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.

2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

C. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to

identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

D. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals.

2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."

E. Comply with Division 1 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 78 23

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Product Data.

B. Related Sections include the following:

1. Division 1 Section "Closeout Procedures" for general closeout procedures.
2. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
3. Divisions 2 through 26 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

A. Record Drawings: Comply with the following:
1. Number of Copies: Submit three (3) sets of marked-up Record Prints.
a. Submit copies of Record Drawings as follows:
1) Initial Submittal: Submit three (3) sets of marked-up Record Prints for review of Architect and Engineering team.
2) Final Submittal: Submit three (3) sets of marked-up Record Prints, One set of PDFs.
a) Electronic Media: USB drive.

B. Record Product Data: Submit three (3) copies of each Product Data submittal.

1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Accurately record information in an understandable drawing technique.
c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to Drawings.
b. Revisions to routing of piping and conduits.
c. Actual equipment locations.
d. Duct size and routing.
e. Locations of concealed internal utilities.
f. Changes made by Change Order or Construction Change Directive.
g. Changes made following Architect's written orders.
h. Field records for variable and concealed conditions.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Electronic Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect and Construction Manager.

1. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.

2. Refer instances of uncertainty to Architect through Construction Manager for resolution.

C. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing Record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.

1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.

2. Consult Architect and Construction Manager for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

D. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

2. Record electronic Drawings: Organize information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification.

3. Identification: As follows:

a. Project name.
b. Date.
c. Designation "PROJECT RECORD DRAWINGS."
d. Name of Architect and Construction Manager.
e. Name of Contractor.

2.2 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.

3. Note related Change Orders and Record Drawings where applicable.

2.3 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's and Construction Manager's reference during normal working hours.

END OF SECTION 01 78 39

SECTION 01 79 00

DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.
   a. Air Handling Equipment
   b. Direct Capture Exhaust Equipment
2. Training in operation and maintenance of systems, subsystems, and equipment.

B. Related Sections include the following:

1. Divisions 2 through 26 Sections for specific requirements for demonstration and training for products in those Sections.

1.3 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Contractor shall record training by video and provide an electronic copy to the Owner (CD).

1.4 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.

B. Coordinate content of training modules with content of approved operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

C. Contractor shall provide to Owner 14 day notice to allow owner to accumulate proper attendance for training.

D. Three (3) O&M manuals shall be provided prior to training events.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:

1. Operations: Include the following, as applicable:

a. Startup procedures.
b. Equipment or system break-in procedures.
c. Routine and normal operating instructions.
d. Regulation and control procedures.
e. Control sequences.
f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

2. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

3. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

4. Maintenance: Include the following:

a. Inspection procedures.
b. Types of cleaning agents to be used and methods of cleaning.
c. List of cleaning agents and methods of cleaning detrimental to product.
d. Procedures for routine cleaning
e. Procedures for preventive maintenance.
f. Procedures for routine maintenance.
g. Instruction on use of special tools.

5. Repairs: Include the following:

a. Diagnosis instructions.
b. Repair instructions.
c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
d. Instructions for identifying parts and components.
e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
2. Owner will furnish an instructor to describe Owner's operational philosophy.
3. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner through Construction Manager, with at least 15 days advance notice.

D. Documentation: Each training session is to be videotaped.
1. Provide two copies of recording to the Owner

E. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

F. Schedule of Training
1. Air Handling System and associated components
2. Direct Capture Vehicle Exhaust System

END OF SECTION 01 79 00

SECTION 02 41 19

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Demolition and removal of selected portions of building or structure.
2. Salvage of existing items to be reused or recycled.

B. Related Sections include the following:

1. Division 1 Section "Summary" for use of premises, and Owner-occupancy requirements.
2. Division 1 Section "Cutting and Patching" for cutting and patching procedures.
3. Division 2:
   a. Section “Mold Remediation”
   b. Section “Asbestos Abatement”
   c. Section “Lead Removal and Disturbance”
4. Sheet Specifications and Notes

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

A. Items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI A10.6 and NFPA 241.

1.6 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area throughout project period. Conduct selective demolition so Owner's operations will not be disrupted.

1. Comply with requirements specified in Division 1 Section "Summary."

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: Hazardous material removal/abatement is a requirement of the project. Anticipate clearances and testing as a priority

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - **PRODUCTS** (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

B. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

D. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.

E. Perform surveys as the Work progresses to detect hazards or resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

1. Comply with requirements for existing services/systems interruptions specified in Division 1 Section "Summary."

B. Piping and Ductwork Removed: Drawings do not show all existing piping which is to be removed. Unless indicated otherwise, where existing equipment has been removed, or its use replaced by new equipment, remove connecting piping back to the branch in the main so that there will be no dead ends or unused pipe lines in mechanical spaces at completion.

C. Wiring and Conduit Removed: Drawings do not show all existing conduit and wire which is to be removed. Unless indicated otherwise, where existing equipment has been removed, or its use replaced by new equipment, remove connecting conduit and wire back to the source of supply or nearest point in the circuit where equipment to remain is connected from so that there will be no unused conduit or wire in project area at completion.

3.3 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches.
5. Maintain adequate ventilation when using cutting torches.
6. Remove decayed, damaged, rotted, or otherwise unsuitable materials and promptly dispose of per remediation plan and recommendations.
7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
8. Dispose of demolished items and materials promptly.
9. Note all mechanical, electrical and other equipment for reinstallation.

B. Reuse of Building Elements: Project has been designed for reuse of building elements as indicated in the Contract Documents. Do not demolish building elements beyond what is indicated on Drawings without Architect's approval. Salvage useable elements for re-use.

C. Removed and Salvaged Items:

1. Clean salvaged items.
2. Store items in a secure area until delivery to Owner.
3. Transport items to Owner's storage area designated by Owner.
4. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Protect items from damage during transport and storage.
3. Reinstall all temporarily removed mechanical, electrical, fire alarm and other items in locations indicated. Comply with installation requirements for new materials and equipment. Provide all connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
4. Replace worn/damaged or rotted framing, bracing or other necessary components to provide complete and sound assembly.

DISPOSAL OF DEMOLISHED MATERIALS

E. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in a landfill or haz-mat facility.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

F. Burning: Do not burn demolished materials.

G. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.4 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 02 41 19

SECTION 02 82 13

ASBESTOS REMOVAL AND DISPOSAL

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The work requires the disturbance, demolition, removal and disposal of the following asbestos-containing materials (ACM) from The City of Valdez Fire Station 1 Remediation & Ventilation Upgrade Project as specified herein:

1. **Vehicle Bay 194** – Remove approximately 184 square feet of wall system on hose bib wall (23L x 8H). In the southwest corner of the vehicle bay remove approximately 86 square feet of wall and ceiling. See demolition sheet for reference of wall system removal with asbestos containing joint compound.

2. **Passage 127** – Remove approximately 54 square feet of wall systems. See demolition sheet for reference of wall system removal with asbestos containing joint

3. **Fan Mezzanine 201**– Clean all surfaces to be dust free. Repair any visibly damaged Thermal Systems

4. **Wall Penetrations** – Provide unit cost for wall penetrations through wall systems with asbestos containing joint compound. See demolition sheet for reference of wall systems where penetrations will need to be performed.

B. It is the contractor's responsibility to remove and dispose of all ACMs affected by the project from the site in accordance with applicable regulations. The contractor shall immediately notify the owner if other ACM or additional quantities are discovered (such as Thermal Systems insulation in wall cavities). Quantities of materials removed shall be documented on a daily basis and shall include all materials removed and locations, in the units used on the drawings. Unit pricing shall be provided in the bid for all identified hazardous materials in case additional quantities are discovered.

C. Disturbance of asbestos-containing materials required for this project typically will fall within different classes of asbestos work depending on the Contractor's means and methods. HEPA vacuuming and/or wet wiping shall be used to immediately clean up all dust and debris generated during the work regardless of the work classification.

D. Asbestos, lead and other hazardous materials are present in the building that may impact the work of all trades. Regulated air contaminates, including asbestos and lead, are also present in settled and concealed dust in and on architectural, structural, mechanical and electrical components or systems throughout the building. All trades shall coordinate with other trades and conduct their work to prevent worker exposure or site contamination. This notification is provided in accordance with EPA and OSHA requirements.

E. Asbestos-containing materials may have come loose and fallen onto or into, floors, ceilings, walls, chases, wall cavities or mechanical, electrical and structural system components. The

Contractor shall immediately notify the Owner if and when they encounter worn, damaged, or deteriorated ACM as evidenced by dust or debris adjacent to ACM materials.

F. Work may be required while employees are occupying the building. Work during occupied periods involving disturbance of asbestos-containing materials inside the building shall be performed using construction walls, critical barriers, and negative air pressure enclosures. Access to work area from within the building shall be blocked to prevent unauthorized or inadvertent entry.

G. A site visit is mandatory to be able to bid this project.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02 83 33 Lead Removal / Disturbance

B. Section 02 85 00 Mold Remediation

1.03 DEFINITIONS AND ABBREVIATIONS: Definitions and abbreviations are provided in the applicable publications listed in Paragraph 1.4 of this section.

1.04 APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced.

A. General Requirements: All work shall be performed in compliance with the International Building, Fire, Fuel Gas, Mechanical, Residential, Energy Conservation and Administrative Code; Uniform Plumbing Code; the National Electrical Code; and the publications listed in this section that are in effect at the time of the bidding of this contract.

B. Title 29 Codes of Federal Regulations (CFR), Department of Labor (USDOL)
Part 1910 General Occupational Safety and Health Standards
Part 1926 Safety and Health Regulations for Construction

C. Title 40 CFR, Environmental Protection Agency (EPA)
Part 61 National Emission Standards for Hazardous Air Pollutants
Part 311 Worker Protection Part 763 Asbestos

D. Title 49 CFR, Department of Transportation (DOT)
Part 171 General Information, Regulations and Definitions
Part 172 Hazardous Materials Communication and Regulations
Part 173 General Requirements for Shipments and Packaging
Part 177 Carriage by Public Highway
Part 178 Specifications for Packaging
Part 382 Requirements for Drug Testing
Part 383 Commercial Driver’s License Standards

E. State of Alaska Administrative Codes (AAC)
8 AAC 61 Occupational Safety and Health Standards
18 AAC 60 Solid Waste Management

F. State of Alaska Statutes
AS 18.31 Health and Safety –Asbestos
AS 45.50.477 Titles Relating to Industrial Hygiene

G. Public Law 101-637
Asbestos School Hazard Abatement Reauthorization Act

H. Federal Standards
313D Material Safety Data Sheets

I. American National Standard Institute (ANSI)
Z9.2 Local Exhaust Systems
Z87.1 Eye and Face Protection
Z88.2 Practices for Respiratory Protection

J. American Society for Testing and Materials (ASTM)
D-4397 Polyethylene Sheeting

K. International Code Institute International Building (IBC), Fire, Fuel Gas, Mechanical, Residential, Energy Conservation and Administrative Codes Current Standards

L. National Fire Protection Association (NFPA) NFPA 701 Fire Tests for Flame Resistant Textiles and Films

M. National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods, Current Edition

N. N. Underwriters Laboratories (UL)
UL 586 High-Efficiency, Particulate, Air (HEPA) Filter Units

1.05 QUALITY ASSURANCE

A. On-site Observation:

1. The safety and protection of the Contractor's employees, sub-contractor's employees, Owner's employees, the facility, and the public is the sole responsibility of the Contractor.
2. The Owner, the Owner's Representative or representatives of State or Federal agencies may make unannounced visits to the site during the work. The contractor shall make available two complete sets of clean, protective clothing for such visitor use. If the work requires the use of NPR, PAPR, or Supplied Air Respirators, the contractor shall provide respirators to the visitor to ensure compatibility with fresh batteries or supplied air system. It is the visitor's responsibility to ensure medical qualification, training, and current "fit test" prior to using any respirator provided by the Contractor.
3. If the Owner or agency visitor determines that practices are in violation of applicable regulations, they will immediately notify the Contractor that operations must cease until corrective action is taken. Such notification will be followed by formal confirmation.
4. The Contractor shall stop work after receiving such notification. The work may not be restarted until the Contractor receives written authorization from the Owner.

5. All costs resulting from such a stop work order shall be borne by the Contractor and shall not be a basis for an increase in the contract amount or an extension of time.

B. Air Monitoring: Air monitoring during the work shall be performed as follows:
1. The Contractor shall hire Independent Testing Laboratories to collect and evaluate all air samples that are the responsibility of the Contractor. The Contractor shall direct its laboratories, in writing, to release air monitoring data, and all other pertinent data and records, to the Owner. A copy of this written direction shall be submitted to the Owner along with the information required by Paragraph 1.13 of this Specification.
2. The Contractor shall be responsible for monitoring its employees for potential exposure to airborne asbestos fibers as required by this specification and all applicable regulations.
3. The Contractor shall be responsible for work area monitoring and environmental monitoring outside the work area as required by this specification.
4. The Owner may perform air monitoring inside the building, inside the work areas, and on the Contractor's employees while asbestos work is underway and at any time during the work.
5. Final inspection and clearance air monitoring shall be conducted by the Contractor's Independent Testing Laboratory. The Independent Testing Laboratory may not be hired by the Abatement Subcontractor to perform final visual inspections and clearance air monitoring.
6. The Contractor shall have its Independent Testing Laboratories archive all air samples until the successful completion of the project.

C. Additional Sampling of Suspect Materials:
1. The Contractor and all Subcontractors shall be vigilant during demolition and construction in the event additional suspect asbestos or hazardous materials are encountered. If suspect asbestos or hazardous materials not previously identified are encountered, the contractor shall stop work that may be affected by this material and immediately notify the Owner. The Owner or the Owner's Representative will provide recommendations and additional testing if necessary.
2. The Contractor and all Subcontractors shall notify the Owner prior to any bulk sampling of suspect asbestos-containing material or other hazardous materials to allow the Owner or Owner's Representative to be present during such sampling.

1.06 PROTECTION OF EXISTING WORK TO REMAIN: Perform asbestos removal in the project work areas without contamination of adjacent work or the facility.

1.07 MEDICAL REQUIREMENTS

A. Institute and maintain a medical surveillance program for employees in accordance with 29 CFR 1926.1101 and 29 CFR 1910.134.

B. Institute and maintain a random drug testing program, as required by 49 CFR 382, for all drivers of vehicles transporting asbestos or hazardous materials.

1.08 TRAINING: Employ only workers who are trained and certified as required by 29 CFR 1910, 29 CFR 1926, 40 CFR 763, and 49 CFR 383 to remove, encapsulate, barricade, transport, or dispose of asbestos.

1.09 PERMITS AND NOTIFICATIONS: Secure necessary permits for asbestos removal, hauling, and disposal and provide timely notification as required by federal, state, and local authorities.

1.10 SAFETY AND ENVIRONMENTAL COMPLIANCE: Comply with laws, ordinances, rules, and regulations of federal, state, and local authorities regarding handling, storing, transporting, and disposing of hazardous materials and all other construction activities.

1.11 RESPIRATOR PROGRAM: Establish a respirator program as required by ANSI Z88.2 and 29 CFR 1910.134.

1.12 HAZARD COMMUNICATION PROGRAM: Implement a hazard communication program in accordance with 29 CFR 1910.1200.

1.13 SUBMITTALS

A. The Contractor shall submit the following documentation to the Owner for review, approval or rejection. Work shall not begin until submittals are approved.
   1. Shop drawings.
   2. Work plan.
   3. Liability insurance policy and performance bond.
   4. Schedule.
   5. Testing laboratory and laboratory personnel.
   6. Disposal site designations and disposal authorizations.
   7. Waste transporter designation.
   8. Notifications and certifications.
   9. “Competent Person” designation and experience.
   10. Request for substitutions.

B. Shop drawings shall show:
   1. Boundaries of each regulated work area.
   2. Location and construction of decontamination areas.
   3. Location of temporary site storage facilities.
   4. Location of air monitoring stations, both in and outside of the work area.
   5. Emergency egress route(s).
   6. Location of negative pressure exhaust systems, if required.

C. The work plan shall include procedures for:

1. Work area setup and protection.
2. Worker protection and decontamination.
3. Initial exposure assessment procedures.
4. Asbestos removal procedures.
5. Waste load-out, transport, and disposal procedures.
6. Air monitoring procedures.
   a. Air monitoring procedures shall include the number of daily samples and the target volumes of each type of sample.
   b. Clearance air monitoring procedures and protocols for each work area.
7. Determination by the Certified Project Designer of the estimated quantities of ACM and PACM to be removed, and determination of clearance requirements for each different type or phase of work.
8. Emergency procedures.
9. The Work Plan shall be prepared and signed by an Environmental Protection Agency (EPA) Certified Project Designer.

D. Insurance Policy and Bond: Submit copies of the Contractor's or Subcontractor's insurance policy and performance bond. Submittal requirement is only to ensure that the insurance certificate(s) show specific coverage for the potentially hazardous materials being handled by this project. The insurance and bond amounts and certificate holder requirements are addressed in other portions of the contract documents and are not covered as part of this submittal requirement.

E. Schedule: Submit construction schedule by work area.

F. Independent Testing Laboratories and Laboratory Personnel: Submit the name, location, and phone number of proposed independent testing laboratories, and the names and certifications of the industrial hygiene technicians. Include the laboratory's accreditation. Not all laboratories will require all accreditations.
   1. The Independent Testing Laboratories shall be acceptable to Owner.
   2. The laboratories shall be proficient in the National Institute of Occupational Safety and Health (NIOSH) Proficiency in Analytical Testing (PAT) program and shall be accredited by the National Institute of Science and Technology (NIST) under their National Voluntary Laboratory Accreditation Program (NVLAP) for bulk asbestos analysis and airborne asbestos fibers as appropriate. NVLAP accreditation for bulk asbestos analysis may be waived if the microscopists are listed in the American Industrial Hygiene Association (AIHA) Asbestos Analyst Registry (AAR).
   3. Provide a current list of their microscopists who have participated in the latest PAT and NVLAP programs and provide the names of microscopists and evidence that they have completed the NIOSH 582 course or equivalent. Provide latest AAR report of performance for microscopists.
   4. Provide name(s) and resume(s) of proposed on-site industrial hygiene technician(s) showing certifications, academic degrees and Alaska Abatement Certificate(s).

G. Disposal Site: Submit the name and location of the proposed Alaska Department of Environmental Conservation/ U.S. Environmental Protection Agency (DEC/EPA) permitted disposal site. Submit authorization to dispose of asbestos waste by the proposed disposal site operator.

H. Waste Transporter: Submit the name and address of the proposed waste transporter.

I. Representations: Submit a signed statement by the Contractor that records of employees' work assignments, certifications, respirator fit tests, and medical records are accurate, up-to-date, and available for inspection.

J. Notifications and Certificates:
   1. Submit a copy of the written "Notification of Demolition and Renovation" to the Environmental Protection Agency. (If required by NESHAP).
   2. Submit a State of Alaska Department of Labor (ADOL) approved copy of the written ADOL notification of proposed workers.
   3. Submit a copy of Project Designer's current certification.

K. Competent Person: Submit the name and certifications of the Contractor's proposed Competent Person and a list of his/her previous projects. Certify by signed statement that the Competent Person has the knowledge and training to supervise the work in compliance with the publications listed in Paragraph 1.4 above.

L. Substitutions: Submit requests for substitutions of materials, equipment and methods.

M. Updated Project Information: Submit changes to the submitted project information at least 24 hours prior to the effective time of change for the following:
   1. Updated schedules.
   2. Change in Competent Person.
   3. ADOL approval for additional workers.
   4. Changes to work plan.
   5. Revisions to the EPA notification.

1.14 TEST REPORTS: Contractor shall submit periodic test reports, daily logs, and monitoring results as specified herein Submit two (2) copies of the following information within twenty-four (24) hours after the end of a shift:

A. Initial Exposure Assessment(s): Submit the results of the Contractor's initial exposure assessment(s).

B. Daily Air Monitoring: Submit daily, all results of Contractor's air monitoring (submit no later than 24 hours after the end of the shift). Submittal shall consist of negative air pressure recordings, visual inspection report, field data sheets, and the analytical laboratory's results.

C. Project Daily Logs: Submit the previous day's Daily Logs. Logs shall include regulated area sign-in sheets and list of asbestos-containing materials removed including quantities and locations of those materials, in the units used on the drawings. Claims for additional quantities will not be addressed unless daily quantities are submitted.

D. Clearance air monitoring is not anticipated for this project as the building will be fully demolished.

1.15 PROJECT COMPLIANCE DOCUMENTS**:** Prepare and submit the following records of compliance with hazardous materials regulations following each work area clearance. Submittals may contain segregated submittals for more than one (1) work area. Submittal shall be received by Owner within four (4) weeks following work area clearance. Compliance documents shall be signed and dated and shall include as a minimum:

A. Waste transport records (40 CFR 61, Figure 4).

B. Disposal site receipts.

C. Contractor's "Start" and Finish" dates for the work area(s).

D. Daily logs, including regulated area sign in sheets, materials summary, etc (if not previously submitted).

E. Final work area inspection report(s) and inspector certifications (if not previously submitted).

F. Final, signed, clean copies of all air sampling field data sheets, location drawings, and air monitoring log.

G. Final, signed, clear, legible copies of all analytical laboratory air monitoring test results, including all clearance data, and current laboratory certifications (if changed from previously submitted).

H. Copies of Asbestos Worker Training certificates for workers performing work on this project and all approved Alaska DOL notifications for those workers.

1.16 SANITARY FACILITIES: Provide adequate toilet and hygiene facilities.

1.17 MATERIAL STORAGE: Store all materials subject to damage off the ground and secure from damage, weather, or vandalism.

1.18 ON-SITE DOCUMENTATION: The Contractor shall maintain on the job site, copies of the following data for safety procedures, equipment, and supplies used for the work.

A. Equipment: Show the model, style, capacity and the operation and maintenance procedures for the following, as applicable:
   1. High-Efficiency, Particulate, Air (HEPA) Filtration units.
   2. HEPA Vacuum cleaners.
   3. Pressure differential recording equipment.
   4. Heat stress monitoring equipment.

B. Material Safety Data Sheets (MSDS): Each encapsulant, surfactant, solvent, detergent, and other material proposed to be used shall have an MSDS.

C. Respiratory Protection Plan: The Contractor's and/or Subcontractor's written respirator program.

PART 2 - PRODUCTS

2.01 PERSONAL PROTECTIVE EQUIPMENT**:** Provide personal protective clothing as approved and selected by the IH.

A. Respirators: Provide personally issued and marked respirators approved by the National Institute of Occupational Safety and Health (NIOSH). Provide sufficient replacements for respirators with disposable canisters. Use respirators equipped with dual cartridges whenever both asbestos hazards and other respiratory hazards exist in the work area.

B. Provide filter cartridges approved for each airborne contaminant which may be present. NIOSH approved filter cartridges may be used. At no time shall the permissible exposure limit (PEL) for the contaminant exceed the PEL listed in 8 AAC 61.1100.

C. Whole Body Protection: Provide approved disposable fire retardant, full body coveralls and hoods fabricated from nonwoven fabric, gloves, eye protection, and hard-hats, and other protective clothing as required to meet applicable safety regulations to personnel potentially exposed to asbestos above the permissible exposure limits (PELs). Wear this protection properly. Full facepiece respirators shall meet the requirements of ANSI Z87.1.

D. Provide protective personal equipment and clothing at no cost to the workers.

2.02 DECONTAMINATION UNIT

A. Provide a temporary three-stage decontamination unit, attached in a leak-tight manner to each negative pressure work area. Decontamination units shall consist of a clean room equipped with separate lockers for each worker, a shower/wash down room, and an equipment locker room equipped with separate lockers for each worker.

B. Shower specifications (if required): Locate flow and temperature controls within the shower where adjustable by the user. Hot water service may be secured from the building hot water system if available, but only with back-flow protection installed by the Contractor at the point of connection, and with prior notification and approval by the Owner. Should sufficient hot water be unavailable, the Contractor shall provide a minimum 40-gallon electric hot water heater with a minimum recovery rate of 20 gallons per minute. Water from the shower room shall not be allowed to wet the floor in the clean room.

2.03 WASTE WATER FILTERS: Provide Water Filtration Units with filters of adequate capacity to treat decontamination water and shower flows. Water filtration unit effluent shall contain less than 7,000,000 asbestos fibers per liter prior to discharge to sanitary sewer or storm drains.

2.04 DANGER SIGNS AND TAPE**:** Post danger signs and tape signs to demarcate areas where asbestos waste is temporarily stored, and, in areas not accessible to the public, where asbestos-containing materials are left in place. Signs and labels shall be in accordance with applicable regulations and codes. The signs posted at work area entrances, exits, decontamination areas, emergency egress, and waste disposal areas shall comply with 29 CFR 1926.1101 and the International Fire Code.

2.05 WARNING LABELS: Affix warning labels to all components or containers containing asbestos wastes. Conform labeling to 29 CFR 1926.1101 and 49 CFR 172.

2.06 HEPA FILTRATION UNITS: (if required) shall conform to ANSI Z9.2, and HEPA filters shall be UL-586 labeled.

2.07 PRESSURE DIFFERENTIAL MONITORING EQUIPMENT**:** Provide continuous monitoring of the pressure differential with an automatic recording instrument for each negative pressure enclosure. Locate the instrument in a clean area where personnel have access to it without respiratory protection. The instrument shall be fitted with an alarm should the negative pressure drop below -0.02 inches of water column relative to the air outside containment.

2.08 CHEMICALS

A. Adhesives: Adhesives shall be capable of sealing joints of adjacent sheets of polyethylene to finished or unfinished surfaces and of adhering under both dry and wet conditions.

B. Mastic Removal Solvents: Mastic removal solvents shall not contain halogenated compounds or compounds with flashpoints less than 60° C (140° F). Solvents shall be compatible with replacement materials.

C. Sealants and Encapsulants: Penetrating and bridging encapsulants for asbestos applications. Tint “Lock-Down” encapsulants used in non-finished areas for identification in a color that will not obscure residual asbestos. Encapsulants shall be compatible with replacement materials.

D. Surfactant: Use a surfactant specifically designed to effectively wet asbestos. Mix and apply the surfactant as recommended by the manufacturer.

2.09 MATERIALS

A. Disposal Containers: Use disposal containers to receive, retain, and dispose of asbestos-containing or contaminated materials. Label leak tight containers in accordance with the applicable regulations. Non-leak tight containers are not acceptable. Plastic bags shall be a minimum 6-mil polyethylene, pre-printed with approved warning labels. Plastic wrap shall be 6-mil polyethylene sheets, securely wrapped and taped. Disposal containers shall be labeled with “ASBESTOS NA 2212,” Contractor’s name and location, and a Class 9 label.

B. Glove Bags: The glove bags shall be a minimum of 6-mil polyethylene or polyvinylchloride plastic, and specially designed for removal of asbestos-containing materials, with two inward projecting long sleeves and rubber gloves, one inward projecting water wand sleeve, an internal tool pouch, and an attached, labeled receptacle for asbestos waste.

C. Plastic Sheet: A minimum 6-mil thick flame resistant polyethylene (in accordance with NFPA 701) shall be used unless otherwise specified.

D. Tape: Tape shall be capable of sealing joints of adjacent sheets of polyethylene, for attachment of polyethylene sheets to finished or unfinished surfaces and of adhering under both dry and wet conditions.

2.10 OTHER MATERIALS**:** The Contractor shall provide standard commercial quality of all other materials as required to prepare and complete the work.

2.11 TOOLS AND EQUIPMENT

A. The Contractor shall provide tools and equipment as required to prepare and complete the work. Tools and equipment shall meet all applicable safety regulations.

B. Transportation equipment shall be suitable for loading, temporary storage, transit, and unloading of contaminated waste without exposure to persons or property. All trucks or vans used to transport asbestos shall be enclosed and all containers sealed leaktight. Truck drivers shall have a commercial driver's license with hazardous material endorsement.

PART 3 - EXECUTION

3.01 WORK AREAS

A. Regulated Work Areas: Establish regulated work areas in compliance with 29 CFR 1926.1101.

B. Decontamination Area: Install decontamination areas in compliance with 29 CFR 1926.1101. Decontamination area shall meet fire-exiting requirements of the International Fire Code. Showers shall be provided with hot water and water filtration units.

C. Negative Pressure Enclosure System: Construct Negative Pressure Enclosure Systems as required by 29 CFR 1926.1101, these specifications, and approved work plan. Signage shall conform to the International Fire Code and 29 CFR 1926.1101. Exhausts from HEPA Filtration Units shall terminate outside of the building.

D. D. Notify applicable Fire Marshal as required by the International Fire Code.

3.02 PERSONNEL PROTECTION PROCEDURES

A. Contractor's Competent Person shall strictly enforce personal protection procedures as required by the approved work plan and all applicable regulations.

B. Post the decontamination, safety, and work procedures to be followed by workers.

C. Provide continuous on-site supervision by the approved Competent Person.

D. Maintain a daily log of all workers and visitors entering regulated work areas. Log shall contain the name of each individual, his or her organization, accurate time of entering and leaving, and purpose of visit.

3.03 ASBESTOS REMOVAL PROCEDURES**:** Remove asbestos in accordance with the Contractor's Approved Work Plan, applicable regulations and this specification. The Owner shall be notified 24-hours in advance of any asbestos disturbance taking place outside of a Negative Pressure Enclosure System.

3.04 AIR MONITORING

A. Perform personal, work area, and environmental monitoring for airborne asbestos fibers by industrial hygiene technicians who are employees of (one of) the Contractor's Independent Testing Laboratories.

B. Conduct air monitoring in accordance with 29 CFR 1926.1101, current EPA guidance, and as specified herein. Calibrate all sampling pumps on-site with a calibrated transfer standard before and after each sample. Built-in rotameters on pumps are not acceptable for calibration. Additional samples beyond the minimum numbers shown below may be necessary if samples are overloaded or require shorter sampling periods to achieve readable samples, due to size of the work force, or due to more than one 8-hour work shifts.

C. Conduct daily work area and environmental air monitoring per shift as follows:
   1. Three (3) air samples within the work area.
   2. One (1) air sample located outside the entrance to the work area.
   3. One (1) air sample located at the exhaust(s) of the HEPA filtration unit(s) (if more than one unit is used, the sampling may be rotated between units, however, each unit must be sampled at least once every three days).
   4. Three (3) air samples located in adjacent occupied areas.
   5. Two (2) waste load-out samples for the full duration of the operation, one taken inside the wash-down station and one taken on the clean side of the wash-down station, in addition to the daily work area and environmental samples. (No samples are necessary if no load-out operation is performed.).

D. Clearance: Each work area shall be visually inspected by the Contractor's competent person, the IH Technician, and the Owner's Representative prior to air sampling. If work area is not free of accumulated dusts, debris, and abated surfaces have not been thoroughly cleaned, the Contractor shall re-clean the work area, at no additional cost to the Owner, and call for an additional visual inspection. The Contractor will be monetarily responsible for additional cost the Owner may incur for additional visual inspections. Monetary cost includes airfare, hotel, employee wages, etc.

1. All surfaces of all materials and objects in the Regulated Work Areas (including locations of dismantled contamination containment systems) shall be thoroughly cleaned prior to the start of clearance testing.
2. Clearance sample set shall consist of a minimum of 3 samples collected within the regulated work area.
   a. A minimum of 1200 liters of air shall be collected on each sample.
   b. Samples shall analyzed by Phase Contrast Microscopy (PCM) utilizing NIOSH method 7400.
   c. All air sample results shall be below 0.01 fibers per cubic centimeter of air (f/cc) for the work area to pass clearance criteria.

3. If all air monitoring results indicated airborne fiber counts meet the requirements for clearance testing of the work, all seals, plastic, debris, and decontamination enclosures shall be removed and disposed of as contaminated waste. Upon receipt of the written final clearance sampling results, the Contractor shall dismantle the asbestos work area.
4. Delay and standby time required by sampling procedures and evaluation or resulting from failure to meet the clearance requirements shall be at the Contractor's expense. Additional air sampling and sample evaluation cost resulting from failure to meet clearance requirements shall be at the Contractor's expense.

E.

F. Conduct personal air monitoring in accordance with 29 CFR 1926.1101 and as specified herein.
   1. Take personnel samples (excluding excursion samples) at least twice per eight-hour work shift at the rate of one sample for every four people performing that task in the same work area. Persons performing separate tasks or in separate work areas shall be sampled separately.
   2. Collect and analyze excursion samples as required by 29 CFR 1926.1101.
   3. Continuously monitor all workers disturbing asbestos outside of a Negative-Pressure Enclosure System if that work is conducted indoors.

G. Daily personnel monitoring may be discontinued only after the Contractor’s Independent Testing Laboratory certifies in writing that a Negative Exposure Assessment has been obtained and the Owner has reviewed and approved the negative exposure assessment data.

H. Submit air monitoring results to the Owner as specified in Paragraphs 1.14 and 1.15.

3.05 DISPOSAL

A. Dispose of asbestos wastes in an EPA/DEC permitted asbestos landfill.

B. Comply with current waste disposal, handling, labeling, storage, and transportation requirements of the waste disposal facility, U.S. Department of Transportation, and EPA regulations.

C. Workers handling waste shall wear protective clothing and canister type respirators.

D. Drivers of the waste transport vehicles need not wear respirators while enroute to disposal site.

E. Workers shall wear respirators when handling asbestos material at the disposal site.

3.06 CLEANING OF WORK AREA

A. Remove all asbestos material and debris upon completion of asbestos repair or removal within a work area. Wet clean or HEPA vacuum all surfaces within the work area.

B. Notify the Owner and the Independent Testing Laboratory that asbestos work has been completed and the work area is ready for visual inspection. Include in the visual inspection report a statement that all asbestos in the work area has been removed, repaired and/or encapsulated as required by the contract, and that all debris has been removed.

C. All required demolition (ACM and non-ACM) shall be completed in each work area. Exceptions may be made with prior approval of the Owner.

D. A lockdown encapsulant shall be applied to all surfaces within the abatement areas after all remediation efforts are completed.

E. Submit the final work area inspection report, clearance air monitoring field data sheets and the laboratory air monitoring report to the Owner as specified in Paragraph 1.15.

3.07 SUBSTANTIAL COMPLETION

A. After the work area barriers and temporary construction and equipment have been removed, the Contractor shall inspect the work area to verify that no asbestos debris, contaminated water, or other residue remains. Any remaining residue shall be cleaned up using HEPA vacuum cleaners and wet wiping methods.

B. The Contractor shall certify that the work area has been cleaned of all asbestos in compliance with the contract, and that there is no unrepaired damage to walls, ceilings, doors, surfaces, equipment or finishes other than that called for by the scope of work.

C. Costs of restoration of damaged finishes shall be borne by the Contractor.

END OF SECTION

SECTION 02 83 33

LEAD REMOVAL / DISTURBANCE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The work will require the disturbance (including cleanup of any existing loose paint), demolition, or removal, and disposal of lead-containing painted building materials related to the Fire Station 1 Remediation and Ventilation Upgrade Project as specified herein. Items to be disturbed may include, but are not limited to:

1. **Vehicle Bay 194**
   Painted Interior Building Components.
2. **Passage 127**
   Painted interior building components

B. The work includes all air monitoring, waste testing and disposal as specified herein. Materials listed are not necessarily hazardous waste or hazardous to handle. Lead-containing paints or materials identified for demolition and disposal shall be tested by the Toxicity Characteristics Leaching Procedure (TCLP) to determine if they are hazardous waste prior to disposal. Metal waste shall be recycled where practical.

C. Asbestos, lead and other hazardous materials are present in the building that may impact the work of all trades. Regulated air contaminates, including asbestos and lead, are also present in settled and concealed dust in and on architectural, structural, mechanical and electrical components or systems throughout the building. All trades shall coordinate with other trades and conduct their work to prevent worker exposure or site contamination. This notification is provided in accordance with EPA and OSHA requirements.

D. All work disturbing lead–containing materials shall comply with 29 CFR 1926.62, 40 CFR 745 and other applicable regulations. IMPORTANT: All renovation work (other than minor repair and maintenance activities) performed on or after April 22, 2010 in Child Occupied Facilities (see definitions in 40 CFR 745) where lead-based paint will be disturbed must be performed by an EPA certified Firm (Contractor) and directed by an EPA certified Renovator using certified and/or properly trained individuals (Workers). In addition to the training certifications, the Firm must provide the Owner with the EPA pamphlet “Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools,” obtain a written acknowledgement of the pamphlet receipt, comply with EPA work practice standards and maintain records in accordance with 40 CFR 745.

1.02 1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02 82 13 Asbestos Abatement
B. Section 02 85 00 Chemical Hazards Removal and Disposal

1.03 DEFINITIONS AND ABBREVIATIONS: Definitions and abbreviations are provided in the applicable publications listed in Paragraph 1.4 of this section.

1.04 APPLICABLE PUBLICATIONS The publications listed below form a part of this specification to the extent referenced.

A. General Requirements: All work shall be performed in compliance with the International Building, Fire, Fuel Gas, Mechanical, Residential, Energy Conservation and Administrative Code; Uniform Plumbing Code; the National Electrical Code; and the publications listed in this section that are in effect at the time of the bidding of this contract.

B. Title 29 Codes of Federal Regulations (CFR), Department of Labor (USDOL)
   1. **Part 1910 General Occupational Safety and Health Standards**
   2. **Part 1926 Safety and Health Regulations for Construction**

C. Title 40 CFR, Environmental Protection Agency (EPA)
   1. **Part 61 National Emission Standards for Hazardous Air Pollutants**
   2. **Part 311 Worker Protection Part 763 Asbestos**

D. Title 49 CFR, Department of Transportation (DOT)
   1. **Part 171 General Information, Regulations and Definitions**
   2. **Part 172 Hazardous Materials Communication and Regulations**
   3. **Part 173 General Requirements for Shipments and Packaging**
   4. **Part 177 Carriage by Public Highway**
   5. **Part 178 Specifications for Packaging**
   6. **Part 382 Requirements for Drug Testing**
   7. **Part 383 Commercial Driver's License Standards**

E. State of Alaska Administrative Codes (AAC)
   1. **8 AAC 61 Occupational Safety and Health Standards**
   2. **18 AAC 60 Solid Waste Management**

F. State of Alaska Statutes
   1. **AS 18.31 Health and Safety –Asbestos**
   2. **AS 45.50.477 Titles Relating to Industrial Hygiene**

G. Public Law 101-637
   1. **Asbestos School Hazard Abatement Reauthorization Act**

H. Federal Standards
   1. **313D Material Safety Data Sheets**

I. American National Standard Institute (ANSI)
   1. **Z9.2 Local Exhaust Systems**
   2. **Z87.1 Eye and Face Protection**
   3. **Z88.2 Practices for Respiratory Protection**

J. American Society for Testing and Materials (ASTM)
   1. **D-4397 Polyethylene Sheeting**

K. International Code Institute International Building (IBC), Fire, Fuel Gas, Mechanical, Residential, Energy Conservation and Administrative Codes Current Standards

L. National Fire Protection Association (NFPA) NFPA 701 Fire Tests for Flame Resistant Textiles and Films

M. M.National Institute of Occupational Safety and Health (NIOSH)Manual of Analytical Methods, Current Edition

N. Underwriters Laboratories (UL)
   1. **UL 586 High-Efficiency, Particulate, Air (HEPA) Filter Units**

1.05 QUALITY ASSURANCE

A. On-site Observation:
   1. **The safety and protection of the Contractor's employees, Subcontractor's employees, Owner's employees, the facility, and the public is the sole responsibility of the Contractor.**
   2. **The Owner, the Owner's Representative, or representatives of State or Federal agencies may make unannounced visits to the site during the work. The Contractor shall make available two complete sets of clean, protective clothing for such visitor use. If the work requires the use of APR, PAPR, or Supplied Air Respirators, the contractor shall provide respirators to the visitor to ensure compatibility with fresh batteries or supplied air system. It is the visitor's responsibility to ensure**

medical qualification, training, and current "fit test" prior to using any respirator provided by the Contractor.

3. **If the Owner or agency visitor determines that practices are in violation of applicable regulations, they will immediately notify the Contractor that operations must cease until corrective action is taken. Such notification will be followed by formal confirmation.**
4. **The Contractor shall stop work after receiving such notification. The work may not be restarted until the Contractor receives written authorization from the Owner.**
5. **All costs resulting from such a stop work order shall be borne by the Contractor and shall not be a basis for an increase in the contract amount or an extension of time.**

B. Monitoring and Testing: Monitoring and testing during the work shall be performed as follows:
1. **The Contractor shall hire Independent Testing Laboratories to collect and evaluate all air and toxicity characteristic leaching procedure (TCLP) samples that are the responsibility of the Contractor. The Contractor shall direct its laboratories, in writing, to release monitoring and testing data, and all other pertinent data and records, to the Owner.**
2. **The Contractor shall be responsible for monitoring its employees for potential exposure to airborne contaminants as required by this specification and all applicable regulations.**
3. **The Contractor shall be responsible for work area monitoring and environmental monitoring outside the work area as required by this specification.**
4. **The Owner may perform monitoring and testing inside the building, inside the work areas, and on the Contractor's employees while work is underway and at any time during the work.**
5. **Final inspection shall be conducted by the Contractors on site environmental technician.**
6. **The Contractor shall have its Independent Testing Laboratories archive all samples until the successful completion of the project.**

C. Additional Sampling of Suspect Materials:
1. **The Contractor and all Subcontractors shall be vigilant during demolition and construction in the event additional suspect lead or hazardous materials are encountered. If suspect lead or hazardous materials not previously identified are encountered, the contractor shall stop work that may be affected by this material and immediately notify the Owner. The Owner or the Owner's Representative will provide recommendations and additional testing if necessary.**
2. **The Contractor and all Subcontractors shall notify the Owner prior to any bulk sampling of suspect lead-containing material or other hazardous materials to allow the Owner or Owner's Representative to be present during such sampling.**

1.06 PROTECTION OF EXISTING WORK TO REMAIN: Perform lead removal in the project work areas without damage or contamination of adjacent work or the facility.

1.07 MEDICAL REQUIREMENTS

A. Institute and maintain a surveillance program in accordance with 29 CFR 1926.62 and 29 CFR 1910.134.

B. Institute and maintain a random drug testing program, as required by 49 CFR 382, for all drivers of vehicles transporting hazardous materials.

1.08 TRAINING: Employ only workers who are trained and certified as required by 29 CFR 1910, 29 CFR 1926, 40 CFR 311, 40 CFR 745 and 49 CFR 383 to remove, encapsulate, barricade, transport, or dispose of lead-containing materials.

1.09 PERMITS, IDENTIFICATION NUMBERS AND NOTIFICATIONS: Secure necessary permits for hazardous material removal, storage, transport and disposal and provide timely notification as required by federal, state, and local authorities.

1.10 SAFETY AND ENVIRONMENTAL COMPLIANCE: Comply with laws, ordinances, rules, and regulations of federal, state, and local authorities regarding handling, storing, transporting, and disposing of hazardous materials and all other construction activities.

1.11 RESPIRATOR PROGRAM: Establish a respirator program as required by ANSI Z88.2 and 29 CFR 1910.134.

1.12 HAZARD COMMUNICATION PROGRAM: Implement a hazard communication program in accordance with 29 CFR 1910.1200.

1.13 SUBMITTALS

A. Submit the following documentation to the Owner for review, approval or rejection. Work shall not begin until submittals are approved.
   1. **Shop drawings.**
   2. **Work plan.**
   3. **Liability insurance policy and performance bond.**
   4. **Schedule.**
   5. **Independent testing laboratory and laboratory personnel.**
   6. **Disposal site designations.**
   7. **Waste transporter designations.**
   8. **Representations.**
   9. **"Competent Person" designation and experience.**
   10. **EPA Training certifications and notification plan, if required.**
   11. **Request for substitutions.**

B. Shop drawings shall show:
   1. **Boundaries of each lead work area, if required.**
   2. **Location and construction of decontamination stations, if required.**
   3. **Location of temporary site storage facilities.**
   4. **Location of air monitoring stations, both in and outside of the work area.**
   5. **Emergency egress route(s).**
   6. **Location of negative pressure exhaust systems, if required.**

C. The work plan shall include procedures for:
   1. **Work area set-up and protection.**
   2. **Worker protection and decontamination.**
   3. **Initial exposure determination(s).**
   4. **Lead removal procedures.**
   5. **Waste testing, transport, and disposal procedures.**
   6. **Monitoring and testing procedures (Sampling and Analysis Plan).**
   7. **Spill clean-up emergency procedures.**
   8. **Method of owner/occupant notification as per 40 CFR 745, if required.**

D. Insurance Policy and Bond: Submit copies of the Contractor's or Subcontractor's insurance policy and performance bond. Submittal requirement is only to ensure that the insurance certificate(s) show specific coverage for the potentially hazardous materials being handled by this project. The insurance and bond amounts and certificate holder requirements are

addressed in other portions of the contract documents and are not covered as part of this submittal requirement.

E. Schedule: Submit construction schedule by work area.

F. Independent Testing Laboratories and Laboratory Personnel: Submit the name, location, and phone number of proposed independent testing laboratories, and the names and certifications of the industrial hygiene technicians. Include the laboratory's accreditation. Not all laboratories will require all accreditations.

1. **The Independent Testing Laboratories shall be acceptable to Owner.**
2. **Submit evidence that the laboratory is currently judged proficient in lead analysis, as determined by the Environmental Lead Proficiency Analytical Testing (ELPAT) Program, of the American Industrial Hygiene Association (AIHA) Environmental Lead Laboratory Accreditation Program (ELLAP) for lead in paint chip, soil, and dust wipe samples.**
3. **Submit evidence that the laboratory has demonstrated proficiency as determined by ELPAT or ELLAP performance for NIOSH Method 7082 and/or NIOSH Method 7105 analytical method for the determination of lead in air.**
4. **Submit evidence that the laboratory has demonstrated proficiency in performing analyses according to Method 1311 TCLP, corresponding to the current version of Test Methods for Evaluating Solid Wastes (Chemical Physical Methods), SW¬-846. Evidence may include successful participation in a recognized inter-laboratory quality control program such as a laboratory certified by the California Health and Welfare Agency, Department of Health Services, or a more informal inter-laboratory quality control program.**
5. **Submit evidence that the laboratory is currently accredited by the American Industrial Hygiene Association (AIHA).**
6. **Submit the name, address, telephone number, and résumé of the Contractor's Industrial Hygienist technician (IHT) who will oversee the on-site monitoring and final visual inspections.**
7. **Submit copies of the Contractor's letter to each of the independent testing laboratories, directing each to release all the results for this project to the Owner, as these results become available and as specified herein.**

G. Disposal Site: Submit the name and location of the proposed Environmental Protection Agency (EPA) permitted disposal site (if required).

H. Waste Transporter: Submit the name and address of the proposed waste transporter.

I. Representations: Submit statement by the Contractor that records of employees' work assignments, certifications, respirator fit tests, and medical records are accurate, up-to ¬date, and available for inspection.

J. Competent Person: Submit the name and certifications of the Contractor's proposed Competent Person and a list of his/her previous projects. Certify that the Competent Person has the knowledge and training to supervise the work in compliance with the publications listed in Paragraph 1.4 above.

K. EPA Lead Training Certifications, and Notification Plan: On projects where lead-based paint is to be disturbed for other than minor repair and maintenance activities in child– occupied facilities, submit Firm and Renovator certificates of training, and describe the contractor's plan to notify the owner and parents and guardians of the planned activities in accordance with 40 CFR 745.

L. Substitutions: Submit requests for substitutions of materials, equipment and methods.

M. Updated Project Information: Submit changes to the submitted project information at least 24 hours prior to the effective time of change for the following:
   1. **Updated schedules for lead removal.**
   2. **Change in Competent Person.**
   3. **Changes to work plan.**

1.14 TEST REPORTS: Submit the following documentation produced during the work as soon as received:

A. Project Daily Logs: Submit the previous day's Daily Logs. Logs shall include regulated area sign-in sheets and list of lead-containing materials removed, including quantities and locations of those materials, in the units used on the drawings. Claims for additional quantities will not be addressed unless daily quantities are submitted.

B. Monitoring and testing data sheets and laboratory reports.

1.15 PROJECT COMPLIANCE DOCUMENTS: Submit the following documents to the Owner with application for final payment:

A. Contractor's actual project "Start and Finish" dates.

B. Waste testing results per Paragraph 3.5 (A).

C. Waste Shipment Records (Manifest EPA form 8700-22) if required.

D. Clearance sampling and soil sampling data sheets (if required) and laboratory reports.

E. Disposal site receipts.

F. Final clearance submittals as outlined in 3.7 (if required).

G. Evidence that each employee who was engaged in lead disturbance/removal work or who was exposed to lead completed training on lead covering the requirements of 29 CFR 1926.62 and 40 CFR 745, as required.

H. Evidence of owner acknowledgement of receipt of EPA pamphlet “Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools”, if required.

1.16 SANITARY FACILITIES: Provide adequate toilet and hygiene facilities.

1.17 MATERIAL STORAGE: Store all materials subject to damage off the ground and secure from damage, weather, or vandalism.

1.18 ON-SITE DOCUMENTATION: Maintain on the job site, copies of the following data for safety procedures, equipment, and supplies used for the work.

A. Equipment: Show the model, style, capacity and the operation and maintenance procedures for the following, as applicable:
   1. **High-Efficiency, Particulate, Air (HEPA) Filtration units.**
   2. **HEPA Vacuum cleaners.**
   3. **Pressure differential recording equipment.**
   4. **Heat stress monitoring equipment.**

B. Material Safety Data Sheets (MSDSs): Maintain MSDSs for each encapsulant, surfactant, solvent, detergent, and other material proposed to be used.

C. Respiratory Protection Plan: The Contractor's written respirator program.

PART 2 - PRODUCTS

2.01 PERSONAL PROTECTIVE EQUIPMENT: Provide personal protective clothing as approved and selected by the IH.

A. Respirators: Provide personally issued and marked respirators approved by the National Institute of Occupational Safety and Health (NIOSH). Provide sufficient replacements for

respirators with disposable canisters. Use respirators equipped with dual cartridges whenever both lead hazards and other respiratory hazards exist in the work area.

B. Provide filter cartridges approved for each airborne contaminant which may be present. NIOSH approved filter cartridges may be used. At no time shall the permissible exposure limit (PEL) for the contaminant exceed the PEL listed in 8 AAC 61.1100.

C. Whole Body Protection: Provide approved aprons, gloves, eye protection, and hard-hats, and other protective clothing as required to meet applicable safety regulations to personnel potentially exposed to lead dust or fumes above the permissible exposure limit (PEL). Wear this protection properly. Full facepiece respirators shall meet the requirements of ANSI Z87.1.

D. Provide protective personal equipment and clothing at no cost to the workers.

2.02 DECONTAMINATION UNIT

A. Provide a temporary three-stage decontamination unit, attached in a leak-tight manner to each Contained Work Area. Decontamination units shall consist of a clean room equipped with separate lockers for each worker, a shower/wash room, and an equipment locker room equipped with separate lockers for each worker.

B. Shower specifications (if required): Locate flow and temperature controls within the shower and be adjustable by the user. Hot water service may be secured from the building hot water system if available, but only with back-flow protection installed by the Contractor at the point of connection, and with prior notification and approval by the Owner. Should sufficient hot water be unavailable, the Contractor shall provide a minimum 40 gallon electric hot water heater with a minimum recovery rate of 20 gallons per hour. Water from the shower room shall not be allowed to wet the floor in the clean room.

2.03 WASTE WATER FILTERS: Install the waste water filters in a series of stages with the final filtration stage sufficient to meet discharge standard of 18 AAC 70 and/or any local sewage system discharge limit for lead. Size the waste water pump for 1.25 times the shower head flow-rate. Dispose all filters as lead contaminated waste.

2.04 WARNING SIGNS AND TAPE: Post warning signs and tape at the boundaries and entrances to lead disturbance and removal work areas. Signs required by other statutes, regulations, or ordinances may be posted in addition to, or in combination with, this warning sign. Conform warning signs and tape to the requirements of 29 CFR 1926.62.

2.05 WARNING LABELS: Affix warning labels to all hazardous waste disposal containers as described in the Contractor's approved Solid Waste Disposal Plan. Conform labeling to 29 CFR 1926.62 and 49 CFR 100-199.

2.06 NEGATIVE PRESSURE EXHAUST SYSTEM (if required): Use the negative pressure exhaust systems to exhaust each contained work area where the PEL will or is expected to be exceeded. Operate the negative pressure exhaust system continuously (24 hours a day) during lead work. Select the negative pressure exhaust system equipment to provide a minimum of 4 air changes per hour under load within the work area. The negative pressure exhaust system shall have a minimum of two stages of pre-filtration ahead of the HEPA filter: The HEPA filter shall bear the UL-586 label. In no case shall the building ventilation system be used as the local exhaust for the contained work area. Terminate the exhaust outside of the building. The exhaust ventilation system equipment shall be equipped with lock-out protection to prevent operation without a HEPA filter properly installed. The exhaust system equipment shall be equipped with the following instrumentation: a static pressure gauge with low flow alarm, an elapsed time indicator, automatic shutdown capability in the event of a major rupture in the

HEPA filter or blocked air discharge and an automatic re-start when power is restored after a power failure.

2.07 PRESSURE DIFFERENTIAL MONITORING EQUIPMENT: Provide continuous monitoring of the pressure differential with an automatic recording instrument for each contained work area. Locate the instrument in a clean area where personnel have access to it without respiratory protection. The instrument shall be fitted with an alarm should the negative pressure drop below -0.02 inches of water column relative to the air outside containment.

2.08 TOOLS: Vacuum cleaners shall be equipped with HEPA filters. Use only approved power tools to remove lead-containing material. Do not use open-flame and electric element heat-gun type tools with temperatures in excess of 700°F to remove lead-containing material. Remove all residual lead contamination from reusable tools being removed from lead disturbance or removal work areas. Electrical tools and equipment shall be UL listed.

2.09 AIR MONITORING EQUIPMENT: The Contractor's IHT shall select the air monitoring equipment to be used for the evaluation of airborne lead.

2.10 EXPENDABLE SUPPLIES: Provide flame resistant 6-mil thick polyethylene sheet plastic shall be provided in widths necessary to minimize seams.

2.11 MATERIAL SAFETY DATA SHEETS (MSDSs): Provide MSDSs for all chemical materials brought onto the work-site.

2.12 OTHER ITEMS: Provide other items, such as consumable materials, disposable and/or reusable cleaning equipment and hand tools, or miscellaneous construction equipment and materials, in sufficient quantity as necessary to fulfill and complete the requirements of the contract. Electrical equipment and supplies shall be UL listed.

2.13 ENCAPSULANTS: Encapsulants shall contain no toxic or hazardous substances. Encapsulants shall be compatible with the products to which they are applied and be compatible with replacement products.

PART 3 - EXECUTION

3.01 WORK AREAS

A. Lead Control Areas: A control area, structure or containment where lead-containing or contaminated materials are being disturbed. Critical barriers and/or physical boundaries shall be employed to isolate the lead control area and to prevent migration of lead contamination and unauthorized entry of personnel. Refer to 40 CFR 745 for additional requirements if lead based paint is disturbed in child-occupied facilities.

B. Contained Lead Work Area Requirements: Construct contained lead work areas as described in the Contractor's approved work plan. A contained lead work area is required whenever airborne lead levels cannot be maintained below the OSHA action level at the boundary of a lead work area.

C. Building Electrical Systems: Verify that the electrical service is deactivated, disconnected and locked out where necessary for wet washing and/or removal. Provide temporary electrical service, equipped with ground fault protection, where needed.

3.02 PERSONNEL PROTECTION PROCEDURES

A. Initial Determination: An initial determination is required in the absence of acceptable prior exposure data in accordance with 29 CFR 1926.62. Establish an initial lead work area for each material to be disturbed and each disturbance procedure if required. Isolate these lead work

areas from the rest of the building. Personnel working in these areas shall wear respiratory protection and personal protective equipment as directed by the IH. Perform personal and work area air monitoring as directed by the IH. Operational decontamination facilities shall be available. Work performed shall be representative of the work to be done during the remainder of the project.

B. Respirator Evaluation: Upgrading, downgrading, or not requiring respirators shall be recommended by the Contractor's IH based on the measured airborne lead-containing dust concentrations. Immediately implement recommendations to upgrade the respiratory protection shall be implemented immediately, followed by notification to the Owner. NOTE: Submit recommendations in writing to downgrade respirator type or not require respirators to the Owner for review and written approval prior to implementation.

C. Decontamination Procedures: Worker and material decontamination procedures shall be as described in the Contractor's approved work plan. Worker decontamination shall be as directed by the Contractor's competent person.

D. Work Stoppage: Stop work if the IH, the Owner, or a representative of a regulatory agency determines that the work is not in compliance with the Contractor's approved work plan, these specifications, or applicable laws and regulations. The Contractor shall stop work and notify the Owner whenever the measured concentrations of lead outside the lead control area equal or exceed 30 µg/m for airborne lead or 200 µg/ft for lead dust on surfaces that would normally be accessible by building occupants. When such work stoppage occurs, the cause of the contamination shall be corrected and the damaged or contaminated area shall be restored to its original decontaminated condition by the Contractor at no expense to the Owner. The Contractor is responsible for removing dusts and debris that were generated as a result of his work.

E. The Contractor shall adhere to all applicable regulations regarding entry into confined spaces.

3.03 LEAD DISTURBANCE AND REMOVAL PROCEDURES

A. General: Perform lead disturbance or removal work in accordance with the Contractors approved work plan, applicable regulations and this specification.

B. Pre-Cleaning: Removal of existing loose paint chips is included in the scope of work. Pre-clean surfaces by HEPA vacuum and wet washing/wiping prior to the establishment of a work area.

C. For renovation work that is regulated by 40 CFR 745, comply with the work practice standards of that regulation.

3.04 MONITORING AND TESTING: Conduct daily sampling in accordance with the Contractor's accepted Sampling and Analysis Plan and this specification. The Owner may conduct air monitoring in the Contractor's work areas and on the Contractor's employees.

A. Perform environmental air monitoring outside the lead work area for each lead work area without a negative initial determination. Include at least one sample immediately outside the entrance to the lead work area.

B. Take personnel samples in accordance with 29 CFR 1926.62. Personal samples for an employee will include a minimum of two samples per 8 hour shift. Employees will be monitored at the rate of at least one employee for every four people performing each task in each work area. Persons performing separate tasks or in separate lead work areas shall be sampled separately.

C. Reduction of monitoring: For each operation for which the Negative Initial Determination established workers' exposure will be below the action level, the Contractor's IH may petition the Owner's Representative to recommend that the monitoring as required above be reduced for the specific task or operation.

D. For renovation work that is regulated by 40 CFR 745, comply with any additional cleaning, inspection and testing standards of that regulation.

3.05 DISPOSAL

A. Sampling of Waste Materials: The Contractor shall test waste materials according to 40 CFR 261 and the disposal site's permit to determine if they are hazardous waste and to dispose of them accordingly. Collect, package and transport to an EPA approved Hazardous Waste Disposal Site all bulk debris, loose paint chips, fines, dust from HEPA filters and vacuum bags, unfiltered waste water, water filter cartridges, disposable personal protective equipment (including respirator filters, poly, and tape) which do not have TCLP test results that classify the material as non-hazardous for lead. Lead-acid batteries and other batteries are classified by the EPA as Universal Wastes. The EPA encourages that all Universal Wastes be recycled in accordance with 40 CFR 273, or in the case of lead-acid batteries, in accordance with 40 CFR 266, subpart G.

B. Hazardous Waste Disposal: Dispose of hazardous project wastes as required by 40 CFR 260 and the Contractor’s approved work plan.

C. Construction (Non-Hazardous) Waste Disposal: Dispose of solid (non-hazardous) waste in a permitted waste facility, in accordance with applicable federal, state, and local laws and regulations. Burning of waste is prohibited.

D. Salvageable Materials: The Contractor may salvage metallic lead, lead-acid batteries and other materials to keep such materials from entering the project waste stream. Sell or transfer salvage with a document of exempt status as provided by 40 CFR 261.

E. Waste Storage: Temporarily store solid wastes as described in the approved work plan.

3.06 FINAL CLEANING AND VISUAL INSPECTION: Perform a final cleaning and visual inspection of each lead control area prior to release to unprotected workers in accordance with the Contractor’s approved work plan. Clean the lead control area by vacuuming with a HEPA filtered vacuum cleaner, wet mopping or wet wiping. Do not dry sweep or use pressurized air to clean up the area. A final visual inspection report shall be provided by the Owner’s Representative verifying that all lead disturbance required by the contract has been completed and that all visible dust and debris subject to disturbance by the planned work under this contract have been removed and the area HEPA vacuumed, wet mopped or wet wiped.

3.07 WORK AREA CLEARANCE TESTING: No Clearance testing is anticipated for this project.

3.08 SUBSTANTIAL COMPLETION

A. After the work area barriers and temporary construction and equipment have been removed, the Contractor shall inspect the work area to verify that no lead debris, contaminated water, or other residue remains. Any remaining residue shall be cleaned up using HEPA vacuum cleaners and wet wiping methods.

B. The Contractor shall certify that the work area has been cleaned of all lead in compliance with the contract, and that there is no unrepaired damage to walls, ceilings, doors or surfaces or finishes other than that called for by the scope of work.

C. Costs of restoration of damaged finishes shall be borne by the Contractor.

END OF SECTION

SECTION 02 85 00

MOLD REMEDIATION

A. This mold remediation specification describes the work procedures to be followed at the Fire Station 1 located at 212 E Chenega Avenue Valdez, Alaska for large scale mold remediation within specific locations of the structure.

Project Scope:

A. Decontamination 129 – Remove approximately 144 square feet of ceiling and wall systems within decontamination room, to include associated FRP.

B. Vehicle Bay 194 – Remove approximately 184 square feet of wall system on hose bib wall (23L x 8H). In the southwest corner of the vehicle bay remove approximately 86 square feet of wall and ceiling.

C. Passage 127 – Remove approximately 54 square feet of wall system

All materials are assumed to have microbial contamination to some degree. All studs and remaining structural items (not in demolition scope) will be decontaminated and left in place to include walls, ceiling, floor, installed building materials and components. Remaining wall systems will have EPA approved anti-microbial inhibitor sprayed into cavities to lock down any migrant contamination. All work will conform to ICCRC 520 Mold Remediation Methodologies. See demolition sheet for reference of wall system removal.

Contractor, upon discovery of suspect mold contamination outside of the known locations will stop work in that area and immediately contact Owner. Contractor will provide a unit cost for square footage for any mold remediation not found in initial scope.

A mandatory site visit is required to bid on this project.

Awarded firm will be IICRC certified for mold remediation.

- The term "Owner" as used throughout this specification shall be interpreted as meaning their designated representative City of Valdez.
- The term "Contractor" as used throughout this specification shall be interpreted as meaning Contractor to whom work has been awarded.
- The term "Consultant" as used throughout this specification shall be interpreted as meaning ATC Group Services LLC (ATC).

PURPOSE

The purpose of large-scale mold remediation is to return a space back to Condition 1, as defined by the Institute of Inspection Cleaning and Restoration Certification (IICRC) Standard for Professional Mold Remediation S520.

REMEDIATION CONTRACTOR QUALIFICATIONS

The following will be demonstrated by contractors performing large scale mold remediation projects for this project.

A. Training. The Contractor’s supervisor of the work crew must attend a recognized training program by the Indoor Air Quality Association (IAQA), the Institute of Inspection Cleaning and Restoration

Certification (IICRC), or similar non-profit organization. Proficiency should be demonstrated by an industry certification such as one from the American Indoor Air Quality Council (AmIAQC).

B. Previous Experience. The Contractor must demonstrate substantial experience with similar projects and provide references. (a) all workers will be fit tested prior to starting the project (follow company fit test program). (b) follow all applicable OSHA safety and health programs.

C. Demonstrated Ability of Workers. The Remediation Contractor must demonstrate that it has (or will have) a sufficient number of remediation workers who have successfully completed in-house training regarding mold.

D. Insurance. The Remediation Contractor must demonstrate that it has sufficient coverage to meet owner's requirement. The Contractor shall secure, pay for, and maintain in full force and effect until no longer necessary, all necessary licenses, permits, and permissions required by federal and state law, city ordinance, statute, or regulations.

E. The Contractor acknowledges that he has acquainted himself with all conditions that may affect the work as would be evident from a thorough investigation of the job site and these specifications covering the work.

F. It shall be the responsibility of all Contractors and Subcontractors to carefully examine all specifications pertaining to all phases of the construction in order that the Contractor and Subcontractors may foresee all requirements for coordination of their work. Claims based on unforeseen requirements will not be considered.

G. Should any error or inconsistency appear in the Specifications, the Contractor, before proceeding with the work, must make mention of the same to the project coordinator for proper adjustment, and in no case proceed with work in uncertainty.

DEFENITIONS

A. Actual Growth: molds that have colonized a substrate, formed fungal mycelia, growth structures and spores; are active or dormant; visible or hidden.

B. Air Filtration Device (AFD): depending on the mode of use, an AFD that filters (usually a HEPA) and recirculates air is referred to as an air scrubber. One that filters air and creates negative pressure is referred to as a negative air machine.

C. Airlock: a system for permitting ingress or egress without permitting air movement from a contaminated area to an uncontaminated area.

D. Assessment: a process performed by an indoor environmental professional that includes the evaluation of data obtained from a building history and inspection to formulate an initial hypothesis about the origin, identity, location and extent of amplification of mold contamination. If necessary, a sampling plan is developed, and samples are collected and sent to a qualified laboratory for analysis. The subsequent data is interpreted by the indoor environmental professional who may then develop a remediation plan.

E. Authorized Visitor: The Owner's representative, the Consultant, or a representative of a regulatory or other agency having jurisdiction over the project who has entered their name into the Contractor's Daily Log.

F. Condition 1 (normal fungal ecology): an indoor environment that may have settled spores, fungal fragments or traces of actual growth whose identity, location and quantity are reflective of a normal fungal ecology for a similar indoor environment.

G. Condition 2 (settled spores): an indoor environment which is primarily contaminated with settled spores that were dispersed directly or indirectly from a Condition 3 area, and which may have traces of actual growth.

H. Condition 3 (actual growth): an indoor environment contaminated with the presence of actual growth and associated spores. Actual growth includes growth that is active or dormant, visible or hidden.

I. Containment: a precaution used to minimize cross-contamination from affected to unaffected areas by traffic, material handling or airborne distribution. Containment normally constitutes of 6-mil polyethylene sheeting, often in combination with negative air pressure, to prevent cross-contamination.

J. Contaminated: the presence of indoor mold growth and/or mold spores, whose identity, location and quantity are not reflective of a normal fungal ecology for similar indoor environments, and which may produce adverse health effects, cause damage to materials and/or adversely affect the operation or function of building systems.

K. Critical Barrier: one or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent mold spores from migrating to an adjacent area.

L. Cross-Contamination: the spread of contaminants from an affected area to an unaffected area.

M. Curtained Doorway: a constructed device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.

N. Engineering Controls: the utilization of methods, equipment or containment in such a manner that they limit the exposure of remediation workers and occupants to contaminants and prevent the introduction of contaminants to surrounding uncontaminated areas and contents.

O. Fungi: one of the five kingdoms into which living things are categorized. Fungi have distinct nuclei and include a variety of types, such as molds, mildews, yeast and mushrooms. Fungi range in size generally from 2 to 20 microns and are ubiquitous in soils, water and air.

P. High Efficiency Particulate Air (HEPA) Filter: Means a type of filtering system capable of filtering out particles of 0.3 microns or greater diameter from a body of air at 99.97% efficiency or greater.

Q. HVAC: an acronym for “heating, ventilation and air-conditioning”

R. Negative Air Machine: see Air Filtration Device

S. Personal Protective Equipment (PPE): safety items designed to prevent exposure to potential hazards. Examples include: respirators, gloves, goggles, protective clothing and boots.

T. Post-Remediation Verification: an inspection and assessment performed by an indoor environmental professional after a remediation project, which may include visual, olfactory and/or sampling methodologies to verify that the building, system or contents have been returned to a Condition 1 status.

1.01 GENERAL

A. Description of Work
    1. This specification covers the removal and disposal of mold. Products shall be as follows or as directed by the City of Valdez. Installation procedures shall be in accordance with the product manufacturer's recommendations. Demolition and removal of materials shall be as required to support the work.
B. Submittals: (Items 1-7 will be considered Pre-Work Submittals)
    1. List of all personnel to be involved in the work with their training and certifications.
    2. List of all products and procedures proposed for use in performance of the work, when required:
        a. List all work areas and containments,

b. Locations and types of all decontamination enclosures,
c. Entrances and exists to the work area and/or containments,
d. Type of remediation activity, technique for each work area and/or containment,
e. Number and location of negative air units and exhausts,
f. Location of water and electric connections to building services,
g. Waste transport routes from the work area to the waste storage container.

3. Respiratory Protection Program
   a. Provide a copy of the firm's written respiratory protection program.
4. Employee Training Program
   a. Provide a copy of the firm's written employee hazard communication program.
   b. The communication program will provide a review of the potential exposure with fungal spores during remediation work.
   c. The communication program will provide a review of the potential exposure with the cleaning agents to be used during the remediation work.
5. Employee Instruction
   Provide documentation showing that each employee has been instructed on the following items:
   a. Use and fit of respirator
   b. Protective clothing
   c. Protective measures
   d. Safety and Emergency Egress Procedures
   e. Site specific fall protection plan and training
6. Safety Data Sheets (SDS)
   Provide a SDS on the EPA approved cleaning agents selected for use on this project. Substitution of alternative products is not permitted without authorization from the City of Valdez.
7. Preliminary Schedule:
   Provide an estimate of manpower to be utilized and the time required for completion of each major Work Area. Include estimated size and number of crews and work shifts.
8. Project Close-out Submittals:
   a. Daily progress logs,
   b. A list of all Workers used in the performance of the project,

C. Quality Assurance
1. Conform to all Federal, State, and Local regulations, guidelines and rules which govern the handling and disposal of mold materials.
   a. United States Environmental Protection Agency (EPA) Mold Remediation in Schools and Commercial Buildings, EPA 402-K-01-001.
   b. New York City Department of Health & Mental Hygiene Guidelines on Assessment and Remediation of Fungi in Indoor Environments.
   c. Institute of Inspection, Cleaning and Restoration Certification, IICRC S500, Standard and Reference Guide for Professional Water Damage Restoration, 2006
   d. Institute of Inspection, Cleaning and Restoration Certification, IICRC S500, Standard and Reference Guide for Professional Water Damage Restoration, 2006
   e. National Air Duct Cleaners Association (NADCA) Assessment cleaning and restoration of HVAC Systems (ACR 2006) March 2006
   f. Occupational Safety and Health Administration (OSHA) Respiratory Protection Standard, 29 Code of Federal Regulations (CFR) 1910.134.
   g. OSHA – Fall Protection, 29 CFR 1926.451 to 1926.1060.
   h. OSHA Lockout Tag-out 29 CFR 1926.417 and 1926.702.

D. Record Keeping

1. Daily Log
   The Contractor shall maintain a Daily Project Log consisting of a three-ring binder. The daily project log will be utilized each day to document the following information:
   a. Date and time of the project,
   b. Name of Project Superintendent,
   c. Brief description of daily work activities,
   d. Contained area sign in and sign out sheet,

1.02 PRODUCT

A. Protective Clothing
   1. The Contractor will provide the workers with the required protective disposal clothing as recommended in the referenced guidelines, consisting of full-body coveralls, head covers, gloves and boots.
   2. The Contractor will not under any circumstances permit any person to enter the work areas without the appropriate protective clothing and equipment. The Contractor will provide protective clothing for use by Owners Representative and the Environmental Consultant. The Contractor will furnish as many sets as required for full-time monitoring.
B. Respiratory Protection
   1. Respirators and High Efficiency Particulate Air (HEPA) filters will be used, when required, as recommended in the guidelines and approved by the National Institute of Occupation Safety and Health (NIOSH).
   2. Respirators will be individually fit-tested to personnel on a yearly basis.
   3. No respirator will be issued to personnel without such personnel participating in a respiratory training program.
   4. The Contractor shall provide and make available a sufficient quantity of respirator filters so that filter changes can be made as necessary during the workday. Filters will be removed and discarded during the decontamination process. Filters cannot be reused. Filters must be changed if breathing becomes difficult.
C. HEPA Filter Equipment
   1. All fan and vacuum units will be equipped with a High Efficiency Particulate Absolute (HEPA) filter.
      a. Containment areas, where required will be maintained under negative pressure relative to the surrounding area. This will be accomplished with a HEPA-filtered fan unit exhausted to the outside.
      b. All interior surfaces to be cleaned, exterior of plastic sheeting containing waste material, final vacuuming of the interior surfaces of the work area and surfaces outside of the work area where dust may have settled will be HEPA-vacuumed.
   2. Cleaning Agent
      a. Agent/Biocide – All agents used shall be EPA-registered for the intended use. The anti-microbial/Biocide agent shall be submitted to the owner's technical representative for approval prior to its use or application.
D. CONTAINMENT

   Containments for large scale mold remediation will utilize the following industry standard for isolation of the contaminates.

   a. Polyethylene: 6 mil in size. Fire retardant to comply with NFPA 701 as listed by UL.
   b. Tape: Industry standard
   c. Adhesive: Industry standard

1.03 EXECUTION

The scope of work includes removal of visual fungal growth on contaminated materials and contaminated materials themselves. The abatement procedures will be identified for each remediation project based on the size, complexity and remediation methods required. The size of the area impacted by fungal contamination will determine the type of remediation. The sizing levels will be based on professional judgment by the City of Valdez and the Consultant, utilizing the Institute of Inspection, Cleaning and Restoration Certification, IICRC S500, Standard and Reference Guide for Professional Water Damage Restoration, 2006. Institute of Inspection, Cleaning and Restoration Certification, IICRC S520, Standard and Reference Guide for Professional Mold Remediation, December 2008 National Air Duct Cleaners Association (NADCA), Assessment, Cleaning, and Restoration of HVAC Systems (ACR 2006), March 2006. American Conference of Governmental Industrial Hygienists (ACGIH), Bioaerosols; Assessment and Control. 1999. EPA - Mold Remediation in Schools and Commercial Buildings or the NYC Department of Health & Mental Hygiene Guidelines on Assessment and Remediation of Fungi in Indoor Environments. These guidelines will be utilized to develop the remediation plan, along with any site-specific requirements.

A. Pre-construction Meeting:
    1. Prior to the start of preparatory work, the Contractor will attend a pre-construction meeting attended by City of Valdez, Facility Personnel, and the Environmental Consultant. All pre-work submittals will be submitted 7 days prior to the pre-construction conference; the Contractor will submit 2 copies of the Pre-Work Submittals.
B. Project Monitoring and Air Sampling:
    1. The City of Valdez will engage the services of an Environmental Consultant (Consultant) who will serve as Owners Representative in regard to the performance to the remediation work and provide direction as required throughout the entire remediation phase. The above referenced Guidelines (1.1 C) will be utilized to develop the basis of the design for the remedial work.
    2. The Contractor is required to ensure cooperation of its personnel with the Consultant for the air sampling and Project monitoring functions described below. The Contractor shall comply with all direction given by the Consultant during the course of the Project.
    3. The Consultant will review and approve or disapprove all submittals, shop drawings and schedules. The Consultant will provide visual inspections prior to the start of work and final inspection of the work areas (as required). The Consultant will provide air sampling services when required for the Project (Post Remediation Verification Sampling).
C. Project Supervisor
    1. The Contractor will designate a full-time Project Supervisor who is qualified to enter the work areas and meets the requirements of a “Competent Person” as defined by OSHA 1926.1101. The Project Supervisor must be able to read and write English fluently, as well as communicate in the primary language of the Workers.
    2. If the Project Supervisor is not on-site at any time whatsoever, all Work will be stopped. The Project Supervisor will remain on-site until the Project is complete.
    3. The Project Supervisor will maintain a Project Log Book.
    4. The Project Supervisor will be responsible for the performance of the Work and will represent the Contractor in all respects at the Project site. The Supervisor shall be the primary point of contact for the Consultant.
D. Hazard Communication
    1. The Contractor shall post warning signs at all entrances or openings to the work areas. Warning signs may be in the form of continuous plastic tape.
    2. The Contractor will co-ordinate with the City of Valdez, the Consultant and the building owner regarding notification of the occupants and other Contractors on-site.

E. Temporary Utilities (if required)
    1. Shut down and lock out all electrical power to the Work Areas.
    2. Provide temporary 120-240 volt, single phase, three wire, 100 amp electric service with Ground Fault Circuit Interrupters (GFCI) for all electric requirements within the Work Area.
        1. Where available, obtain from Owner's existing system. Otherwise provide power from other sources (i.e. generator).
        2. Provide temporary wiring and "weatherproof" receptacles in sufficient quantity and location to serve all HEPA equipment and tools.
        3. Provide wiring and receptacles as required by the Consultant for air sampling equipment.
        4. All power to the Work Area shall be brought in from outside the area through GFIC's at the source.
    3. Provide temporary lighting with "weatherproof" fixtures for all Work Areas including decontamination chambers.
        1. The entire Work Area shall be kept illuminated at all times.
        2. Provide lighting as required by the Environmental Consultant for the purposes of performing required inspections.
    4. All temporary devices and wiring used in the Work Area shall be capable of decontamination procedures including HEPA vacuuming and wet-wiping.
    5. Utilize domestic water service, if available, from Owner's existing system. Provide hot water heaters with sufficient capacity to meet Project demands.

F. Containment Barriers
    1. When containment of the work areas is not necessary, dust suppression methods will be utilized.
    2. When containment of the work area is required, the Contractor must be careful not to disturb fungal contaminated building materials while isolating work areas to prevent the release of fungal spores. Any pre-cleaning prior to the erection of the containment will be completed as required. Workers shall wear respirators when installing isolation barriers if fungal contaminated surfaces (walls or surfaces with visible settled dusts) are likely to be disturbed. The Contractor shall completely isolate the work areas for the duration of the work by sealing off all walls, floors, openings, and fixtures in the work areas including, but not limited to, heating and ventilation supply air ducts and diffusers and return air ducts and grilles (HVAC system totally de-energized - no HVAC system airflow into or out of work area), return air grilles, common return air plenums, doorways, corridors, windows, skylights, and lighting with polyethylene sheeting held securely in place as described in this section.
    3. Containment Entry and Exit Procedures will be established as required for the work.
    4. Personnel, Equipment and Waste Decontamination Procedures will be established as required for the work.

G. Negative Pressure
    1. When Negative Pressure is required, the Contractor shall establish a negative air pressure differential inside the enclosed areas relative to interior areas outside the containment before remedial operations begin. No air must flow from inside the enclosed work areas to the areas outside. Unless otherwise indicated in these specifications, the term "outside the work area" shall mean areas within the building that are not in the enclosed work areas. The Contractor shall ensure that air pressure differential is maintained demonstrated by manometer until the Consultant has determined that the work area has passed the final inspection.

H. Work Procedures

1. All materials will be decontaminated and/or removed under containment, or mini-containment. As waste is removed, it will be placed into a disposal container promptly. Disposal containers, at a minimum, will consist of double bagging using 6-mil polyethylene bags. Bags will be taped to form an airtight seal and labeled appropriately. Waste from HEPA-filtered vacuums shall be double bagged in 6-mil polyethylene bags.
2. The Contractor at all times will keep the site and work area free from accumulations of bagged dust material or rubbish caused by its operations and free from any flammable materials or other source of fire hazard. During the performance of the work, the Contractor shall remove all bagged material from and about the work site in strict accordance with the specifications and applicable codes and regulations.
3. All visually contaminated materials and adjacent visually uncontaminated material will be decontaminated and/or removed under full containment unless specified otherwise.
4. EPA approved cleaning agents will be utilized when specified.
5. In the event that areas adjoining the enclosed project area become or are suspected of becoming contaminated with spores as a result of the Contractor's work, the Contractor shall thoroughly and totally decontaminate (for example, use separate HEPA vacuum in occupied space) the affected areas at the contractors expense. These areas shall be subject to detailed visual inspection and final clearance sampling as may be requested by the Consultant.

I. Clearance Preparation
   1. When containment areas are not utilized, the work area and areas used by remedial workers for egress will be cleaned as specified.
   2. When containment areas are utilized, all work area side surfaces and layers, of the polyethylene barrier sheeting will be cleaned as specified. If negative pressure is utilized, the negative air machines will remain on until notified by the Consultant. Negative air machines will be shut down a minimum of 12 hours prior to post remediation verification sampling.

J. Final Clearance Inspections
   1. After all visible accumulations of material and debris are removed, the Contractor will notify the Consultant for a final clearance visual inspection. The Contractor and Consultant will conduct a thorough visual inspection of the work area(s). If during this inspection, any visible dust or debris is observed, the Contractor will contain and re-clean the work area(s). The Contractor will pay all associated costs for the re-cleaning services.
   2. Breakdown of containment will proceed only upon receipt by the Contractor of clearance issued by the Consultant.

K. Post-Remediation Air Sampling
   1. The Consultant will conduct post-remediation air sampling using fungal spore traps. Air samples will be analyzed by an AIHA accredited microbiological laboratory. If fungal spore concentrations inside containment are elevated when compared to outside ambient air or do not meet industry standard for clearance criteria, the Contractor will conduct additional cleaning and sampling (at contractors' cost), and then the sampling process will be repeated. Clearance criteria for this project is 270 spores per cubic meter or less of moisture indicating spores.

L. Restoration of Utilities, Firestopping and Finishes
   1. After final clearance remove locks and restore electrical and HVAC systems. All temporary power will be disconnected, power lockouts removed and power restored. All temporary plumbing will be removed.
   2. Finishes damaged by the Contractor including, but not limited to, plaster/paint damage due to duct tape and spray adhesives, and floor tile lifted due to wet or

humid conditions, will be restored and/or replaced prior to final payment. All foam and expandable foam products and materials used to seal Work Area openings will be completely removed upon completion of remediation activities.

3. All penetrations (including, but not limited to, pipes, ducts, etc.) through fire rated construction will be fire stopped using materials and systems tested in accordance with ASTM E814 on Projects where re-insulation is part of the required work.

End of Section

SECTION 05 50 00

METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and Division-1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

A. Definition: Metal fabrications include items made from iron and steel shapes, plates, bars, strips, tubes, pipes and castings which are not a part of structural steel or other metal systems specified elsewhere.

B. Extent of metal fabrications is indicated on drawings and schedules.

C. Types of work in this section include metal fabrications for:

1. Rough hardware.
2. Ladders, including metal ships ladders, elevator pit ladders, roof ladders.
3. Loose bearing and leveling plates.
4. Miscellaneous framing, trim and supports.
5. Shelf angles and headers.
6. Steel grating. (Ladder rungs where indicated)

D. Structural steel is specified in another section within Division 5.

E. See Division 9 Section “Painting” for application of finish coats.

1.3 SYSTEM PERFORMANCES

A. Structural Performances: Provide assemblies which, when installed, comply with the following minimum requirements for structural performance, unless otherwise indicated.

1.4 QUALITY ASSURANCE

A. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's specifications, anchor details and installation instructions for products used in miscellaneous metal fabrications, including paint products and grout.

B. Shop Drawings: Submit shop drawings for fabrication and erection of miscellaneous metal fabrications. Include plans, elevations and details of sections and connections. Show anchorage and accessory items. Provide templates for anchor and bolt installation by others.

1. Where materials or fabrications are indicated to comply with certain requirements for design loadings, include structural computations, material properties and other information needed for structural analysis.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Ferrous Metals:

1. Metal Surfaces, General: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.
2. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.

B. Grout:

1. Non-Shrink Non-Metallic Grout: Pre-mixed, factory-packaged, non-staining, non-corrosive, non-gaseous grout complying with CE CRD-C621. Provide grout specifically recommended by manufacturer for interior and exterior applications of type specified in this section.

C. Fasteners:

1. General: Fasteners shall be per the General Structural Notes for all connections shown on the structural drawings without exception. Otherwise, provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade and class required.

a. Bolts and Nuts: Regular hexagon head type, ASTM A 307, Grade A.
b. Lag Bolts: Square head type, FS FF-B-561.
c. Machine Screws: Cadmium plated steel, FS FF-S-92.
d. Wood Screws: Flat head carbon steel, FS FF-S-111.
e. Plain Washers: Round, carbon steel, FS FF-W-92.
f. Masonry Anchorage Devices: Expansion shields, FS FF-S-325.
g. Toggle Bolts: Tumble-wing type, FS FF-B-588, type, class and style as required.

h. Lock Washers: Helical spring type carbon steel, FS FF-W-84.

D. Paint:

1. Shop Primer for Ferrous Metal: Fast-curing, lead-free, abrasion-resistant, rust-inhibitive primer selected for compatibility with substrates and with types of alkyd-type finish paint systems indicated, and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure; complying with performance requirements only of FS TT-P-86, Types I, II, and III.
2. Galvanizing Repair Paint: High zinc dust content paint for regalvanizing welds in galvanized steel, complying with the Military Specifications MIL-P-21035 (Ships) or SSPC-Paint-20.

2.2 FABRICATION, GENERAL

A. Workmanship: Use materials of size and thickness indicated, or if not indicated, as required to produce strength and durability in finished product for use intended. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of work.

1. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32" unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
2. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections, grind exposed welds smooth and flush to match and blend with adjoining surfaces.
3. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts.
4. Provide for anchorage of type indicated, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
5. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware and similar items.

B. Galvanizing: Provide a zinc coating for those items shown or specified to be galvanized, as follows:

1. ASTM A 153 for galvanizing iron and steel hardware.
2. ASTM A 123 for galvanizing rolled, pressed and forged steel shapes, plates, bars and strip 1/8" thick and heavier.
3. ASTM A 386 for galvanizing assembled steel products.
4. Fabricate joints which will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.

C. Shop Painting:

1. Apply shop primer to surfaces of metal fabrications except those which are galvanized or as indicated to be embedded in concrete unless otherwise indicated, and in compliance with requirements of SSPC-PA1 "Paint Application Specification No. 1" for shop painting.
2. Stripe paint all edges, corners, crevices, bolts, welds and sharp edges.

D. Surface Preparation: Prepare ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:

1. Exteriors (SSPC Zone 1B): SSPC-SP6 "Commercial Blast Cleaning".
2. Interiors (SSPC Zone 1A): SSPC-SP3 "Power Tool Cleaning".

2.3 ROUGH HARDWARE

A. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Division-6 sections.

B. Fabricate items of sizes, shapes and dimensions required. Furnish malleable-iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

2.4 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on concrete construction, made flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts and for grouting as required.

2.5 MISCELLANEOUS FRAMING AND SUPPORTS

A. Provide miscellaneous steel framing and supports which are not a part of structural steel framework, as required to complete work.

B. Fabricate miscellaneous units to sizes, shapes and profiles indicated or, if not indicated, of required dimensions to receive adjacent other work to be retained by framing. Except as otherwise indicated, fabricate from structural steel shapes plates and steel bars, of welded construction using mitered joints for field connection. Cut, drill and tap units to receive hardware and similar items.

C. Equip units with integrally welded anchors for casting into concrete. Furnish inserts if units must be installed after concrete is placed.

2.6 SHELF ANGLES

A. Provide galvanized structural steel shelf angles of sizes indicated for attachment to steel framing.

PART 3 - EXECUTION

3.1 PREPARATION

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible. Do not delay job progress; allow for trimming and fitting where taking field measurements before fabrication might delay work.

B. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, sleeves, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

3.2 INSTALLATION

A. General:

1. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; including, threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required.

2. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for installation of miscellaneous metal fabrications. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items which are to be built into concrete masonry or similar construction.

3. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind exposed joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.

4. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.

5. Setting Loose Plates: Clean concrete and masonry bearing surfaces of any bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of bearing plates.

6. Set loose leveling and bearing plates on wedges, or other adjustable devices. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims, but if protruding, cut-off flush with the edge of the bearing plate before packing with grout. Use metallic non-shrink

grout in concealed locations where not exposed to moisture; use non-metallic non-shrink grout in exposed locations, unless otherwise indicated.

a. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.3 ADJUST AND CLEAN

A. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting.

B. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

C. Touch-Up Painting: Cleaning and touch-up painting of field welds, bolted connections and abraded areas of the shop paint on miscellaneous metal is specified in Division 9 of these specifications.

D. For galvanized surfaces: Clean field welds, bolted connections and abraded areas and apply galvanizing repair paint to comply with ASTM A780.

END OF SECTION 05 50 00

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.

2. Installation of Pressure Treated wood
3. Framing with engineered wood products.
4. Wood blocking**,** cants, and nailers.
5. Wood furring
6. Plywood backing panels.

B. Related Requirements:
1. Section 061600 "Sheathing."

1.3 DEFINITIONS

A. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) or greater but less than 5 inches nominal (114 mm actual) in least dimension.

B. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NeLMA: Northeastern Lumber Manufacturers' Association.
2. NLGA: National Lumber Grades Authority.
3. WCLIB: West Coast Lumber Inspection Bureau.
4. WWPA: Western Wood Products Association.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.5 INFORMATIONAL SUBMITTALS

A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Engineered wood products.
3. Shear panels.
4. Powder-actuated fasteners.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
3. Provide dressed lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 15 percent unless otherwise indicated.

C. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

1. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat items indicated on Drawings, all wood in the facility is required to be fire retardant treated. Wood exposed or used on the building envelope is required to be fire retardant treated and pressure treated with wood preservative. Wood included in this section includes the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 DIMENSION LUMBER FRAMING

A. Non-Load-Bearing Interior Partitions: Standard, Stud, or No. 1 grade.

1. Application: Interior partitions not indicated as load-bearing.
2. Species:

    a. Northern species; NLGA.

B. Load-Bearing Partitions: Construction or No. 2 grade.

1. Application: Exterior or interior walls.
2. Species:

    a. Douglas fir-larch (north); NLGA.

C. Joists, Rafters, and Other Framing Not Listed Above: Select Structural grade.

1. Species:

    a. Douglas fir-larch (north); NLGA.

2.4 ENGINEERED WOOD PRODUCTS

A. Engineered Wood Products, General: Products shall contain no urea formaldehyde and comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Source Limitations: Obtain each type of engineered wood product from single source from a single manufacturer.

C. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Boise Cascade Corporation.
b. Georgia-Pacific.
c. Weyerhaeuser Company.

2. Extreme Fiber Stress in Bending, Edgewise: 3100 psi for 12-inch nominal- depth members.
3. Modulus of Elasticity, Edgewise: 2,000,000 psi

2.5 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Cants.
4. Furring.
5. Grounds.
6. Sills

B. For items of dimension lumber size, provide Standard, Stud, or No. 3 grade lumber and any of the following species:

1. Northern species; NLGA.
2. Eastern softwoods; NeLMA.

C. For concealed boards, provide lumber with 15 percent maximum moisture content and the following species and grades:

1. Hem-fir or hem-fir (north); Standard or No. 3 Common grade; NLGA, WCLIB, or WWPA.

D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

F. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

G. For sills, use Pressure Treated lumber and appropriate, non-corrosive fasteners.

2.6 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).

2.7 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

C. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

D. Shear Wall Panels: Install shear wall panels to comply with manufacturer's written instructions.

E. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.

F. Do not splice structural members between supports unless otherwise indicated.

G. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.

H. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:

1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches (2438 mm) o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches (2438 mm) o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal- (38-mm actual-) thickness.
3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. (9.3 sq. m) and to solidly fill space below partitions.
4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet (6 m) o.c.

I. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

J. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

K. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.

L. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

D. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 WOOD FURRING INSTALLATION

A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

B. Furring to Receive Plywood or Hardboard Paneling: Install 1-by-3-inch nominal- (19-by-63-mm actual-) size furring at 24 inches o.c.

3.4 WALL AND PARTITION FRAMING INSTALLATION

A. General: Provide single bottom plate and double top plates using members of 2-inch nominal (38-mm actual) thickness whose widths equal that of studs, except single top plate may be used for non-load-bearing partitions. Fasten plates to supporting construction unless otherwise indicated.

1. For exterior walls, provide 2-by-6-inch nominal- size wood studs spaced 16 inches o.c. unless otherwise indicated.
2. For interior partitions and walls, match existing wall framing; provide 2-by-6-inch nominal- size wood studs spaced 16 inches o.c. unless otherwise indicated.
3. Provide continuous horizontal blocking at midheight of partitions more than 96 inches (2438 mm) high, using members of 2-inch nominal (38-mm actual) thickness and of same width as wall or partitions.

B. Construct corners and intersections with three or more studs**,** except that two studs may be used for interior non-load-bearing partitions.

C. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Support headers on jamb studs.

1. For non-load-bearing partitions, provide double-jamb studs and headers not less than 4-inch nominal (89-mm actual) depth for openings 48 inches (1200 mm) and less in width, 6-inch nominal (140-mm actual) depth for openings 48 to 72 inches

(1200 to 1800 mm) in width, 8-inch nominal (184-mm actual) depth for openings 72 to 120 inches (1800 to 3000 mm) in width, and not less than 10-inch nominal (235-mm actual) depth for openings 10 to 12 feet (3 to 3.6 m) in width.

2. For load-bearing walls, provide double-jamb studs for openings 60 inches (1500 mm) and less in width, and triple-jamb studs for wider openings. Provide headers of depth indicated.

D. Replace damaged or rotted framing members as necessary. Anticipate that areas indicated for demolition on plans will require re-framing, inclusive of plates, studs, blocking, etc. Contractor to provide necessary support of adjoining assemblies during reframing.

3.5 CEILING FRAMING INSTALLATION

A. Decon Rm: replace framing as needed to complete mechanical and finish work. Inspect and repair/replace vapor barrier at interior side of drop ceiling.

3.6 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes sufficiently wet that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 10 00

SECTION 07 21 00

BUILDING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
- **1.** Batt Fiberglass at exterior walls.
- **2.** Acoustic Insulation at interior partitions.
- **3.** Spray applied urethane.
- **4.** Vapor retarders.

B. Related Sections include the following:
- **1.** Division 6: Section “Rough Carpentry” for Plywood specification
- **2.** Division 9 Section "Gypsum Board Assemblies" for installation in metal-framed assemblies of insulation.
- **3.** Division 9 Section "Gypsum Board Assemblies" for Fiberglass faced gypsum
- **4.** Division 15 Section "Mechanical Insulation."

C. Minimum Thermal Resistance values of construction assemblies (R value)
- **1.** Provide a minimum of R-38 batt insulation at soffit assemblies unless shown otherwise.
- **2.** Provide a minimum of R-21 batt insulation in Exterior Wall Assemblies- fill entire void where shown on Wall Assemblies, Sections and Details.
- **3.** Provide a minimum of R-45 Rigid Insulation at all Roof Assemblies.

1.3 SUBMITTALS

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

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Surface-Burning Characteristics: ASTM E 84.
2. Fire-Resistance Ratings: ASTM E 119.
3. Combustion Characteristics: ASTM E 136.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect plastic insulation as follows:

1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.
4. Cover plastic and foam plastics with non-combustible surface typically.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 GLASS-FIBER BLANKET INSULATION

A. Basis of Design: Knauf Insulation, EcoBatt

B. Other Acceptable Manufacturers:
- **1.** CertainTeed Corporation.
- **2.** Guardian Building Products, Inc.
- **3.** Johns Manville.
- **4.** Owens Corning.

C. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
- **1.** Provide wall insulation full-thickness of stud cavity unless indicated otherwise.

2.3 ACOUSTIC GLASS-FIBER BLANKET INSULATION

A. Basis of Design: Knauf Insulation, EcoBatt

B. Other Acceptable Manufacturers:
- **1.** CertainTeed Corporation.
- **2.** Guardian Building Products, Inc.
- **3.** Johns Manville.
- **4.** Owens Corning.

C. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

D. Unfaced, Glass-Fiber Board Insulation (Theatre Board): For mounting behind metal acoustical wall panels
- **1.** ASTM C423, Type A Mounting; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
- **2.** 3.0 PCF, 1” Thickness

2.4 SPRAY POLYURETHANE FOAM INSULATION

A. Closed-Cell Polyurethane Foam Insulation: Spray-applied polyurethane foam using water as a blowing agent, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.
- **1.** Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - **a.** Polyseal Insulation
  - **b.** BioBased Insulation
  - **c.** Tiger Foam
  - **d.** Dow Company

e. Preferred Solutions, INC.

2. Minimum density of 2.0 lb/cu. ft. thermal resistivity of 6.3 deg F x h x sq. ft./Btu x in. at 75 deg F .

3. Expansion: Low-expansion foam to be utilized at Doors, jamb studs, built up headers, Windows and Louvers.

2.5 VAPOR RETARDERS

A. Polyethylene Vapor Retarders:

1. Covered applications at Walls and Roof: ASTM D 4397, 6 mils thick, with maximum permeance rating of 0.13 perm.

2. Exposed applications at walls and soffits: 6 mil, laminated, fire retardant. ASTM E 1745, Class A Flame spread, ASTM E 84, meets or exceeds NFPA 701, White.

B. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

C. Single-Component Nonsag Urethane Sealant: ASTM C 920, Type I, Grade NS, Class 25, Use NT related to exposure, and Use O related to vapor-barrier-related substrates.

D. Adhesive for Vapor Retarders: Product recommended by vapor-retarder manufacturer and has demonstrated capability to bond vapor retarders securely to substrates indicated.

2.6 AUXILIARY INSULATING MATERIALS

A. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by insulation manufacturers for sealing joints and penetrations in vapor-retarder facings.

B. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates indicated without damaging insulation and substrates.

C. Mechanical Fasten

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.

C. Install laminated wall panels with both urethane adhesive and mechanical fastinsulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.

D. Extend insulation in thickness indicated to envelop entire area to be insulated. Blow In Insulation tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

E. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

F. For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Seal joints between foam-plastic insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

C. Set vapor-retarder-faced units with vapor retarder to warm side and in locations indicated within construction, unless other directed otherwise.

1. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.

D. Install blown in/batt insulation in cavities formed by framing members according to the following requirements:

1. Completely fill cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
2. When installing acoustic glass fiber blanket insulation, place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Maintain 3-inch(76-mm) clearance of insulation around recessed lighting fixtures.
4. Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
5. For metal-framed wall cavities where cavity heights exceed 96 inches(2438 mm), support unfaced blankets mechanically and support faced blankets by taping stapling flanges to flanges of metal studs.

3.5 INSTALLATION OF VAPOR RETARDERS

A. General: Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives, sealants, or other anchorage system as indicated. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.
1. Extend vapor retarder into window, door, vent and any other penetrations in exterior envelope and lap under air infiltration barrier. Seal vapor retarder against framing.
2. Seal Vapor retarder against steel decking. When sealing perpendicular to steel decking fill voids in decking flutes with closed cell spray applied urethane insulation to complete the membrane.
3. Lap vapor retarder a minimum of 6” with continuous sealant at lap joint.

B. Before installing vapor retarder, apply urethane sealant to flanges of metal framing including runner tracks, metal studs, and framing around door and window openings. Seal overlapping joints in vapor retarders with vapor-retarder tape or sealant according to vapor-retarder manufacturer's written instructions. Seal butt joints with vapor-retarder tape. Locate all joints over framing members or other solid substrates.

C. Firmly attach vapor retarders to metal framing and solid substrates with vapor-retarder fasteners as recommended by vapor-retarder manufacturer.

D. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating

objects and vapor retarder. For penetrations that are concealed, provide manufactured gaskets or fill penetration with approved fire stopping.

E. Repair tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarder. Contractor to call for inspection / review of vapor retarder and insulation a minimum of 24 hours prior to installation of GWB.

3.6 PROTECTION

A. Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07 21 00

SECTION 07 60 00

METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes sheet metal flashing and trim in the following categories:

1. Exposed trim.
2. Copings.
3. Edge flashing.
4. Cavity Wall base
5. Window/door flashing.
6. Misc. Flashing
7. Exterior Louvers

1.3 PERFORMANCE REQUIREMENTS

A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing.

1.4 SUBMITTALS

A. Product Data including manufacturer's material and finish data, installation instructions, and general recommendations for each specified flashing material and fabricated product.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experience Installer who has completed sheet metal flashing and trim work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

1.6 PROJECT CONDITIONS

A. Coordinate Work of this Section with interfacing and adjoining Work for proper sequencing of each installation. Ensure best possible weather resistance, durability of Work, and protection of materials and finishes.

PART 2 - PRODUCTS

2.1 METALS

A. Galvanized Steel Sheet at cavity wall: ASTM A 526/A 526M, G 90, commercial steel, or ASTM A 527/A 527M, G 90, lock-forming quality, hot-dip galvanized steel sheet(24 GA.)

B. Coil-Coated Galvanized Steel Sheet: Zinc-coated, commercial-quality steel sheet complying with ASTM A 755/A 755M, G 90 coating designation, coil coated with high-performance fluoropolymer coating; not less than 0.0336 inch thick.

1. High-Performance Organic Coating: Fluoropolymer two-coat system with fluoropolymer coat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 605.2.

2. Color and Gloss: As selected from full range of manufacturer's standard colors.

a. Multiple colors of sheet metal will be utilized. Sheet metal is to match color of surrounding material.

2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.

B. Elastomeric Sealant: Generic type recommended by sheet metal manufacturer and fabricator of components being sealed and complying with requirements for joint sealants as specified in Division 7 Section "Joint Sealants."

C. Adhesives: Type recommended by flashing sheet metal manufacturer for waterproof and weather-resistant seaming and adhesive application of flashing sheet metal.

2.3 FABRICATION, GENERAL

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

B. Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

C. Form exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems.

D. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.

E. Expansion Provisions: Space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

F. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.

G. Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent separation as recommended by manufacturer.

H. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.

I. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, noncorrosive metal recommended by sheet metal manufacturer.

1. Size: As recommended by SMACNA manual or sheet metal manufacturer for application but never less than thickness of metal being secured.

2.4 SHEET METAL FABRICATIONS

A. General: Fabricate sheet metal items in thickness or weight needed to comply with performance requirements but not less than that listed below for each application and metal.

B. Exposed Trim (including entry canopies, reveal flashing below metal siding, roof copings, louver trims,) – Match color of surrounding metal surfaces. If surrounding surfaces are not comprised of painted metal surfaces verify color with Architect: Fabricate from the following material:

1. Coil-Coated Galvanized Steel Sheet: 24 gauge, unless indicated otherwise.

C. Counter Flashing: Fabricate from the following material:
- **1.** Coil-Coated Galvanized Steel Sheet: 24 gauge, unless indicated otherwise.
- **2.** Finish: Two coat Fluoropolymer coating.
- **3.** Color: Match color of surrounding metal surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions under which sheet metal flashing and trim are to be installed and verify that Work may properly commence. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer's installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Anchor units of Work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weatherproof.

B. Color: Sheet Metal flashing is to match surrounding wall surface. Architect to approve sheet metal colors and locations for each color utilized.

C. Install exposed sheet metal Work that is without oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

D. Roof-Edge Flashings: Secure metal flashings at roof edges according to FM Loss Prevention Data Sheet 1-49 for specified wind zone

E. Expansion Provisions: Provide for thermal expansion of exposed sheet metal Work. Space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

F. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.

1. Use joint adhesive for nonmoving joints.

G. Separations: Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.

1. Bed flanges of Work in a thick coat of roofing cement where required for waterproof performance.

3.3 CLEANING AND PROTECTION

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

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

END OF SECTION 07 60 00

SECTION 07 84 00

FIRESTOPPING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Firestopping systems including the following:
- **1.** Fire resistive joint fire containment.
- **2.** Penetrations through fire-rated vertical and horizontal assemblies.
- **3.** Firestop sealants.
- **4.** Joints in or between fire-resistance-rated constructions.
- **5.** Joints in smoke barriers.

1.2 RELATED SECTIONS

A. Section 07 92 00 - Joint Sealers.

B. Section 09 29 00 - Plaster and Gypsum Board.

C. Section 15400 - Plumbing.

D. Section 23 05 00 - HVAC.

E. Section 26 05 00 - Electrical.

1.3 REFERENCES

A. American National Standards Institute (ANSI):
- **1.** ANSI/UL 263 - Fire Tests of Building Construction and Materials.
- **2.** ANSI/UL 723 - Surface Burning Characteristics of Building Materials.
- **3.** ANSI/UL 1479 - Standard for Fire Tests of Through-Penetration Firestops.
- **4.** ANSI/UL 1709 - Rapid Rise Fire Tests of Protection Materials for Structural Steel.
- **5.** ANSI/UL 2079 - Tests for Fire Resistance of Building Joint Systems.

B. ASTM International (ASTM):
- **1.** ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- **2.** ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- **3.** ASTM E 814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
- **4.** ASTM E 1399 - Standard Test Method for Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural

Joint Systems.

5. ASTM E 1966 - Standard Test Method for Fire Resistive Joint Systems.
6. ASTM E 1725 - Standard Test Methods for Fire Tests of Fire-Resistive Barrier Systems for Electrical System Components.
7. ASTM E 2307 - Fire Tests of Perimeter Fire Barrier Systems Using Intermediate Scale, Multi-Story Test Apparatus.

C. FM Global (FM) - FM4991 - Standard for Approval of Firestop Contractors.

D. International Code Congress (ICC):
1. International Building Code (IBC).

E. National Fire Protection Association (NFPA):
1. NFPA 70 - National Electrical Code.
2. NFPA 101 - Life Safety Code.

F. Underwriters Laboratories (UL) - UL Building Materials Directory; Through-Penetration Firestops Systems (XHEZ), Joint Systems (XHBN), Firestop Devices (XHJI), Forming Materials (XHKU), Wall Opening Protective Materials (CLIV), and Fill, Void or Cavity Materials (XHHW).

1.4 PERFORMANCE REQUIREMENTS

A. Provide systems that are listed by at least one the following:
1. Underwriters Laboratories Inc. (UL), in "Fire Resistance Directory".
2. Intertek Testing Service (Formerly known as Omega Point Laboratories), in "Directory of Listed Products."
3. Any other qualified independent testing and inspection agency that conducts periodic follow-up inspections and is acceptable to authorities having jurisdiction.

B. Provide firestop products that are flexible enough to allow for pipe vibration in a through penetration application.

C. Provide firestop sealants and sprays for construction joint applications that are flexible enough to satisfy the movement criteria per the test standards ASTM E 1399, ASTM E 1966 or ANSI/UL 2079.

D. Provide products that meet the intent of the L rating classification for the movement of smoke per ANSI/UL 1479 for through penetrations and ANSI/UL 2079 for construction joints.

E. Provide products identical to those tested and listed for classification by UL, Intertek or any other qualified independent testing agency.

F. Provide products that bear classification marking of qualified independent testing agency.

G. Where firestop systems not listed by any listing agency are required due to

project conditions, submit a substitution proposal with evidence specified.

H. Use only products specifically listed for use in listed systems.

I. Provide products that are compatible with each other, with the substrates forming openings, and with the items, if any, penetrating the firestopping, under the conditions represented by this project, based on testing and field performance demonstrated by manufacturer.

J. Firestopping materials must meet and be acceptable for use by all building codes and NFPA codes cited in this section.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Shop Drawings: For each firestopping system, provide the following:
- **1.** Listing agency's detailed drawing showing opening, penetrating item(s), and firestopping materials, identified with listing agency's name and number or designation and fire rating achieved. .
- **2.** For proposed systems that do not conform strictly to the listing, submit listing agency's drawing marked to show modifications and approved by firestop system manufacturer.

C. Product Certificates: Submit certificates of conformance signed by firestop system manufacturer certifying that materials furnished comply with requirements.

D. Product Data: Furnish manufacturer's product data sheets on each material to be used in firestop systems. Information on manufacturer's product data sheet should include:
- **1.** Product characteristics including compliance with appropriate ASTM/UL/ANSI test standards.
- **2.** Storage and handling requirements and recommendations.

E. Product Schedule: For each fire-resistive joint system. Include location and design designation of qualified testing agency.

1) Where Project conditions require modification to a qualified testing agency's illustration for a particular fire-resistive joint system condition, submit illustration, with modifications marked, approved by fire-resistive joint system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

F. Installation Instruction: Furnish manufacturer's installation instructions.

1.6 QUALITY ASSURANCE

A. General: All through-penetration firestop systems shall be installed with approved methods using materials that have been tested and classified to

produce an approved assembly.

B. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of fifteen (15) years experience.

C. Installer Qualifications: Firm must be qualified by having experience, staff, and be properly trained to install the specified products, and meets the following criteria:

1. Contractor must provide a list of completed projects as evidence of experience; include project name and address, owner's name and address, and architect's name and phone number. Projects should have similar fire-rated penetrations and products.

D. Codes: Where manufacturer's application procedures are in conflict with those of the code authority having jurisdiction, the more strict guidelines will prevail.

E. Pre-installation Meetings: Meetings to agree on firestop requirements, conditions, manufacturer's instructions.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products until ready for installation in manufacturer's original unopened packaging, legibly marked with manufacturer's name and product identification, date of manufacture, lot number, shelf life, listing agency's classification marking, curing time, and mixing instructions if applicable.

B. Store and handle in such a manner as to prevent deterioration or damage due to moisture, temperature changes, contaminants, and other causes; follow manufacturer's instructions.

C. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

1.8 PROJECT CONDITIONS

A. Coordinate construction and cutting of openings so that each particular firestop system may be installed in accordance with its listing, including sizing, sleeves, and penetrating items.

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

C. Provide ventilation as required by firestopping manufacturer, including mechanical ventilation if required.

1.9 WARRANTY

A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:

1. 3M Fire Protection Products, which is located at: 3M Center Bldg. 223-2N-21 ; St. Paul, MN 55144-1000; Toll Free Tel: 800-328-1687; Fax: 651-737-0636; Web: www.3m.com/firestop

B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 SCOPE/APPLICATION

A. Provide installed firestop protects that limit the spread of fire, heat, smoke, and gasses through otherwise unprotected openings in rated assemblies, including walls, partitions, floors, roof/ceilings, and similar locations. restoring the integrity of the fire rated construction to its original fire rating.

B. Provide firestop systems listed for the specific combination of fire rated construction, type of penetrating item, annular space requirements, and fire rating, and the following criteria:

1. F-Rating: Equal to or greater than the fire-resistance rating of the assembly in which the firestopping will be installed.

2. T-Rating: In habitable areas where penetrating items are exposed to potential contact with materials on fire side(s) of rated assembly, T-rating must equal its F-rating.

3. L-Rating: L-rating of 1 cfm per linear foot (5.5 cu m/h/m) maximum at ambient temperatures.

4. Wall Penetrations: Systems must be symmetrical, with the same rating from both sides of the wall.

5. Testing: Determine ratings in accordance with ÅSTM E 814 or UL 1479.

C. Provide firestopping systems listed for construction gaps per the specific combination of fire-rated construction type, configuration, gap dimensions, and fire rating, and the following criteria:

1. Fire resistance rating must be equal to or greater than that of the assembly in which it is to be installed.

2. Movement capability must be appropriate to the potential movement of the gap, demonstrated by testing in accordance with ASTM E 1399 for minimum of 500 cycles at 10 cycles per minute.

3. L-Rating: L-rating of 1 cfm per linear foot (5.5 cu m/h/m) maximum.

4. Determine ratings in accordance with UL 2079.

2.3 THROUGH PENETRATION FIRESTOP SYSTEMS

A. 3M Fire Barrier IC 15WB+ Sealant: Intumescent latex based sealant. No-sag, fast drying, paintable.
  1. Fire Resistance: For use in 1 hour fire rated systems.

B. 3M Fire Barrier Watertight Silicone 3000 WT Sealant: Water-tight intumescent silicone sealant for filling voids in concrete gypsum, metal, plastic, wood and insulation.
  1. Fire Resistance: For use in 1 hour fire rated systems.

2.4 FIRESTOPPING FOR CONSTRUCTION GAPS

A. 3M Fire Barrier 2000 NS Silicone Sealant: Non-slump sealant for wall joints.
  1. Service Flexibility: Accommodate vibration from normal building movement.
  2. Pipe Size Capability: Maximum pipe size of 24 inches (610 mm).
  3. Compression/Extension Recovery: +/- 31 percent of original joint width.
  4. Fire Resistance: For use in 1 hour fire rated systems..

B.Mineral Rock Wool Fire safing (at curtain wall perimeter)
  1. Construction Joints: Safi ng insulation should be compression fitted into the joint opening, leaving no voids.
  a. Perimeter Installation: Safing insulation should be compression fitted between the slab edge and tleaving no voids.

2. FIRE-RESISTIVE JOINT SYSTEMS

A. Where required, provide fire-resistive joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which fire-resistive joint systems are installed. Fire-resistive joint systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.

B. Joints in or between Fire-Resistance-Rated Construction: Provide fire-resistive joint systems with ratings determined per ASTM E 1966 or UL 2079:

  1. Joints include those installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies].
  2. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of construction they will join.

C. Joints in Smoke Barriers: Provide fire-resistive joint systems with ratings determined per UL 2079.

  1)L-Rating: Not exceeding 5.0 cfm/ft (0.00775 cu. m/s x m) of joint at 0.30 inch wg (74.7 Pa) at both ambient and elevated temperatures.

D. Exposed Fire-Resistive Joint Systems: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

E. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials, that are needed to install fill materials and to maintain ratings required. Use only components specified by fire-resistive joint system manufacturer and approved by the qualified testing agency for systems indicated.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. Conduct tests according to manufacturer's written recommendations to verify that substrates are free of oil, grease, rolling compounds, incompatible primers, loose mill scale, dirt and other foreign substances capable of impairing bond of firestopping.

C. Verify that items penetrating fire rated assemblies are securely attached, including sleeves, supports, hangers, and clips.

D. Verify that openings and adjacent areas are not obstructed by construction that would interfere with installation of firestopping, including ducts, piping, equipment, and other suspended construction.

E. Verify that environmental conditions are safe and suitable for installation of firestopping.

F. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Prepare substrates in accordance with manufacturer's instructions and recommendations.

B. Install masking and temporary coverings as required to prevent contamination or defacement of adjacent surfaces due to firestopping installation.

3.3 INSTALLATION

A. Install in strict accordance with manufacturer's detailed installation instructions and procedures.

B. Install so that openings are completely filled and material is securely adhered.

C. Where firestopping surface will be exposed to view, finish to a smooth, uniform surface flush with adjacent surfaces.

D. After installation is complete, remove combustible forming materials and accessories that are not part of the listed system.

E. Repair or replace defective installations to comply with requirements.

F. At each through penetration, attach identification labels on both sides in location where label will be visible to anyone seeking to remove penetrating items or firestopping.

G. Clean firestop materials off surfaces adjacent to openings as work progresses, using methods and cleaning materials approved in writing by firestop system manufacturer and which will not damage the surfaces being cleaned.

H. Notify authority having jurisdiction when firestopping installation is ready for inspection; obtain advance approval of anticipated inspection dates and phasing, if any, required to allow subsequent construction to proceed.

I. Do not cover firestopping with other construction until approval of authority having jurisdiction has been received.

3.4 FIELD QUALITY CONTROL

A. Owner will engage an independent testing agency to inspect installed firestopping and to prepare reports indicating whether the installed work complies with the contract documents.

B. Notify testing agency at least 7 days prior to date when firestopping installation will be ready for inspection; obtain advance approval of general schedule and phasing, if any, required to allow subsequent construction to proceed.

3.5 CLEANING AND PROTECTION

A. Remove left over material and debris from Work area. Use necessary means to protect film before, during, and after installation.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 07 84 00

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes joint sealants for the following applications:

1. Exterior joints in the following vertical surfaces and horizontal non-traffic surfaces:
- **a.** Perimeter joints between materials listed above and frames of doors, windows, and louvers.
- **b.** Joints at siding materials as indicated
- **c.** Joints in interior finishes
- **d.** Other joints as indicated.

2. Interior joints in the following vertical surfaces and horizontal non traffic surfaces:
- **a.** Control and expansion joints on exposed interior surfaces of exterior walls.
- **b.** Perimeter joints of exterior openings where indicated.
- **c.** Vertical joints on exposed surfaces of walls and partitions.
- **d.** Perimeter joints between interior wall surfaces and frames of interior doors windows.
- **e.** Joints between plumbing fixtures and adjoining walls, floors, and counters.
- **f.** Other joints as indicated.

B. Related Sections include the following:
1. Division 9 Section "Gypsum Board Assemblies" for sealing perimeter joints of gypsum board partitions to reduce sound transmission.

1.3 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

A. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

1.6 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.3 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

B. Suitability for Contact with Food: Where elastomeric sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

C. Single-Component Non sag Polysulfide Sealant :

1. Products:
a. Pacific Polymers, Inc.; Elastoseal 230 Type I (Gun Grade).
b. Polymeric Systems Inc.; PSI-7000.
2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.
a. Use O Joint Substrates: galvanized steel, wood.

D. Multicomponent Nonsag Neutral-Curing Silicone Sealant:

1. Products:
a. Dow Corning Corporation; 756 H.P.
2. Type and Grade: M (multicomponent) and P (pourable).
3. Class: 50.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.
a. Use O Joint Substrates: galvanized steel.

E. Single-Component Mildew-Resistant Neutral-Curing Silicone Sealant:

1. Products:
a. Pecora Corporation; 898.
b. Tremco; Tremsil 600 White.
2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.
a. Use O Joint Substrates: galvanized steel.

F. Multi-component Non sag Urethane Sealant:

1. Products:

a. Sika Corporation, Inc.; Sikaflex - 2c NS TG.
b. Sonneborn, Division of ChemRex Inc.; NP 2.
c. Tremco; Vulkem 227.
d. Tremco; Vulkem 322 DS.
2. Type and Grade: M (multicomponent) and NS (nonsag).
3. Class: 25.
4. Uses Related to Exposure: T (traffic) and NT (nontraffic).
5. Uses Related to Joint Substrates: M, G**,** A, and, as applicable to joint substrates indicated, O Joint Substrates: (galvanized steel, wood).

2.4 LATEX JOINT SEALANTS

A. Latex : Comply with ASTM C 834, Type P, Grade NF.

B. Products:

1. Pecora Corporation; AC-20+.
2. Sonneborn, Division of ChemRex Inc.; Sonolac.
3. Tremco; Tremflex 834.

2.5 ACOUSTICAL JOINT SEALANTS

A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following:

1. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
2. Products:
a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
b. United States Gypsum Co.; SHEETROCK Acoustical Sealant.

B. Colors of Exposed Acoustical Joint Sealants: As selected by Architect from manufacturer's full range of colors.

C. Acoustical Sealant for Concealed Joints: Manufacturer's standard, nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission.

1. Products:
1) Pecora Corporation; BA-98.
2) Tremco; Tremco Acoustical Sealant.
3) Serious Energy Inc.; Quiet Seal 350.

2.6 PREFORMED TAPE SEALANTS

A. Back-Bedding Mastic Tape Sealant: Preformed, butyl-based elastomeric tape sealant with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800 for products indicated below:

1. AAMA 804.3 tape, where indicated.
2. AAMA 806.3 tape, for applications in which tape is subject to continuous pressure.
3. AAMA 807.3 tape, for applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Tape Sealant: Closed-cell, PVC foam tape sealant; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive; and complying with AAMA 800 for the following types:

1. Type 1, for applications in which tape acts as the primary sealant.
2. Type 2, for applications in which tape is used in combination with a full bead of liquid sealant.

2.7 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

2.8 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Non staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

a. Concrete.

b. Masonry.

3. Remove laitance and form-release agents from concrete.

4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

a. Metal.

b. Glass.

B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Non sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
4. Installation of Preformed Tapes: Install according to manufacturer's written instructions.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 07 92 00

SECTION 09 29 00

GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Water Resistant, impact resistant, fiberglass-faced gypsum board for walls and ceilings.

B. Related Sections include the following:
1. Division 2 Mold Remediation and Asbestos Abatement
2. Division 6 Sheathing for Air Infiltration Barrier
3. Division 7 Section "Building Insulation" for insulation and vapor retarders installed in assemblies that incorporate gypsum board.
4. Division 7 Section "Joint Sealants" for acoustical sealants installed in assemblies that incorporate gypsum board.
5. Division 9 Section "Non-Load-Bearing Steel Framing" for non-structural framing and suspension systems that support gypsum board.
6. Division 9 painting Sections for primers applied to gypsum board surfaces.

1.3 SUBMITTALS

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

B. Samples: For the following products:

1. Textured Finishes: 3 samples 12” by 12” for each textured finish indicated and on same backing indicated for Work for approval by Architect. (Very light orange peel) Substrate to be examined and accepted by Architect prior to spraying texture)

1.4 QUALITY ASSURANCE

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

1.5 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PANELS, GENERAL

A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.2 INTERIOR EXTENDED EXPOSURE GYPSUM BOARD

A. General: Complying with ASTM C 36/C 36M or ASTM C 1396/C 1396M, ASTM D 3273 as applicable to type of gypsum board indicated and whichever is more stringent.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. American Gypsum Co.
b. BPB America Inc.
c. G-P Gypsum.
d. Lafarge North America Inc.
e. National Gypsum Company.
f. PABCO Gypsum.
g. USG Corporation.
h. Substitutions allowed in accordance with Division 1 product substitution requirements.

B. Type X – Interior, Water Resistant, Impact resistant. Height as indicated on plans and wall assembly descriptions; Basis of Design: Gold Bond® BRAND eXP® Interior Extreme® IR Gypsum Panel

1. Core: Fire-resistance rated gypsum core, with additives to enhance mold/mildew resistance.
2. Thickness: 5/8 inch
3. Facers: Mold and moisture resistance coated fiberglass mat for abrasion resistance.
4. Long Edges: Tapered. Wrapped with coated fiberglass mat
5. Mold Resistance: 10 when tested in accordance with ASTM D 3273
6. Flexural Strength: Parallel greater than 100 lbf.; Perpendicular greater than 140 lbf.; when tested in accordance with ASTM C 473
7. Humidified Deflection: less than 1/8 inch when tested in accordance with ASTM C 473
8. Nail pull resistance: 90 lbs, when tested in accordance with ASTM C 473
9. Water Absorption: less than 5 percent when tested in accordance with ASTM C 473
10. Permeance: greater than 10 perms, when tested in accordance with ASTM E 96
11. Combustibility: Noncombustible when tested in accordance with ASTM E 136
12. Flame Spread/Smoke Developed: 0/0 when tested in accordance with ASTM E 84
13. Surface Abrasion Resistance: Classification Level 3 in accordance with ASTM C 1629
14. Indentation Resistance: Classification Level 1 in accordance with ASTM C 1629.
15. Soft Body Impact Resistance: Classification Level 2 in accordance with ASTM C 1629

16. Hard Body Impact Resistance: Classification Level 1 in accordance with ASTM C 1629.
17. Environmental Requirements: Provide products that comply with testing and product requirements for low emitting materials

2.3 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.
2. Shapes:

a. Metal Cornerbead.
b. LC-Bead: J-shaped; exposed long flange receives joint compound.
c. Expansion (control) joint.

B. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Fry Reglet Corp.
b. Gordon, Inc.
c. Pittcon Industries.
d. Substitutions allowed in accordance with Division 1 product substitution requirements.
e. Expansion Joint Trim – Fry Reglet CRM50-50-2-PC

2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221 (ASTM B 221M), Alloy 6063-T5.
3. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified

2.4 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Wallboard: Paper.

2. Exterior Gypsum Soffit Board: Paper.
3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints, and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping or drying-type, all-purpose compound.

a. Use setting-type compound for installing paper-faced metal trim accessories.

3. Fill Coat: For second coat, use setting-type, sandable topping or drying-type, all-purpose compound.
4. Finish Coat: For third coat, use setting-type, sandable topping or drying-type, all-purpose compound.

2.5 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Acoustical joint sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

D. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

E. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

F. Acoustical Sealant: As specified in Division 7 Section "Joint Sealants." – Seal at top and bottom of all classroom, toilet room, Practice Rooms, and office walls:

G. Thermal Insulation: As specified in Division 7 Section "Building Insulation."

H. Vapor Retarder: As specified in Division 7 Section "Building Insulation."

2.6 TEXTURE FINISHES

A. Primer: As recommended by textured finish manufacturer.

B. Unaggregated Finish: Water-based, job-mixed, unaggregated, drying-type texture finish for spray application.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. G-P Gypsum; Georgia-Pacific ToughRock Wall and Ceiling Texture.
b. USG Corporation; SHEETROCK Wall and Ceiling Spray Texture (Unaggregated).
c. Substitutions allowed in accordance with Division 1 product substitution requirements.

2. Texture: Very light stipple finish—match existing

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members, or provide control joints to counteract wood shrinkage.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Moisture- and Mold-Resistant Type: Located at all areas, Toilet room areas, and as indicated on drawings.

B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels either vertically (parallel to framing) or horizontally (perpendicular to framing), unless specifically indicated or required by fire-resistance-rated assembly, and minimize end joints.
    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
    b. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.
3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

3.4 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints [at locations indicated on Drawings according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners, unless otherwise indicated.
2. LC-Bead: Use at exposed panel edges, unless otherwise indicated.
3. L-Bead: Use where indicated.
4. U-Bead: Use where indicated.

3.5 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Panels that are substrate for FRP.
3. Level 4: At panel surfaces that will be exposed to view

3.6 APPLYING TEXTURE FINISHES

A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.

B. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture free of starved spots or other evidence of thin application or of application patterns.

C. Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture-finish manufacturer's written recommendations.

3.7 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged—see remediation specification.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 29 00

SECTION 09 65 13

RESILIENT WALL BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Wall base.
2. Molding accessories.

1.3 SUBMITTALS

A. Samples for Initial Selection: For each type of product indicated.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F(10 deg C) or more than 90 deg F(32 deg C).

1.5 PROJECT CONDITIONS

A. Maintain temperatures within range recommended by manufacturer, but not less than [70 deg F(21 deg C)] or more than [95 deg F(35 deg C)] , in spaces to receive floor tile during the following time periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After post installation period, maintain temperatures within range recommended by manufacturer, but not less than [55 deg F(13 deg C)] > or more than [95 deg F(35 deg C)].

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

1. AFCO-USA, American Floor Products Company, Inc
2. Armstrong World Industries, Inc
3. Azrock Commercial Flooring, DOMCO
4. Burke Mercer Flooring Products
5. Endura;
6. Johnsonite
7. Roppe Corporation;

2.2 COLORS AND PATTERNS

A. Colors and Patterns: As selected by Architect from manufacturer's full range - See Room Elevations for color and location

2.3 RESILIENT WALL BASE

A. Wall Base:

1. Style: Cove (with top-set toe).
2. Type :rubber, vulcanized thermoset
3. Group :solid, homogeneous
4. Minimum Thickness: 0.125 inch(3.2 mm)].
5. Height 6 inches(102 mm) or to match existing adjacent height.
6. Lengths: Coils in manufacturer's standard length
7. Outside Corners: Premolded.
8. Inside Corners: Pre-moulded
9. Surface: Smooth.

2.4 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturers for applications indicated.

B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.

B. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

C. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

1. Do not install resilient products until they are the same temperature as the space where they are to be installed.

D. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 RESILIENT WALL BASE INSTALLATION

A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

D. Do not stretch wall base during installation.

E. Premolded Corners: Install premolded corners before installing straight pieces.

F. Job-Formed Corners:

1. Inside Corners: Use straight pieces of maximum lengths possible. Form by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.

3.4 RESILIENT ACCESSORY INSTALLATION

A. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor coverings that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing resilient product installation:

1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

a. Do not wash surfaces until after time period recommended by manufacturer.

B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

END OF SECTION 09 65 13

SECTION 09 72 16

DECORATIVE FIBERGLASS REINFORCED WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Prefinished fiber-reinforced plastic sheets and fiber-reinforced plastic laminate sheets, both adhered to gypsum board wall surfaces. Includes both metal and plastic trim.

B. Products Not Furnished or Installed under This Section:

1. Gypsum substrate board.
2. Resilient Base.

1.2 RELATED SECTIONS

A. Section 09 25 00 – Gypsum substrate board.

B. Section 09 11 10 – Metal Stud Framing

C. Section 09 90 00 - Painting & Transparent Finishes.

D. Section 09 65 30 - Resilient Base.

1.3 REFERENCES

A. American Society for Testing and Materials: Standard Specifications (ASTM)

1. ASTM D 256 - Izod Impact Strengths (ft #/in)
2. ASTM D 570 - Water Absorption (%)
3. ASTM D 638 - Tensile Strengths (psi) & Tensile Modulus (psi)
4. ASTM D 790 - Flexural Strengths (psi) & Flexural Modulus (psi)
5. ASTM D 2583- Barcol Hardness
6. ASTM D 5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels.
7. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.4 SUBMITTALS

A. Product Data: Submit sufficient manufacturer's data to indicate compliance with these specifications, including:

1. Preparation instructions and recommendations.

2. Storage and handling requirements and recommendations.
3. Installation methods.

B. Shop Drawings: Submit elevations of each wall showing location of paneling and trim members with respect to all discontinuities in the wall elevation.

C. Selection Samples: Submit manufacturer's standard color pattern selection samples representing manufacturer's full range of available colors and patterns.

D. Samples for Verification: Submit appropriate section of panel for each finish selected indicating the color, texture, and pattern required.

1. Submit complete with specified applied finish.
2. For selected patterns show complete pattern repeat.
3. Exposed Molding and Trim: Provide samples of each type, finish, and color.

E. Manufacturers Material Safety Data Sheets (MSDS) for adhesives and sealants prior to their delivery to the site.

1.5 QUALITY ASSURANCE

A. Conform to building code requirements for interior finish for smoke and flame spread requirements as tested in accordance with:

1. ASTM E 84 (Method of test for surface burning characteristics of building Materials)

a. Wall Required Rating – Class A.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials factory packaged on strong pallets.

B. Store panels and trim lying flat, under cover and protected from the elements. Allow panels to acclimate to room temperature (70°) for 48 hours prior to installation.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Building are to be fully enclosed prior to installation with sufficient heat (70°) and ventilation consistent with good working conditions for finish work

B. During installation and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.

1. Provide ventilation to disperse fumes during application of adhesive as recommended by the adhesive manufacturer.

1.8 WARRANTY

A. Furnish one year guarantee against defects in material and workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Panolam Industries International, Inc., www.panolam.com

B. Substitutions allowed under Section 01600.

2.2 FIBER REINFORCED PLASTIC (FRP) PANELS

A. Fiberglass reinforced thermosetting polyester resin panel sheets complying with ASTM D 5319.

1. Coating: Multi-layer print, primer and finish coats or applied over-layer.
2. Dimensions:

a. Thickness – 0.090 inch (2.29mm) nominal
b. Width - 4'-0" (1.22m) nominal
c. Length – 10'-0" or as indicated on the drawings

3. Tolerance:

a. Length and Width: +/-1/8 inch (3.175mm)
b. Square - Not to exceed 1/8 inch for 8 foot (2.4m) panels or 5/32 inch (3.96mm) for 10 foot (2.4m) panels

B. Properties: Resistant to rot, corrosion, staining, denting, peeling, and splintering.

1. Flexural Strength - 1.0 x 10^4 psi per ASTM D 790. (7.0 kilogram-force/square millimeter)
2. Flexural Modulus - 3.1 x 10^5 psi per ASTM D 790. (217.9 kilogram-force/square millimeter)
3. Tensile Strength - 7.0 x 10^3 psi per ASTM D 638. (4.9 kilogram-force/square millimeter)
4. Tensile Modulus - 1.6 x 10^5 psi per ASTM D 638. (112.5 kilogram-force/square millimeter)
5. Water Absorption - 0.72% per ASTM D 570.
6. Barcol Hardness (scratch resistance) of 35 55 as per ASTM D 2583.
7. Izod Impact Strength of 72 ft. lbs./in ASTM D 256

C. Back Surface: Smooth. Imperfections which do not affect functional properties are not cause for rejection.

D. Front Finish: As Indicated on the Drawings. As selected by Owner/Architect from the manufacturer's full product range.

1. Color: Match existing product. As selected by Owner/Architect from the manufacturer's full product range.
2. Surface: texture to match.
3. Fire Rating : Class A
4. Size/Layout: As indicated on drawings or if not indicated on drawings balance panels on wall with equal panels on each side of wall. Panels to run full height of wall without a horizontal seam unless indicated on the drawing

2.3 MOLDINGS

A. Plastic Trims for FRP panels:

a. Provide at all panel edges.
b. Color to match panel color.

2.4 ACCESSORIES

A. Color matched joint caulking: Color Sil by Color Rite (405) 354-3645).

1. 100% silicon based colored caulking.
2. Match panel color (see reference guide from ColorSIL.)

B. Adhesive: Either of the following construction adhesives complying with ASTM C 557.

1. For FRP panels, Titebond Advanced Polymer Panel Adhesive (with mold inhibitor) in 3.5 gallon pails.

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails countersunk, joints and cracks filled flush and smooth with the adjoining surface.

1. Verify that stud spacing does not exceed 24 inch (61cm) on-center.

B. Repair defects prior to installation.

1. Level wall surfaces to panel manufacturer's requirements. Remove protrusions and fill indentations.

3.2 INSTALLATION

A. Comply with manufacturer's recommended procedures and installation sequence.

B. Cut sheets to meet supports allowing 1/8” inch (3 mm) clearance for every 8 foot (2.43m) of panel.

1. Cut and drill with carbide tipped saw blades or drill bits, or cut with shears.

C. For FRP panels, apply panels to board substrate, above base, vertically oriented with seams plumb and pattern aligned with adjoining panels.

1. Install panels with manufacturer's recommended gap for panel field and corner joints.

a. Adhesive trowel and application method to conform to adhesive manufacturer’s recommendations.

D. For FRP panels, apply panel moldings to all panel edges using silicone sealant providing for required clearances.

1. All moldings must provide for a minimum 1/8 inch (3.18mm) of panel expansion at joints and edges, to insure proper installation.
2. Apply sealant to all moldings, channels and joints between the system and different materials to assure watertight installation.

3.3 CLEANING

A. Remove excess sealant from panels and moldings. Wipe panel down using a damp cloth and mild soap solution or cleaner.

B. Refer to manufacturer's specific cleaning recommendations Do not use abrasive cleaners.

END OF SECTION 09 72 16

SECTION 09 90 11

EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes surface preparation and the application of paint systems on exterior surfaces that are not pre-finished and are designed to be painted.

B. Related Sections include the following:

1. Division 9 Section "Interior Painting" for surface preparation and the application of paint systems on interior substrates.

1.3 QUALITY ASSURANCE

A. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.5 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F(10 and 35 deg C).

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F(3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Benjamin Moore & Co.
2. ChemRex.
3. Columbia Paint & Coatings.
4. Del Technical Coatings.
5. ICI Paints.
6. Kryton Canada Corporation.
7. PPG Architectural Finishes, Inc.
8. Rodda Paint Co.
9. Sherwin-Williams Company (The).

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

B. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

C. Colors: Match Architect's samples

2.3 EXTERIOR PAINT SCHEDULE (Systems and gloss levels are found in the MPI, APSM)

A. Painted Hollow Metal: Alkyd. Gloss Level 5. H.P.

1. Coating.Special Metallic Paint:

a. Finish Coat: Sherwin Williams, Bond Plex to match aluminum, Gloss, B71S200

B. Ferrous Metal: Alkyd. Gloss Level 5.

1. Special Metallic Paint:

a. Finish Coat: Sherwin Williams, Bond Plex to match aluminum, Gloss, B71S200

C. Galvanized Metal: Alkyd. Gloss Level 5.

1. Special Metallic Paint:

a. Finish Coat: Sherwin Williams, Bond Plex to match aluminum, Gloss, B71S200

D. Plastic and PVC: Ext. 6.8, Acrylic. Gloss Level 5, or match surrounding painted surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers

C. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

D. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:

1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance of paint materials with product requirements.

3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove non-complying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

END OF SECTION 09 90 11

SECTION 09 90 12

INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes surface preparation and the application of paint systems on the following interior substrates:

1. Galvanized metal (misc metal components)
2. Gypsum board.
3. Wood

B. Related Sections include the following:

1. Division 6 Sections for shop priming carpentry with primers specified in this Section.
2. Division 9 Section "Exterior Painting" for surface preparation and the application of paint systems on exterior substrates.

1.3 SUBMITTALS

A. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches(200 mm) square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.
5. Paint samples to be applied to surface similar to surface to be painted.

1.4 QUALITY ASSURANCE

A. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."

2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F(7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F(10 and 35 deg C).

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F(3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Benjamin Moore & Co.
2. Bennette Paint Mfg. Co., Inc.
3. Color Wheel Paints & Coatings.
4. Columbia Paint & Coatings.
5. Davis Paint Company.
6. Diamond Vogel Paints.
7. General Paint.
8. ICI Paints.
9. Kelly-Moore Paints.
10. No-Burn Inc.
11. Rodda Paint Co.
12. Sherwin-Williams Company (The).
13. Spectra-Tone.
14. Safe-Coat
15. 3M

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. Chemical Components of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions; these requirements do not apply to primers or finishes that are applied in a fabrication or finishing shop:

1. Flat Paints and Coatings: VOC content of not more than 50 g/L.

2. Nonflat Paints and Coatings: VOC content of not more than 150 g/L.

3. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).

4. Restricted Components: Paints and coatings shall not contain any of the following:

a. Acrolein.
b. Acrylonitrile.
c. Antimony.
d. Benzene.
e. Butyl benzyl phthalate.
f. Cadmium.
g. Di (2-ethylhexyl) phthalate.
h. Di-n-butyl phthalate.
i. Di-n-octyl phthalate.
j. 1,2-dichlorobenzene.
k. Diethyl phthalate.
l. Dimethyl phthalate.
m. Ethylbenzene.
n. Formaldehyde.
o. Hexavalent chromium.
p. Isophorone.
q. Lead.
r. Mercury.
s. Methyl ethyl ketone.
t. Methyl isobutyl ketone.
u. Methylene chloride.
v. Naphthalene.

w. Toluene (methylbenzene).
x. 1,1,1-trichloroethane.
y. Vinyl chloride.

C. Colors: As selected by Architect from manufacturer's full range.

1. Project will require paint to match surrounding surfaces, in some cases. Contractor to plan ahead for color matching.

2.3 INTERIOR PAINT SCHEDULE

A. See Interior Elevations for interior finishes and colors

B. Systems and glass levels are found in the MPI, APSM. All work is Premium Grade.

C. Gypsum WallBoard: Epoxy Finish: Water Base Epoxy. Gloss Level E3 or GPS-4 in utility spaces; 2 on ceilings; and 4 in corridors except where subjected to strong natural light at oblique angles.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Gypsum Board: 12 percent.

C. Clean surfaces of grease, dirt, or other debris.

D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

E. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

D. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.

E. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

F. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat. Notify Owners Representative between each coat of paint, prior to application of successive coat of paint.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Intumescent coatings on steel should be applied in thickness recommended by manufacturer to achieve anticipated fire rating (1 hour). Repeat application as many times as necessary to achieve recommended coating thickness.

F. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:

1. Mechanical Work:

a. Uninsulated metal piping.
b. Uninsulated plastic piping.
c. Pipe hangers and supports.
d. Tanks that do not have factory-applied final finishes.
e. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
g. Mechanical equipment that is indicated to have a factory-primed finish for field painting.

2. Electrical Work:

a. Electrical equipment that is indicated to have a factory-primed finish for field painting.

3.4 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

E. Take care to ensure Intumescent paint is not damaged during the course of construction. Prior to installing ceilings, inspect Intumescent Paint and if damaged areas are noted, reapply intumescent paint at any damaged areas.

END OF SECTION 09 90 12

SECTION 10 26 00
CORNER GUARDS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Corner guards.

1.2 SUBMITTALS

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

B. Samples: For each type of unit and for each color and texture required.

C. Maintenance data.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Interior surface protection products specified herein and included on the submittal drawings shall be manufactured by Construction Specialties, Inc.

2.2 MATERIALS

A. Engineered PETG: Extruded material should be high-impact Acrovyn 4000 with Shadowgrain texture. Chemical and stain resistance should be per ASTM D543 standards as established by the manufacturer. Colors to be indicated in the finish schedule from one of manufacturer's available colors and patterns.

2.3 CORNER GUARDS

A. Engineered PETG Corner Guards: Surface mounted guards.

1. Basis of Design: Acrovyn Model VA-200N 90° surface mounted corner guard with 1 1/2" (38.0mm) legs self-adhesive tape backing.

2.4 FABRICATION

B. General: Fabricate wall protection systems to comply with requirements indicated for design, dimensions, detail, finish and member sizes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.

1. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface preparation: Prior to installation, clean substrate to remove dirt, debris and loose particles. Perform additional preparation procedures as required by manufacturer's instructions.

B. Protection: Take all necessary steps to prevent damage to material during installation as required in manufacturer's installation instructions.

3.3 INSTALLATION

A. Install the work of this section in strict accordance with the manufacturer's recommendations, using only approved adhesive, and locating all components firmly into position, level and plumb.

B. Temperature at the time of installation must be between 65°-75°F (18°-24°C) and be maintained for at least 48 hours after the installation.

3.4 CLEANING

A. General: Immediately upon completion of installation, clean guards and accessories in accordance with manufacturer's recommended cleaning method.

B. Remove surplus materials, rubbish and debris resulting from installation as work progresses and upon completion of work.

3.5 PROTECTION

A. Protect installed materials to prevent damage by other trades. Use materials that may be easily removed without leaving residue or permanent stains.

END OF SECTION 10 26 00

SECTION 22 05 00

COMMON WORK RESULTS FOR PLUMBING

PART 1 - GENERAL

1.1 SCOPE

A. All provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to this work.

1.2 WORK INCLUDED

A. The work to be included in these and all other plumbing subsections shall consist of providing, installing, adjusting and setting into proper operation complete and workable systems for all items shown on the drawings, described in the specifications or reasonably implied. This shall include the planning and supervision to coordinate the work with other crafts and to maintain a proper time schedule for delivery of materials and installation of the work.

B. Division 01 of the specifications is to be specifically included as well as all related drawings.

1.3 RELATED WORK

A. Related Work Specified Elsewhere:
   1. Heating, Ventilating and Air Conditioning (HVAC) Specifications: Division 23.
   2. Electrical Specifications: Division 26.

B. Unless otherwise indicated on the electrical drawings or the electrical schedules, provide all plumbing equipment motors, motor starters, thermal overload switches, control relays, time clocks, thermostats, motor operated valves, float controls, damper motors, electric switches, electrical components, wiring and any other miscellaneous Division 22 controls. Disconnect switches are included in the electrical work, unless specifically called out on mechanical plans.

C. Carefully coordinate all work with the electrical work shown and specified elsewhere.

1.4 REFERENCED CODES - LATEST ADOPTED EDITION

A. UPC Uniform Plumbing Code.

B. IMC International Mechanical Code.

C. IFC International Fire Code.

D. IBC International Building Code.

E. NFPA 70 National Electrical Code (NEC).

1.5 PROJECT RECORD DRAWINGS

A. In addition to other requirements of Division 01, mark up a clean set of drawings as the work progresses to show the dimensioned location and routing of all mechanical work which will become permanently concealed. Show routing of work in concealed blind spaces within the building. Show exact dimensions of buried piping off of columns or exterior walls.

B. Maintain record documents at job site in a clean, dry and legible condition. Keep record documents available for inspection by the Project Manager.

C. Show the location of all valves and their appropriate tag identification.

D. At completion of project, deliver these drawings to the Architect and obtain a written receipt.

1.6 SUBMITTALS

A. See General Conditions and the General Requirements in Division 01 regarding submittals.

B. Submit by specification section complete and all at one time; partial submittals will not be considered. Submittals shall be provided in electronic PDF Format. The data in the electronic file shall be arranged and indexed under basic categories in order of the Specification Sections. An index shall be included with bookmarks and identifying tabs between sections and references to sections of specifications.

C. Catalog sheets shall be complete and the item or model to be used shall be clearly marked, and identified as to which item in the specifications or on the drawings is being submitted and with drawing fixture number where applicable.

D. Only submit on items specifically required by each specification section. If a submittal has not been requested, it will not be reviewed.

1.7 OPERATING AND MAINTENANCE MANUALS

A. Submit maintenance manuals to the Engineer covering all equipment, fixtures, devices, etc. installed by the Contractor.

B. The operation and maintenance manuals shall be submitted by specification section complete and all at one time; partial operations and maintenance manual submittals will not be considered. The Operation and maintenance manuals shall be provided in electronic PDF Format. The data in the electronic file shall be arranged and indexed under basic categories. An index shall be included with bookmarks and identifying tabs between sections and references to sections of specifications. The manual shall contain, but not limited to, the following types of information:
   1. Cover sheet with name, address, telephone number of Contractor, General Contractor and major equipment suppliers.
   2. Catalog cuts of all equipment, fixtures, etc. installed (Marked to identify the specific items used).
   3. Manufacturer's maintenance and overhaul instruction booklets including exploded views.
   4. Identification numbers of all parts and nearest sources for obtaining parts and services.
   5. A copy of valve schedule and reduced scale drawings showing valve locations.
   6. Written summary of instructions to Owner.
   7. All manufacturers' warranties and guarantees.
   8. Contractors Warranty Letter.

C. A periodic maintenance form that includes all of the equipment shall be provided with the maintenance manual. The form shall list each piece of equipment and how often maintenance is required (daily, weekly, monthly, annually). Opposite each task shall be squares for check-off for a full year (initials) to verify that the tasks are being done.

1.8 HANDLING

A. See General Conditions and the General Requirements in Division 01 regarding material handling.

B. Deliver packaged materials to job site in unbroken packages with manufacturer's label, and store to facilitate inspection and installation sequence. All items must be labeled and identified as to make, size and quality.

1.9 SUBSTITUTIONS

A. See General Conditions and the General Requirements in Division 01 for substitution request procedures.

B. In accordance with the General Conditions and the General Requirements in Division 01, Substitution and Product Options, all substitute items must fit in the available space, and be of equal or better quality including efficiency performance, size, and weight, and must be compatible with existing equipment. The Engineer shall be the final authority regarding acceptability of substitutes.

1.10 DIMENSIONS

A. Before ordering any material or doing any work, the Contractor shall verify all dimensions, including elevations, and shall be responsible for the correctness of the same. No extra charge or compensation will be allowed on account of differences between actual dimensions and measurements indicated on the drawings.

B. Any differences, which may be found, shall be submitted to the Engineer for consideration before proceeding with the work.

1.11 MANUFACTURER'S DIRECTIONS

A. All manufactured articles shall be applied, installed and handled as recommended by the manufacturer, unless specifically called out otherwise. Advise the Architect/Engineer of any such conflicts before installation.

1.12 PERMITS, FEES, ETC.

A. The Contractor under each Division of these specifications shall arrange for a permit from the local authority. The Contractor shall pay for any inspection fees or other fees and charges required by ordinance, law, codes and these specifications.

1.13 TESTING

A. The Contractor under each section shall at his own expenses perform the various tests as specified and required by the Architect and as required by applicable code, the State and local authorities. The Contractor shall furnish all fuel and materials necessary for making tests.

1.14 TERMINOLOGY

A. Whenever the words "furnish", "provide", "furnish and install", "provide and install", and/or similar phrases occur, it is the intent that the materials and equipment described be furnished, installed and connected under this Division of the Specifications, complete for operation unless specifically noted to the contrary.

B. Where a material is described in detail, listed by catalogue number or otherwise called for, it shall be the Contractor's responsibility to furnish and install the material.

C. The use of the word "shall" conveys a mandatory condition to the contract.

D. "This section" refers to the section in which the statement occurs.

E. "The project" includes all work in progress during the construction period.

F. In describing the various items of equipment, in general, each item will be described singularly, even though there may be a multiplicity of identical or similar items.

1.15 SCHEDULE OF WORK

A. The work under the various sections must be expedited and close coordination will be required in executing the work. The various trades shall perform their portion of the work at such times as directed so as to meeting scheduled completion dates, and to avoid delaying any other trade. The Architect will set up completion dates. Each contractor shall cooperate in establishing these times and locations and shall process his work so as to ensure the proper execution of it.

1.16 COOPERATION AND CLEANING UP

A. The contractor for the work under each section of the specifications shall coordinate his work with the work described in all other sections of the specifications to the end that, as a whole, the job shall be a finished one of its kind, and shall carry on his work in such a manner that none of the work under any section of these specifications shall be handicapped, hindered or delayed at any time.

B. At all times during the progress of the work, the Contractor shall keep the premises clean and free of unnecessary materials and debris. The Contractor shall, on direction at any time from the Architect, clear any designated areas or area of materials and debris. On completion of any portion of the work, the Contractor shall remove from the premises all tools and machinery and all debris occasioned by the work, leaving the premises free of all obstructions and hindrances.

1.17 WARRANTY

A. Unless a longer warranty is hereinafter called for, all work, materials and equipment items shall be warrantied for a period of one year after acceptance by the Owner. All defects in labor and materials occurring during this period, as determined by the Architect/Engineer, shall be repaired and/or replaced to the complete satisfaction of the Architect/Engineer. Guarantee shall be in accordance with Division 01.

1.18 COMPLETION REQUIREMENTS

A. In accordance with the General Conditions and the General Requirements in Division 01, Project Closeout; before acceptance and final payment, the Contractor shall furnish:

1. Accurate project record drawings, shown in red ink on prints, showing all changes from the original plans made during installation of the work.
2. Contractors One Year Warranty.
3. All Manufacturers' Guarantees.
4. Test and Balance Reports.
5. Operation and Maintenance Manuals.

1.19 INSPECTION OF SITE - REMODEL PROJECTS

A. The accompanying plans do not indicate completely the existing plumbing and mechanical installations. The bidders for the work under these sections of the specifications shall inspect the existing installations and thoroughly acquaint themselves with conditions to be met and the work to be accomplished in removing and modifying the existing work, and in installing the new work in the present building and underground serving to and from that structure. Failure to comply with this shall not constitute grounds for any additional payments in connection with removing or modifying any part of the existing installations and/or installing any new work.

1.20 RELOCATION OF EXISTING INSTALLATIONS

A. There are portions of the existing plumbing, mechanical and electrical systems, which shall remain in use to serve the finished building in conjunction with the indicated new installations. By actual examination at the site, each bidder shall determine those portions of the remaining present installations, which must be relocated to avoid interference with the installations of new work of his particular trade and that of all other trades. All such existing installations, which interfere with new installations, shall be relocated by the Contractor.

1.21 SALVAGE MATERIALS

A. The Contractor shall remove existing fixtures, equipment and other items associated with the plumbing systems where no longer required for the project. Where such items are exposed to view or uncovered by any cutting or removal of general construction and has no continuing function as determined by the Architect/Engineer, they shall be removed.

B. All items or materials removed from the project shall be made available for the Owner's inspection. The Owner retains the option to claim any item or material. Contractor

shall deliver any claimed item or material in good condition to the place designated by the Owner. All items not claimed become the property of the contractor and shall be removed from the site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All equipment shall be regularly cataloged items of the manufacturer and shall be supplied as a complete unit in accordance with the manufacturer's standard specifications along with any optional items required for proper installation unless otherwise noted. Maintain manufacturer's identification, model number, etc. on all equipment at all times.

B. Where more than one of an item is to be provided, all of the items shall be identical manufacture, make, model, color, etc.

2.2 RESTRICTED MATERIALS

A. No materials containing asbestos in any form shall be allowed.

B. No solder or flux containing lead shall be used on this project.

C. Any pipe or plumbing fitting or fixture, any solder, or any flux utilized on this project shall be "lead free" in accordance with the Safe Drinking Water Act, Section 1417. "Lead free" materials utilized in domestic water system shall not contain more than 0.2 percent lead when used with respect to solder and flux; and not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures. All materials utilized in domestic water system shall be certified by an ANSI accredited organization to conform to ANSI/NSF Standard 61.

D. Where materials or equipment provided by this Contractor are found to contain restricted materials, such items shall be removed and replaced with non-restricted materials items. Entire cost of restricted materials removal and disposal and cost of installing new items shall be the responsibility of the Contractor for those restricted materials containing items installed by the Contractor.

2.3 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

A. Plastic Nameplates: Laminated plastic with engraved letters.

B. Plastic Tags: Laminated plastic with engraved letters, minimum 1-1/2 inches diameter.

C. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering.

D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

E. Plastic Underground Pipe Markers: Bright colored continuously printed plastic ribbon tape, for direct burial service.

2.4 PIPE HANGERS AND SUPPORTS

A. Acceptable Manufacturers:
1. Tolco.
2. Erico.
3. B-Line Systems, Inc.

B. Plumbing Piping - DWV:
1. Conform to ANSI/MSS SP58.
2. Hangers for Pipe Sizes ½ to 1-½ Inch: Malleable iron or carbon steel, adjustable swivel, split ring.
3. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
5. Vertical Support: Steel riser clamp.
6. Copper Pipe Support: Carbon steel ring, adjustable, copper plated with neoprene isolation pad.

C. Plumbing Piping - Water:
1. Conform to ANSI/MSS SP58.
2. Hangers for Pipe Sizes ½ to 1-½ Inch: Malleable iron or carbon steel, adjustable swivel, split ring.
3. Hangers for Cold Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
5. Vertical Support: Steel riser clamp.
6. Copper Pipe Support: Carbon steel ring, adjustable, copper plated with neoprene isolation pad.
7. Design hangers to allow installation without disengagement of supported pipe.
8. Copper Plating: All hanger elements in metal-to-metal contact with copper pipe, except hanger rings with factory-applied 1/16 inch minimum thick plastic or tape cushion strip over all contact surfaces.
9. Strut Type Pipe Hanging System: Unistrut P-1000 series; framing members shall be No. 12 gage formed steel channels, 1-5/8 inch square, conforming to ASTM A 570 GR33, one side of channel shall have a continuous slot with inturned lips; framing nut with grooves and spring 1/2 inch size, conforming to ASTM 675

GR60; screws conforming to ASTM A 307; fittings conforming to ASTM A 575; all parts enamel painted or electro-galvanized.

D. Shield for Insulated Piping 1-½ Inches and Smaller: 18 gauge galvanized steel shield over insulation in 180º segments, minimum 12 inches long at pipe support.

E. Shield for Insulated Piping 2 Inches and Larger: Hard block, calcium silicate insert, 180° segment, 12 inch minimum length, block thickness same as insulation thickness, flame resistant vapor barrier covering and 18 gauge galvanized shield.

F. Shields for Vertical Copper Pipe Risers: Galvanized steel pipe.

2.5 HANGER RODS

A. Steel Hanger Rods: Mild steel, threaded both ends, threaded one end, or continuous threaded. Minimum Hanger Rod Sizes:

PIPE AND TUBE SIZE (INCHES)	ROD SIZE (INCHES)
¼ to 4	3/8

2.6 ANCHOR BOLTS

A. Anchor (Expansion) Bolts: Shall be carbon steel to ASTM A 307; nut shall conform to ASTM A194; shall be drilled-in type. Design values for shear and tension shall be not more than 80 percent of the allowable load.

2.7 FLASHING

A. Metal Flashing: 26-gauge minimum galvanized steel.

B. Metal Counter Flashing: 22 gauge minimum galvanized steel.

C. Flexible Flashing: 47-mil thick sheet butyl, compatible with roofing.

D. Caps: Steel, 22-gauge minimum; 16 gauge at fire resistant elements.

2.8 SLEEVES

A. Sleeves for Pipes Through Non-fire Rated Floors: Form with 18 gauge galvanized steel for 4 inch diameter and larger, 22 gauge up to 3" diameter.

B. Sleeves for Pipes through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Form with steel pipe or 18 gauge galvanized steel for 4 inch diameter and larger, 22 gauge up to 3" diameter.

C. Sleeves for Pipes through Fire Rated and Fire Resistive Floors and Walls, and Fireproofing: UL listed caulking system.

D. Fire Stopping Insulation: Mineral fiber type, non- combustible.

E. Caulk: Fire stop sealant in compliance with ASTM E814, UL 1479 and Division 07.

2.9 ACCEPTABLE MANUFACTURERS: VIBRATION ISOLATORS AND SEISMIC RESTRAINT

A. Vibration isolators and Seismic Restraint shall be manufactured by:
1. Amber/Booth.
2. Cooper Industries.
3. International Seismic Application Technology.
4. Kinetics Noise Control.
5. Mason Industries.
6. Vibro-Acoustics.

B. Substitutions: Items of same function and performance are acceptable in conformance with Division 01.

2.10 SEISMIC BRACING AND SUPPORT OF SYSTEMS AND COMPONENTS

A. General:
1. Seismic restraint designer shall coordinate all attachments with the structural engineer of record.
2. Design analysis shall include calculated dead loads, static seismic loads, and capacity of materials utilized for the connection of the equipment or system to the structure.
3. Analysis shall detail anchoring methods, bolt diameter, and embedment depth.
4. All seismic restraint devices shall be designed to accept without failure the forces calculated per the applicable building code and as summarized in installation requirements.
5. The total height of the structure (h) and the height of the system to be restrained within the structure (z) shall be determined in coordination with architectural plans and the General Contractor.

B. Friction from gravity loads shall not be considered resistance to seismic forces.

2.11 SEISMIC BRACING COMPONENTS

A. Steel strut shall be 1-5/8 wide in varying heights and mig-welded combinations as required to meet load capacities and designs indicated. A material heat code, part number, and manufacturer's name shall be stamped on all strut and fittings to maintain traceability to material test reports.
   1. Material for epoxy painted strut: ASTM A1011, SS, Grade 33.
   2. Material for pre-galvanized strut: ASTM A653, SS, Gr. 33.
   3. Material for Hot-Dip Galvanized strut: ASTM A1011, SS, Grade 33 and hot-dip galvanized after fabrication in accordance with ASTM A123.
   4. Material for fittings and accessories: ASTM A907 Gr. 33, Structural Quality or ASTM A1011, SS. Gr.33.
   5. Fittings and accessories: Products shall be of the same manufacturer as strut and designed for use with that product.

PART 3 - EXECUTION

3.1 DRAWINGS

A. The drawings are partly diagrammatic, not necessarily showing all offsets or exact locations of piping and ducts, unless specifically dimensioned. The contractor shall provide all materials and labor necessary for a complete and operable system. Complete details of the building which affect the mechanical installation may not be shown. For additional details, see Architectural, and Electrical Drawings. Coordinate work under this section with that of all related trades.

3.2 INSTALLATION

A. All work shall comply with the latest adopted applicable codes and ordinances including, but not limited to, the IMC, UPC, IBC, NEC, NFPA, IECC, IFGC and IFC Standards; all local and state amendments to all codes and standards.

B. Obtain and pay for all inspection fees, connection charges and permits as a part of the Contract.

C. Compliance with codes and ordinances shall be at the Contractor's expense.

3.3 MEASUREMENTS

A. Verify all measurements on the job site.

B. Check all piping, equipment, etc. to clear openings.

3.4 OPERATING INSTRUCTIONS

A. Before the facility is turned over to the Owner, instruct the Owner or Owner's personnel in the operation, care and maintenance of all systems and equipment under the jurisdiction of the Plumbing Division. These instructions shall also be included in a written summary in the Operating Maintenance Manuals.

B. The Operation and Maintenance Manuals shall be utilized for the basis of the instruction. Provide a minimum of four hours of onsite instruction to the owner designated personnel.

C. When required by individual specification sections provide additional training on plumbing systems and equipment as indicated in the respective specification section.

D. Provide schedule for training activities for review prior to start of training.

3.5 SYSTEM ADJUSTING

A. Each part of each system shall be adjusted and readjusted as necessary to ensure proper functioning of all plumbing systems. Test all plumbing equipment, fixtures and piping for proper water distribution, drainage, pressure and flow, adjust systems as required to eliminate splashing, noise and vibration.

3.6 CUTTING, FITTING, REPAIRING, PATCHING AND FINISHING

A. Arrange and pay for all cutting, fitting, repairing, patching and finishing of work by other trades where it is necessary to disturb such work to permit installation of mechanical work. Perform work only with craftsmen skilled in their respective trades.

B. Avoid cutting, insofar as possible, by setting sleeves, frames, etc. and by requesting openings in advance. Assist other trades in securing correct location and placement of rough-frames, sleeves, openings, etc. for piping.

C. Cut all holes neatly and as small as possible to admit work. Include cutting where sleeves or openings have been omitted. Perform cutting in a manner so as not to weaken walls, partitions or floors. Drill holes required to be cut in floors without breaking out around holes.

3.7 PAINTING

A. Perform all of the following painting in accordance with provisions of Division 09 with colors as selected by the Architect. Provide the following items as a part of plumbing work:
   1. Factory applied prime coat on access doors.

3.8 IDENTIFICATION

A. Tag all valves with heat resistant laminated plastic labels or brass tags engraved with readily legible letters. Securely fasten to the valve stem or bonnet with beaded chain. Provide a framed, typewritten directory under glass, and installed where directed. Provide complete record drawings that show all valves with their appropriate label. Seton 250-BL-G, or 2961.20-G, 2” round or equal.

B. Label all equipment with heat resistant laminated plastic labels having engraved lettering ½" high. If items are not specifically listed on the schedules, consult the Engineer concerning designation to use. Seton engraved Seton-Ply nameplates or equal.

C. Identify piping to indicate contents and flow direction of each pipe exposed to view by a labeled sleeve in letters readable from floor at least once in each room and at intervals of not more than 20' apart and on each side of partition penetrations. Coloring scheme in accordance with ANSI A13.1-1981, Seton Opti-Code or equal.

3.9 PIPE HANGERS AND SUPPORTS

A. Support plumbing piping in accordance with the latest adopted edition of the UPC.

B. Support horizontal piping as follows:

MATERIALS	TYPES OF JOINTS	HORIZONTAL	VERTICAL
Cast-Iron Hubless	Shielded Coupling	Every other joint, unless over 4 feet then support each joint [1,2,3.4]	Base and each floor, not to exceed 15 feet
Copper Tube and Pipe	Soldered or Brazed	1 ½ inches and smaller, 6 feet; 2 inches and larger, 10 feet	Each floor, not to exceed 10 feet[5]
Steel and Brass Pipe for Water or DWV	Threaded or Welded	¾ inch and smaller, 10 feet; 1 inch and larger, 12 feet	Every other floor, not to exceed 25 feet[5]
Steel, Brass, and Tinned Copper Pipe for Gas	Threaded or Welded	½ inch, 6 feet; ¾ inch and 1 inch, 8 feet; 1 ¼ inches and larger, 10 feet	½ inch, 6 feet; ¾ inch and 1 inch, 8 feet; 1 ¼ inches every floor level
Schedule 40 PVC and ABS DWV	Solvent Cemented	All sizes, 4 feet; allow for expansion every 30 feet [3,6]	Base and each floor’ provide mid-story guides; provide for expansion every 30 feet[6]

MATERIALS	TYPES OF JOINTS	HORIZONTAL	VERTICAL
CPVC	Solvent Cemented	1 inch and smaller, 3 feet; 1 ¼ inches and larger, 4 feet	Base and each floor; provide mid-story guides[6]
Copper	Mechanical	In accordance with standards acceptable to the Authority Having Jurisdiction	
Steel and Brass	Mechanical	In accordance with standards acceptable to the Authority Having Jurisdiction	
PEX	Cold Expansion, Insert and Compression	1 inch and smaller, 32 inches; 1 ¼ inches and larger, 4 feet	Base and each floor; provide mid-story guides

Notes:
[1] Support adjacent to joint, not to exceed 18 inches.
[2] Brace not to exceed 40 foot intervals to prevent horizontal movement.
[3] Support at each horizontal branch connection.
[4] Hangers shall not be placed on the coupling.
[5] Vertical water lines shall be permitted to be supported in accordance with recognized engineering principles with regard to expansion and contraction, where first approved by the Authority Having Jurisdiction.
[6] See the appropriate IAPMO Installation Standard for expansion and other special requirements.
[7] See manufacturer installation instructions for additional requirements.

C. Install hangers to provide minimum ½ inch space between finished covering and adjacent work.

D. Place a hanger within 12 inches of each horizontal elbow.

E. Use hangers with 1-½ inch minimum vertical adjustment.

F. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.

G. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub.

H. Where several pipes can be installed in parallel and at the same elevation, provide multiple or trapeze hangers.

I. Support riser piping independently of connected horizontal piping.

J. Provide transverse seismic support for all piping systems.

3.10 FLASHING

A. Provide flexible flashing and metal counter-flashing where piping penetrates weather or waterproofed walls, floors, and roofs.

B. Flash vent pipes projecting 3 inches minimum above finished roof surface with pre-manufactured butyl boot.

C. Seal floor drains watertight to adjacent materials.

3.11 SLEEVES

A. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

B. Set sleeves in position in construction. Provide reinforcing around sleeves.

C. Extend sleeves through floors one inch above finished floor level. Caulk sleeves full depth and provide floor plate.

D. Where piping penetrates floor, ceiling, or wall, install sleeve, close off space between pipe and adjacent work with fire stopping insulation and caulk seal. Use fire rated caulking where fire rated walls are penetrated. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

E. Install chrome plated steel escutcheons at finished surfaces.

3.12 SEISMIC RESTRAINT

A. General:
   1. All piping and equipment shall be restrained to resist seismic/wind forces per the applicable building code(s) as a minimum. Restraint attachments shall be made by bolts, welds or a positive fastening method. Friction shall not be considered. All attachments shall be proven capable of accepting the required wind load by calculations. Additional requirements specified herein are included specifically for this project.
   2. Install seismic and wind restraint devices per the manufacturer's submittals. Any deviation from the manufacturer's instructions shall be reviewed and approved by the manufacturer.
   3. Attachment to structure for suspended pipe and equipment: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.
   4. Wall penetrations may be used as bracing locations provided the wall can provide adequate resistance without significant damage.
   5. Coordinate sizes and locations of cast-in-place inserts for post-tensioned slabs with seismic restraint manufacturer.
   6. Provide hanger rod stiffeners where indicated or as required to prevent buckling of rods due to seismic forces.
   7. Where rigid restraints are used on equipment or piping, support rods for the equipment or piping at restraint locations must be supported by anchors rated for

seismic use. Post-installed concrete anchors must be in accordance with ACI 355.2.

B. Concrete Anchor Bolts:
   1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid pre- or post-tensioned tendons, electrical and telecommunications conduits.
   2. Mechanical Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
   3. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
   4. Set anchors to manufacturer's recommended torque, using a torque wrench.

C. Piping Systems:
   1. For projects with a Seismic Design Category of C, provide seismic cable restraints on the following:
      a. All piping systems assigned a component importance factor, Ip, of 1.5 with a nominal pipe diameter greater than 2" (50 mm) or trapeze-supported piping with combined operating weight over 10 lbs/ft (15 kg/m).
   2. For projects with a Seismic Design Category of D, E or F, provide seismic cable restraints on the following:
      a. All piping greater than 3" (75 mm) nominal diameter.
      b. All piping systems assigned a component importance factor, Ip, of 1.5 with a nominal pipe diameter greater than 1" (25 mm) or trapeze-supported piping with combined operating weight over 10 lbs/ft (15 kg/m).
   3. "12-inch rule", where pipe can be exempted from seismic restraint based on the length of the support rods, is accepted if one of the following conditions are met:
      a. Hangers are detailed to avoid bending of the hangers and their attachment; and provisions are made for piping to accommodate expected deflections. The maximum stress due to combined loading including bending in the hangers must be less than 21.6 ksi.
      b. Isolation hangers are added to hanger rod to provide swivel joint and to prevent bending moment in hanger.
   4. Restraint spacing:
      a. For ductile piping, space lateral supports a maximum of 40' (12 m) o.c., and longitudinal supports a maximum of 80' (24 m) o.c.
      b. For non-ductile piping (e.g., cast iron, PVC) space lateral supports a maximum of 20' (6 m) o.c., and longitudinal supports a maximum of 40' (12 m) o.c.

c. For piping with hazardous material inside (e.g., natural gas, medical gas) space lateral supports a maximum of 20' (6 m) o.c., and longitudinal supports a maximum of 40' (12 m) o.c.
d. For pipe risers, restrain the piping at floor penetrations using the same spacing requirements as above.

5. Brace a change of direction longer than 12' (3.7 m).
6. Longitudinal restraints for single pipe supports shall be attached directly to the pipe, not to the pipe hanger.
7. For supports with multiple pipes (trapezes), secure pipes to trapeze member with clamps approved for application.
8. Piping on roller supports shall include a second roller support located on top of the pipe at each restraint location to provide vertical restraint.

D. Install restraint cables so they do not bend across edges of adjacent equipment or building structure.

E. Install flexible metal hose loops in piping which crosses building seismic joints, sized for the anticipated amount of movement.

F. Install flexible piping connectors where adjacent sections or branches are supported by different structural elements, and where the connections terminate with connection to equipment that is anchored to a different structural element from the one supporting the connections as they approach equipment.

G. Coordinate seismic restraints with thermal expansion compensators, guides and anchor points. Thermal expansion anchor points shall be designed to accommodate seismic forces.

3.13 SCOPE OF VIBRATION ISOLATION WORK

A. All vibrating equipment and the interconnecting pipe shall be isolated to eliminate the transmission of objectionable noise and vibration from the structure.

B. Plumbing equipment shall be carefully checked upon delivery for proper mechanical performance, which shall include proper noise and vibration operation.

3.14 GENERAL PROCEDURES – VIBRATION ISOLATION

A. Select isolators in accordance with the manufacturer's recommendations and the equipment weight distribution to allow for proper static deflection of the isolators in relation to the span of the building structure supporting the equipment, considering the allowable deflection and weight of the structure.

B. Install isolators so they can be easily removed for replacement.

C. Mount all equipment absolutely level.

D. Install all isolators per manufacturer's instructions.

E. Install vibration isolators for mechanical motor driven equipment.

F. Piping vibration isolation flexible connections shall be installed at a 90° angle to equipment deflection direction unless otherwise noted.

3.15 INSTALLATION OF EQUIPMENT

A. Unless otherwise indicated, mount all equipment and install in accordance with manufacturer's recommendations and approved submittals.

B. Maintain manufacture recommended minimum clearances for access and maintenance.

C. Where equipment is to be anchored to structure, furnish and locate necessary anchoring and vibration isolation devices.

D. Furnish all structural steel, such as angles, channels, beams, etc. required to support all piping, equipment and accessories installed under this Division. Use structural supports suitable for equipment specified or as indicated. In all cases, support design will be based upon data contained in manufacturer's catalog.

E. Openings: Arrange for necessary openings in buildings to allow for admittance and reasonable maintenance or replacement of all equipment furnished under this Contract.

F. Access Doors: Provide as necessary for reasonable maintenance of all equipment valves, controls, etc.

END OF SECTION 22 05 00

SECTION 22 07 00

PLUMBING INSULATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Piping Insulation.

1.2 RELATED WORK

A. Section 22 05 00 - Common Work Results for Plumbing.

B. Section 22 40 00 - Plumbing Fixtures.

1.3 SUBMITTALS

A. Submit product data under provisions of Division 01.

B. Include product description, thickness for each service, and locations.

1.4 QUALITY ASSURANCE

A. Applicator: Company specializing in piping insulation application with three years minimum experience.

B. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.

C. Materials: Flame spread/smoke developed rating of 25/50 in accordance with UL 723, ASTM E84, or NFPA 255.

D. Factory fabricated fitting covers manufactured in accordance with ASTM C450.

1.5 DELIVERY STORAGE AND HANDLING

A. Division 01 - 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. Shipment of materials from manufacturer to installation location shall be in weather tight transportation.

D. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.

1.7 FIELD MEASURMENTS

A. Verify field measurements prior to fabrication.

1.8 WARRANTY

A. Division 01- Execution and Closeout Requirements: Product warranties and product bonds.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Johns Manville.

B. Knauf.

C. Armstrong.

D. Substitutions: Under provisions of Division 01.

2.2 INSULATION - PIPING

A. Type P-A: Glass fiber, rigid, molded, non-combustible insulation; ANSI/ASTM C547; 'k' value of 0.23 at 75º F, rated from 0º F to 850º F, vapor retarder jacket of Kraft paper bonded to aluminum foil, self-sealing lap and butt strips; Johns Manville "Micro-Lok" or approved equal.

2.3 INSULATION ACCESSORIES

A. Adhesives: Waterproof and fire-retardant type.

B. FSK Joint Tape; ASTM C1136 Foil-Scrim-Kraft (FSK) lamination coated with solvent acrylic pressure sensitive adhesive; capable of adhering to fibrous and sheet metal surfaces; tri-directionally reinforced 2x3 squares per inch fiberglass scrim; 9.5 mils thick, -40 to 240º F service temperatures; Venture Tape “1525CW” or approved equal.

PART 3 - EXECUTION

3.1 PREPARATION

A. Install insulation after piping and equipment has been tested and approved.

B. Prepare surfaces in accordance with manufacturer's recommendations.

3.2 INSTALLATION - PIPING

A. Install materials in accordance with manufacturer's recommendations, building codes and industry standards.

B. Continue insulation vapor barrier through penetrations except where prohibited by code.

C. Locate insulation and cover seams in least visible locations.

D. Neatly finish insulation at supports, protrusions, and interruptions.

E. Provide insulated cold pipes conveying fluids below ambient temperature with vapor retardant jackets with self-sealing laps. Insulate complete system, including under fitting jackets.

F. For insulated pipes conveying fluids above ambient temperature, secure jackets with self-sealing lap or outward clinched, expanded staples. Bevel and seal ends of

insulation at equipment, flanges, and unions. Insulate complete system, including under fitting jackets.

G. Fully insulate all piping domestic water piping.

3.3 SCHEDULE - PIPING

PIPING	TYPE	PIPE SIZE Inch	MINIMUM INSULATION THICKNESS Inch
Domestic Cold Water	P-A	All Sizes	1”
Domestic Hot Water	P-A	All Sizes	1”
Domestic Hot Water Recirculating	P-A	All Sizes	1”
Vent Through Roof	P-A	All Sizes	1"
Piping Exposed to Freezing	P-A	All Sizes	2"

END OF SECTION 22 07 00

SECTION 22 10 00

PLUMBNG PIPING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. DWV Piping.

B. Domestic Water Piping.

C. Dielectric Connections.

1.2 RELATED WORK

A. Section 22 05 00 – Common Work Results for Plumbing.

B. Section 22 07 00 - Plumbing Insulation.

C. Section 22 40 00 - Plumbing Fixtures.

1.3 QUALITY ASSURANCE

A. Valves: Manufacturer's name and pressure rating marked on valve body.

B. Any pipe or plumbing fitting or fixture, any solder, or any flux utilized on this project shall be “lead free” in accordance with the Safe Drinking Water Act, Section 1417. “Lead free” materials utilized in domestic water system shall not contain more than 0.2 percent lead when used with respect to solder and flux; and not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures. All materials utilized in domestic water system shall be certified by an ANSI accredited organization to conform to ANSI/NSF Standard 61.

1.4 SUBMITTALS

A. Submit product data under provisions of Division 01.

B. Include data on pipe materials, pipe fittings, valves and accessories.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Division 01.

B. Store and protect products under provisions of Division 01.

C. Deliver and store valves in shipping containers with labeling in place.

PART 2 - PRODUCTS

2.1 DWV PIPING

A. ABS Schedule 40 Cellular Core (Foam Core) Pipe: Pipe and fittings shall be manufactured from ABS compound with a cell class of 42222 for pipe and 32222 for fittings as per ASTM D 3965 and conform with National Sanitation Foundation (NSF) standard 14. ASTM D 2661 Fittings. Joints: ASTM D 2235 solvent welded. Installation of ABS piping in return air plenums is prohibited.

2.2 CONDENSATE PIPING

A. Copper Tubing: ASTM B88, Type L, hard drawn. Fittings: ASME B16.18, cast copper alloy, or ASME B16.22, wrought copper. Joints: ANSI/ASTM B32, solder, Grade 95TA; Flux: ASTM B813.

B. Polyvinyl Chloride (PVC): Schedule 80, ASTM D1785, Type 1, Grade 1, Cell classification 12454B. Fittings: Schedule 80 ASTM D2467 socket. Joints: Solvent socket weld, flanged joints shall be provided at unions, valves and equipment connections.

2.3 DOMESTIC WATER PIPING

A. Chlorinated Polyvinyl Chloride (CPVC) Piping:

1. ½" To 2": FlowGuard Gold CPVC or equal, ASTM D2846, NSF listed, SDR 11, Schedule 40, Fittings: Solvent welded socket type. Valves: Ball type valves listed for use with CPV piping.

B. Polypropylene (PP-R) Piping:

1. Pipe shall be manufactured from a PP-R resin meeting the short-term properties and long-term strength requirements of ASTM F 2389. The pipe shall contain no rework or recycled materials except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. All pipe shall be made in a three layer extrusion process. Domestic hot water shall contain a fiber layer (faser) to restrict thermal expansion. All pipe shall comply with the rated pressure requirements of ASTM F 2389. All pipe shall be certified by NSF International as complying with NSF 14, NSF 61, and ASTM F 2389 or CSA B137.11.

2. Pipe shall be Aquatherm® Greenpipe®, or Greenpipe® Faser®, available from Aquatherm, Inc.. Piping specifications and ordering information are available at www.aquathermpipe.com.

3. Valves and Fittings: Valves and fittings designed and listed for use with Aquatherm PP-R resin piping.

C. PEX Tubing: Tubing shall be cross-linked high-density polyethylene. Tubing shall be produced using saline method of cross-linking and shall meet the dimension and performance specifications of ASTM F876/F877 and CSA B137.5. Tubing shall also comply with ANSI/NSF 61 as suitable for use with potable water. Temperature and pressure ratings shall be 160 psi at 73 degrees F, 100 psi at 180 degrees F, and 80 psi at 200 degrees F.

2.4 ACCEPTABLE MANUFACTURERS - DIELECTRIC CONNECTIONS

A. Elster Perfection - Clearflow.

B. Substitutions: Under provisions of Division 01.

PART 3 - EXECUTION

3.1 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections fixtures.

3.2 INSTALLATION

A. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

B. Route piping in orderly manner and maintain gradient.

C. Install piping to conserve building space and not interfere with use of space.

D. Group piping whenever practical at common elevations.

E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

F. Provide clearance for installation of insulation and access to valves and fittings.

G. Provide access where valves and fittings are not exposed. Coordinate size and location of access doors.

H. Establish invert elevations, slopes for drainage to 1/4” per foot, 1/8” per foot if 4" or over, minimum. Maintain gradients.

I. Install valves with stems upright or horizontal, not inverted.

3.3 TESTING

A. Test all water piping in accordance with Section 609 of the UPC. Submit a signed statement to the Engineer stating testing dates, procedure and initials of tester.

B. Test all sanitary sewer and vent piping in accordance with Section 712 of the UPC.

3.4 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Flush, clean and disinfect the potable water system in accordance with Section 609 of the UPC. Submit a signed statement to the Engineer stating disinfection dates, procedure and initials of tester.

END OF SECTION 22 10 00

SECTION 22 40 00

PLUMBING FIXTURES

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Washer Rough-In Box.

1.2 RELATED WORK

A. Section 22 05 00 - Common Work Results for Plumbing.

1.3 REFERENCES

A. ANSI/ASSE 1011 - Hose Connection Vacuum Breakers.

1.4 QUALITY ASSURANCE

A. Manufacturer: For each product specified, provide components by same manufacturer throughout.

B. Trim: By same manufacturer for each product specified throughout.

1.5 SUBMITTALS

A. Submit product data under provisions of Division 01.

B. Include sizes, rough-in requirements, service sizes, and finishes.

1.6 OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data under provisions of Division 01.

B. Include fixture trim exploded view and replacement parts lists.

C. Provide Manufacturer's parts list and maintenance information on specialties.

1.7 WARRANTY

A. Provide manufacturer's warranty under provisions of Division 01.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS –WASHER ROUGH-IN BOXES

A. Oatey.

B. Guy Gray.

C. Substitutions: Under provisions of Division 01.

2.2 WASHER ROUGH-IN BOX

A. Box: High impact polystyrene with four (4) support brackets, Snap-on faceplate frame accommodating up to 1 inch drywall, four (4) 2 inch knock-outs with integral test caps.

B. Faucet: Single lever brass hammer ball valve with integral water hammer arrestors.

PART 3 - EXECUTION

3.1 INSPECTION

A. Confirm location and size of openings before rough-in and installation.

B. Verify adjacent construction is ready to receive rough-in work of this Section.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions to permit intended performance.

3.3 CLEANING

A. At completion remove all visible stickers and tags not intended to be left in place, thoroughly clean all surfaces of plumbing fixtures.

END OF SECTION 22 40 00

SECTION 23 05 00

COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 SCOPE

A. All provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to this work.

1.2 WORK INCLUDED

A. The work to be included in these and all other mechanical subsections shall consist of providing, installing, adjusting and setting into proper operation complete and workable systems for all items shown on the drawings, described in the specifications or reasonably implied. This shall include the planning and supervision to coordinate the work with other crafts and to maintain a proper time schedule for delivery of materials and installation of the work.

B. Division 01 of the specifications is to be specifically included as well as all related drawings.

1.3 RELATED WORK

A. Related Work Specified Elsewhere:
   1. Plumbing Specifications: Division 22.
   2. Electrical Specifications: Division 26.
   3. Motors and Connections: Division 26.
   4. Starters and Disconnects: Division 26.

B. Unless otherwise indicated on the electrical drawings or the electrical schedules, provide all mechanical equipment motors, motor starters, thermal overload switches, control relays, time clocks, thermostats, and motor operated valves, float controls, damper motors, electric switches, electrical components, wiring and any other miscellaneous Division 23 controls. Disconnect switches are included in the electrical work, unless specifically called out on mechanical plans.

C. Carefully coordinate all work with the electrical work shown and specified elsewhere.

1.4 REFERENCED CODES - LATEST ADOPTED EDITION

A. IMC International Mechanical Code.

B. UPC Uniform Plumbing Code.

C. IBC International Building Code.

D. IFC International Fire Code.

E. NFPA 70 National Electrical Code (NEC).

1.5 PROJECT RECORD DRAWINGS

A. In addition to other requirements of Division 01, mark up a clean set of drawings as the work progresses to show the dimensioned location and routing of all mechanical work which will become permanently concealed. Show routing of work in concealed blind spaces within the building. Show exact dimensions of buried piping off of columns or exterior walls.

B. Maintain record documents at job site in a clean, dry and legible condition. Keep record documents available for inspection by the Project Manager.

C. Show the location of all valves and their appropriate tag identification.

D. At completion of project, deliver these drawings to the Architect and obtain a written receipt.

1.6 SUBMITTALS

A. See General Conditions and the General Requirements in Division 01 regarding submittals.

B. Submit by specification section complete and all at one time; partial submittals will not be considered. Submittals shall be provided in electronic PDF Format. The data in the electronic file shall be arranged and indexed under basic categories in order of the Specification Sections.

C. Catalog sheets shall be complete and the item or model to be used shall be clearly marked, and identified as to which item in the specifications or on the drawings is being submitted and with drawing fixture number where applicable.

D. Only submit on items specifically required by each specification section. If a submittal has not been requested, it will not be reviewed.

1.7 OPERATING AND MAINTENANCE MANUALS

A. Submit maintenance manuals to the Engineer covering all equipment, devices, etc. installed by the Contractor.

B. The operation and maintenance manuals shall be submitted by specification section complete and all at one time; partial operations and maintenance manual submittals will not be considered. The Operation and maintenance manuals shall be provided in electronic PDF Format. The data in the electronic file shall be arranged and indexed under basic categories. The manual shall contain, but not limited to, the following types of information:
   1. Cover sheet with name, address, telephone number of Contractor, General Contractor and major equipment suppliers.
   2. Catalog cuts of all equipment, etc. installed (Marked to identify the specific items used).
   3. Manufacturer's maintenance and overhaul instruction booklets including exploded views.
   4. Identification numbers of all parts and nearest sources for obtaining parts and services.
   5. Reduced scale drawings of the control system and a verbal description of how these controls operate.
   6. A copy of the final test and balance report.
   7. Written summary of instructions to Owner.
   8. All manufacturers' warranties and guarantees.
   9. Contractors Warranty Letter.

C. A periodic maintenance form that includes all of the equipment shall be provided with the maintenance manual. The form shall list each piece of equipment and how often maintenance is required (daily, weekly, monthly, annually). Opposite each task shall be squares for check-off for a full year (initials) to verify that the tasks are being done.

1.8 HANDLING

A. See General Conditions and the General Requirements in Division 01 regarding material handling.

B. Deliver packaged materials to job site in unbroken packages with manufacturer's label, and store to facilitate inspection and installation sequence. All items must be labeled and identified as to make, size and quality.

1.9 SUBSTITUTIONS

A. See General Conditions and the General Requirements in Division 01 for substitution request procedures.

B. In accordance with the General Conditions and the General Requirements in Division 01, Substitution and Product Options, all substitute items must fit in the available space, and be of equal or better quality including efficiency performance, size, and weight, and must be compatible with existing equipment. The Architect/Engineer shall be the final authority regarding acceptability of substitutes.

1.10 DIMENSIONS

A. Before ordering any material or doing any work, the Contractor shall verify all dimensions, including elevations, and shall be responsible for the correctness of the same. No extra charge or compensation will be allowed on account of differences between actual dimensions and measurements indicated on the drawings.

B. Any differences, which may be found, shall be submitted to the Architect/Engineer for consideration before proceeding with the work.

1.11 MANUFACTURER'S DIRECTIONS

A. All manufactured articles shall be applied, installed and handled as recommended by the manufacturer, unless specifically called out otherwise. Advise the Architect/Engineer of any such conflicts before installation.

1.12 PERMITS, FEES, ETC.

A. The Contractor under each Division of these specifications shall arrange for a permit from the local authority. The Contractor shall pay for any inspection fees or other fees and charges required by ordinance, law, codes and these specifications.

1.13 TESTING

A. The Contractor under each section shall at his own expenses perform the various tests as specified and required by the Architect and as required by applicable code, the State and local authorities. The Contractor shall furnish all fuel and materials necessary for making tests.

1.14 TERMINOLOGY

A. Whenever the words "furnish", "provide", "furnish and install", "provide and install", and/or similar phrases occur, it is the intent that the materials and equipment described be furnished, installed and connected under this Division of the Specifications, complete for operation unless specifically noted to the contrary.

B. Where a material is described in detail, listed by catalogue number or otherwise called for, it shall be the Contractor's responsibility to furnish and install the material.

C. The use of the word "shall" conveys a mandatory condition to the contract.

D. "This section" refers to the section in which the statement occurs.

E. "The project" includes all work in progress during the construction period.

F. In describing the various items of equipment, in general, each item will be described singularly, even though there may be a multiplicity of identical or similar items.

1.15 SCHEDULE OF WORK

A. The work under the various sections must be expedited and close coordination will be required in executing the work. The various trades shall perform their portion of the work at such times as directed so as to meeting scheduled completion dates, and to avoid delaying any other trade. The Architect will set up completion dates. Each contractor shall cooperate in establishing these times and locations and shall process his work so as to ensure the proper execution of it.

1.16 COOPERATION AND CLEANING UP

A. The contractor for the work under each section of the specifications shall coordinate his work with the work described in all other sections of the specifications to the end that, as a whole, the job shall be a finished one of its kind, and shall carry on his work in such a manner that none of the work under any section of these specifications shall be handicapped, hindered or delayed at any time.

B. At all times during the progress of the work, the Contractor shall keep the premises clean and free of unnecessary materials and debris. The Contractor shall, on direction at any time from the Architect, clear any designated areas or area of materials and debris. On completion of any portion of the work, the Contractor shall remove from the premises all tools and machinery and all debris occasioned by the work, leaving the premises free of all obstructions and hindrances.

1.17 WARRANTY

A. Unless a longer warranty is hereinafter called for, all work, materials and equipment items shall be warrantied for a period of one year after acceptance by the Owner. All defects in labor and materials occurring during this period, as determined by the Architect/Engineer, shall be repaired and/or replaced to the complete satisfaction of the Architect/Engineer. Guarantee shall be in accordance with Division 01.

1.18 COMPLETION REQUIREMENTS

A. In accordance with the General Conditions and the General Requirements in Division 01, Project Closeout; before acceptance and final payment, the Contractor shall furnish:

1. Accurate project record drawings, shown in red ink on prints, showing all changes from the original plans made during installation of the work.
2. Contractors One Year Warranty.
3. All Manufacturers' Guarantees.
4. Test and Balance Reports.
5. Operation and Maintenance Manuals.

1.19 INSPECTION OF SITE - REMODEL PROJECTS

A. The accompanying plans do not indicate completely the existing plumbing and mechanical installations. The bidders for the work under these sections of the specifications shall inspect the existing installations and thoroughly acquaint themselves with conditions to be met and the work to be accomplished in removing and modifying the existing work, and in installing the new work in the present building and underground serving to and from that structure. Failure to comply with this shall not constitute grounds for any additional payments in connection with removing or modifying any part of the existing installations and/or installing any new work.

1.20 RELOCATION OF EXISTING INSTALLATIONS

A. There are portions of the existing plumbing, mechanical and electrical systems, which shall remain in use to serve the finished building in conjunction with the indicated new installations. By actual examination at the site, each bidder shall determine those portions of the remaining present installations, which must be relocated to avoid interference with the installations of new work of his particular trade and that of all other trades. All such existing installations, which interfere with new installations, shall be relocated by the Contractor.

1.21 SALVAGE MATERIALS

A. The Contractor shall remove existing equipment, duct, grilles and other items associated with the mechanical systems where no longer required for the project. Where such items are exposed to view or uncovered by any cutting or removal of general construction and has no continuing function as determined by the Architect/Engineer, they shall be removed.

B. All items or materials removed from the project shall be made available for the Owner's inspection. The Owner retains the option to claim any item or material. Contractor shall deliver any claimed item or material in good condition to the place designated by the Owner. All items not claimed become the property of the contractor and shall be removed from the site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All equipment shall be regularly cataloged items of the manufacturer and shall be supplied as a complete unit in accordance with the manufacturer's standard specifications along with any optional items required for proper installation unless otherwise noted. Maintain manufacturer's identification, model number, etc. on all equipment at all times.

B. Where more than one of an item is to be provided, all of the items shall be identical manufacture, make, model, color, etc.

2.2 RESTRICTED MATERIALS

A. No materials containing asbestos in any form shall be allowed.

B. No solder or flux containing lead shall be used on this project.

C. Where materials or equipment provided by this Contractor are found to contain restricted materials, such items shall be removed and replaced with non-restricted materials items. Entire cost of restricted materials removal and disposal and cost of installing new items shall be the responsibility of the Contractor for those restricted materials containing items installed by the Contractor.

2.3 ELECTRICAL MOTORS

A. Motors: Furnish electric motors designed for the specific application and duty applied, and to deliver rated horsepower without exceeding temperature ratings when operated

on power systems with a combined variation in voltage and frequency not more than + 10% of rated voltage. Motors for pumps and fans shall be selected to be non-overloading.

B. Verify from the drawings and specifications the available electrical supply characteristics and furnish equipment that will perform satisfactorily under the conditions shown and specified.

C. All motors for use with equipment with variable frequency drives shall be inverter ready motors. Verify compatibility and sizing of motor with variable frequency drive.

D. Size motors for 1.15 service factor and not to exceed 40º C temperature rise above ambient.

E. Fractional horsepower motors to have self-resetting thermal overload switch.

2.4 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

A. Plastic Nameplates: Laminated plastic with engraved letters.

B. Plastic Tags: Laminated plastic with engraved letters, minimum 1-1/2 inches diameter.

C. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering.

D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

2.5 PIPE HANGERS AND SUPPORTS

A. Acceptable Manufacturers:
1. PHD Manufacturing, Inc.
2. Michigan Hanger Company.
3. B-Line Systems, Inc.

B. Hydronic Piping:
1. Conform to ANSI/MSS SP58.
2. Hangers for Pipe Sizes ½ to 1-½ Inch: Malleable iron, adjustable swivel, split ring for steel pipe, copper swivel for copper pipe.
3. Hangers for Hot Pipe Sizes 2 to 4 Inches and Cold Pipe Sizes 2 Inches and Larger: Carbon steel, adjustable, clevis.
4. Multiple or Trapeze Hangers: Steel channels or strut with hanger rods.
5. Vertical Support: Steel riser clamp.
6. Copper Pipe Support: Carbon steel ring, adjustable, copper plated with felt isolation pad or all copper ring or swivel.

C. Shield for Insulated Piping 1-½ Inches and Smaller: 18 gauge galvanized steel shield over insulation in 180º segments, minimum 12 inches long at pipe support.

D. Shield for Insulated Piping 2 Inches and Larger: Hard block, calcium silicate insert, 180° segment, 12 inch minimum length, block thickness same as insulation thickness, flame resistant vapor barrier covering and 18 gauge galvanized shield.

E. Design hangers to allow installation without disengagement of supported pipe.

F. Copper Plating: All hanger elements in metal-to-metal contact with copper pipe, except hanger rings with factory-applied 1/16 inch minimum thick plastic or tape cushion strip over all contact surfaces.

G. Strut Type Pipe Hanging System: Unistrut P-1000 series; framing members shall be No. 12 gage formed steel channels, 1-5/8 inch square, conforming to ASTM A 653 GR33, one side of channel shall have a continuous slot with inturned lips; framing nut with grooves and spring 1/2 inch size, conforming to ASTM 675 GR60; screws conforming to ASTM A 307; fittings conforming to ASTM A 575; all parts enamel painted or electro-galvanized.

2.6 HANGER RODS

A. Steel Hanger Rods: Threaded both ends, or continuous threaded.

2.7 ANCHOR BOLTS

A. Anchor (Expansion) Bolts: Shall be carbon steel to ASTM A 307; nut shall conform to ASTM A194; shall be drilled-in type. Design values for shear and tension shall be not more than 80 percent of the allowable load.

2.8 FLASHING

A. Metal Flashing: 26-gauge minimum galvanized steel.

B. Metal Counter Flashing: 22 gauge minimum galvanized steel.

C. Flexible Flashing: 47-mil thick sheet butyl, compatible with roofing.

D. Caps: Steel, 22-gauge minimum; 16 gauge at fire resistant elements.

2.9 FORMED STEEL CHANNEL

A. Manufacturers:
   1. Unistrut Corp.
   2. B-Line Systems.
   3. Erico.
   4. Substitutions under provisions of Division 01.

B. Product Description: Galvanized 12 gauge (2.8 mm) thick steel. With holes 1-1/2 inches (38 mm) on center.

PART 3 - EXECUTION

3.1 DRAWINGS

A. The drawings are partly diagrammatic, not necessarily showing all offsets or exact locations of piping and ducts, unless specifically dimensioned. The contractor shall provide all materials and labor necessary for a complete and operable system. Complete details of the building which affect the mechanical installation may not be shown. For additional details, see Architectural, and Electrical Drawings. Coordinate work under this section with that of all related trades.

3.2 INSTALLATION

A. All work shall comply with the latest adopted applicable codes and ordinances including, but not limited to, the IMC, UPC, IBC, NFPA, IECC, IFGC and IFC Standards; all local and state amendments to all codes and standards.

B. Obtain and pay for all inspection fees, connection charges and permits as a part of the Contract.

C. Compliance with codes and ordinances shall be at the Contractor's expense.

D. Install in accordance with manufacturer's instructions.

3.3 MEASUREMENTS

A. Verify all measurements on the job site.

B. Locate all equipment on the centers of walls, openings, spaces, etc., unless specified otherwise.

C. Check all piping, ducts, etc. to clear openings.

D. Rough-in dimensions shall be per manufacturer's recommendations.

3.4 OPERATING INSTRUCTIONS

A. Before the facility is turned over to the Owner, instruct the Owner or Owner's personnel in the operation, care and maintenance of all systems and equipment under the jurisdiction of the Mechanical Division. These instructions shall also be included in a written summary in the Operating Maintenance Manuals.

B. The Operation and Maintenance Manuals shall be utilized for the basis of the instruction. Provide a minimum of four hours of onsite instruction to the owner designated personnel.

C. Provide schedule for training activities for review prior to start of training.

3.5 SYSTEM ADJUSTING

A. Each part of each system shall be adjusted and readjusted as necessary to ensure proper functioning of all controls, proper air distribution, and elimination of drafts, noise and vibration.

B. Balance air systems for volume quantities shown and as required to ensure even temperature and the elimination of drafts. Balancing shall be done by a qualified firm acceptable to the Engineer. Provide balancing log to the Engineer before substantial completion.

3.6 CUTTING, FITTING, REPAIRING, PATCHING AND FINISHING

A. Arrange and pay for all cutting, fitting, repairing, patching and finishing of work by other trades where it is necessary to disturb such work to permit installation of mechanical work. Perform work only with craftsmen skilled in their respective trades.

B. Avoid cutting, insofar as possible, by setting sleeves, frames, etc. and by requesting openings in advance. Assist other trades in securing correct location and placement of rough-frames, sleeves, openings, etc. for ducts and piping.

C. Cut all holes neatly and as small as possible to admit work. Include cutting where sleeves or openings have been omitted. Perform cutting in a manner so as not to weaken walls, partitions or floors. Drill holes required to be cut in floors without breaking out around holes.

3.7 PAINTING

A. Perform all of the following painting in accordance with provisions of Division 09 with colors as selected by the Architect. Provide the following items as a part of mechanical work:
   1. Factory applied prime and finish coats on mechanical equipment.
   2. Factory applied prime and finish coat on all air registers, grilles and diffusers, unless otherwise specified.
   3. Factory applied prime coat on access doors.

B. If factory finish on any equipment furnished is damaged in shipment or during construction, refinish to equal original factory finish.

3.8 IDENTIFICATION

A. Tag all valves with heat resistant laminated plastic labels or brass tags engraved with readily legible letters. Securely fasten to the valve stem or bonnet with beaded chain. Provide a framed, typewritten directory under glass, and installed where directed. Provide complete record drawings that show all valves with their appropriate label. Seton 250-BL-G, or 2961.20-G, 2” round or equal.

B. Label all equipment with heat resistant laminated plastic labels having engraved lettering ½" high. If items are not specifically listed on the schedules, consult the Engineer concerning designation to use. Seton engraved Seton-Ply nameplates or equal.

C. Identify piping to indicate contents and flow direction of each pipe exposed to view by a labeled sleeve in letters readable from floor at least once in each room and at intervals of not more that 20' apart and on each side of partition penetrations. Coloring scheme in accordance with ANSI A13.1-1981, Seton Opti-Code or equal.

3.9 PIPE HANGERS AND SUPPORTS

A. Support horizontal piping as follows:

PIPE SIZE	MAX. HANGER SPACING	HANGER DIAMETER
½ to 2 inch	6'-0"	3/8"

B. Install hangers to provide minimum ½ inch space between finished covering and adjacent work.

C. Place a hanger within 12 inches of each horizontal elbow.

D. Use hangers with 1-½ inch minimum vertical adjustment.

E. Where several pipes can be installed in parallel and at the same elevation, provide multiple or trapeze hangers.

F. Support riser piping independently of connected horizontal piping.

3.10 FLASHING

A. Provide flexible flashing and metal counter-flashing where piping and ductwork penetrate weather or waterproofed walls, floors, and roofs.

B. 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.

3.11 SCOPE OF VIBRATION ISOLATION WORK

A. All vibrating equipment and the interconnecting pipe shall be isolated to eliminate the transmission of objectionable noise and vibration from the structure.

B. HVAC equipment shall be carefully checked upon delivery for proper mechanical performance, which shall include proper noise and vibration operation.

C. All installed rotating equipment with excessive noise and/or vibration, which cannot be corrected in place, shall be replaced at no cost to Owner.

3.12 INSTALLATION OF EQUIPMENT

A. Unless otherwise indicated, mount all equipment and install in accordance with manufacturer's recommendations and approved submittals. Maintain manufacturers recommended minimum clearances for access and maintenance.

B. Where equipment is to be anchored to structure, furnish and locate necessary anchoring and vibration isolation devices.

C. Furnish all structural steel, such as angles, channels, beams, etc. required to support all piping, ductwork, equipment and accessories installed under this Division. Use structural supports suitable for equipment specified or as indicated. In all cases, support design will be based upon data contained in manufacturer's catalog.

D. Openings: Arrange for necessary openings in buildings to allow for admittance and reasonable maintenance or replacement of all equipment furnished under this Contract.

END OF SECTION 23 05 00

SECTION 23 05 93

TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Air Systems:

1. Vehicle Exhaust Systems
2. Apparatus Bay Exhaust Systems.

1.2 SCOPE

A. Furnish the professional services of a qualified and approved balancing and testing firm to perform the work of this specification section.

B. The work of this section includes but is not necessarily limited to:

1. Testing and balancing exhaust fans.
2. Working directly with the control subcontractor to obtain proper system adjustments.

1.3 APPLICABLE CODES AND STANDARDS

A. SMACNA Manual for the Balancing and Adjustment of Air Distribution Systems.

B. AMCA Publication 203, Field Performance Measurements.

C. American Air Balancing Council (AABC) Recommended Procedures

D. National Environmental Balancing Bureau (NEBB) Recommended Procedures

1.4 QUALIFICATION OF THE BALANCING FIRM OR COMPANY

A. Subcontractor minimum qualifications include:

1. Demonstrate satisfactory completion of five projects of similar scope in the State of Alaska during the past five years. Provide references if requested.
2. NEBB Certified in Testing, Adjusting and Balancing of Air and Hydronic Systems.

1.5 TIMING OF WORK

A. Do not begin balancing and testing until the systems, including controls, are completed and in full working order.

B. Schedule the testing and balancing work in cooperation with other trades.

C. Complete the testing and balancing at least one week before the date of substantial completion and before any occupancy occurs

1.6 CONTRACTOR RESPONSIBILITY TO BALANCING AGENCY

A. Award the test and balance contract to an approved firm or company upon receipt of contract to allow the Balance and Testing Agency to schedule this work in cooperation with other trades involved and comply with completion date.

B. Put all ventilating systems, equipment and controls into full operation for the Balancing Agency and continue the operation of same during each working day of testing balancing.

C. Provide scaffolding, ladders and access to each system for proper testing balancing.

D. Ensure that the building enclosure is complete, including but not limited to, structural components, windows and doors installed, door hardware complete, ceilings complete, stair, elevator and mechanical shafts complete, roof systems complete, all plenums sealed, etc.

E. Make any changes in pulleys, belts and dampers, or add any dampers as required for correct balance as recommended by the Balance and Testing Agency at no additional cost to the Owner.

F. Require that the building control system firm provide access to hardware and software, or onsite technical support required to assist the TAB effort. The hardware and software or the onsite technical support shall be provided at no cost to the TAB firm.

1.7 REPORT

A. Certified Reports shall be included in project O & M manuals. Reports shall include: testing, adjusting, and balancing reports bearing the signature of the Test and Balance Agency Representative. The reports shall be certified proof that the systems have been tested, adjusted, and balanced in accordance with the referenced standards; are an accurate representation of how the systems have been installed; are a true representation of how the systems are operating at the completion of the testing, adjusting and balancing procedures; and are an accurate record of all final quantities measured, to establish normal operating values of the system. Follow the procedures

and format specified below:

1. Draft Reports: Upon completion of testing, adjusting and balancing procedures, prepare draft reports on the approved forms. Draft reports may be hand written, but must be complete, factual, accurate, and legible. Organize and format draft reports in the same manner specified for the final reports.

2. Final Reports: Upon verification and approval of the draft report; prepare final reports, typewritten, organized and formatted as specified below.

3. Report Format: Report forms shall be those standard forms prepared by the referenced standard for each respective item and system to be tested, adjusted and balanced. Fianl report shall be in electronic PDF format. Divide the contents of the report into the below listed divisions:

    a. General Information and Summary.
    b. Air Systems.
    c. Special Systems.
    d. System Deficiency Reports and Corrective Actions.

4. Report Contents: Provide the following minimum information, forms and data:

    a. General Information and Summary: Inside cover sheet to identify testing, adjusting, and balancing agency; contractor; owner, architect, engineer and project. Include addresses, contact names and telephone numbers. Also, include a certification sheet containing the name, address, telephone number and signature of the Certified Test and Balance Personnel. Include in this division a listing of the instrumentation used for the procedures along with the proof of calibration.

    b. The remainder of the report shall contain the appropriate forms containing as a minimum, the information indicated on the standard report forms prepared by the AABC for each respective item and system.

    c. Calibration Reports: Submit proof that all required instrumentation has been calibrated to tolerances specified in the referenced standards, within a period of six months prior to starting the project.

1.8 SUBMITTALS

A. Submit in accordance with Division 01.

B. Submit balancing agency qualifications and sample balancing forms.

C. Provide list of equipment to be used and date of last calibration.

D. Submit preliminary balance report a minimum of one week prior to balancing system.

PART 2 - PRODUCTS

2.1 INSTRUMENTS

A. Maintain all instruments accurately calibrated and in good working order. Use instruments with the following minimum performance characteristics.
   1. Air Velocity Instruments: Direct reading in feet per minute, 2% accuracy.
   2. Static Pressure Instruments: Direct reading in inches' water gauge, 2% accuracy.
   3. RPM Instruments: Direct reading in revolutions per minute, .5% accuracy; or revolution counter accurate within 2 counts per 1,000.
   4. Pressure Readout: Direct reading in feet of water or PSI, .5% accuracy.
   5. Temperature Instruments - Direct reading in degrees F, +.5% accuracy.
   6. Sound Measuring Instrument: Octave Band Analyzer which essentially complies to AASA Standards SI.6 1960 with a range of 24DB to 150 DB sound pressure level ref. .0002 microbar. Calibrate sound test instrument before use to a closed coupler and a driving loudspeaker that produces a known-sound pressure level at the microphone of the analyzer.

PART 3 - EXECUTION

3.1 GENERAL PROCEDURES

A. Start with new, clean filters.

B. Coordinate adjustments of automatically operated dampers and valves to operate as specified, indicated and/or noted.

C. Use manufacturer's ratings on all equipment to make required calculations.

D. Make final adjustments for each space per heating or cooling comfort requirement. State reason for variance from design CFM, i.e., "too noisy", "drafty", etc.

E. Mark equipment and balancing device settings (including damper-control positions, valve position indicators, fan-speed-controls, and similar controls and devices) with paint or other suitable permanent identification material to show final settings.

3.2 REQUIREMENTS FOR ALL AIR HANDLING SYSTEMS

A. Identify each diffuser, grille and register as to location and area.

B. Identify and list size, type and manufacturer of diffusers, grilles, registers and all testing equipment.

C. In readings and tests of diffusers, grilles and registers, include required FPM velocity and required CFM and test CFM after adjustments. If test apparatus is designed to read CFM directly, velocity reading may be omitted. Identify test apparatus used. Identify wide open (W.O.) runs.

D. Check and record the following items:
1. Operating suction and discharge pressure.
2. Full nameplate data of all equipment.
3. Rated and actual running amperage and voltage of all motors.
4. Drive data including sheaves and belts and adjustments.
5. Electrical overloads/heaters sizes and ranges of motors.

3.3 BALANCING EXHAUST DUCTWORK

A. Analyze system and identify major branches. Tabulate design CFM for each branch.

B. Select the branch which appears to be the longest run from the fan or to have the highest static pressure requirements.

C. Adjust other branch dampers or the fan to establish 110% design air flow through the selected branch.

D. Adjust the air flow through each air inlet on the selected branch to within +5% of the requirements so that at least one branch damper serving an inlet (or outlet) is wide open.

E. Proceed to another branch and set up 110% design airflow. Balance each inlet or outlet to within +5% of requirements, again leaving at least one wide open run. Repeat this process until all branches are balanced 110% airflow.

F. Once each branch has been balanced at 110% flow with one wide open run on each branch, balance with branches together, leaving at least one branch damper wide open. At this point, adjust the fan delivery so that each branch is at about 110% design airflow. Adjust the branch dampers so that each inlet (or outlet) in the system is within 10% of the required airflow.

G. Adjust the fan for design airflow.

H. Read and record the airflow at each inlet and outlet.

I. Secure each branch damper and mark the balanced position of the damper quadrant.

END OF SECTION 23 05 93

SECTION 23 07 00

HVAC INSULATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Ductwork Insulation.

1.2 RELATED WORK

A. Section 23 05 00 – Common Work Results for HVAC Systems.

B. Section 23 31 00 – HVAC Ducts and Casings.

C. Section 23 33 00 – Air Duct Accessories.

1.3 SUBMITTALS

A. Submit product data under provisions of Division 01.

B. Include product description, thickness for each service, and locations.

C. Submit manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

A. Applicator: Company specializing in piping insulation application with three years minimum experience.

B. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.

C. Materials: Flame spread/smoke developed rating of 25/50 in accordance with UL 723, ASTM E84, or NFPA 255.

D. Factory fabricated fitting covers manufactured in accordance with ASTM C450.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Division 01 - 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. Shipment of materials from manufacturer to installation location shall be in weather tight transportation.

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

1.6 ENVIRONMENTAL REQUIREMENTS

A. Maintain ambient temperatures and conditions required by manufacturers of adhesive, mastics, and insulation cements.

1.7 FIELD MEASURMENTS

A. Verify field measurements prior to fabrication.

1.8 WARRANTY

A. Division 01- Execution and Closeout Requirements: Product warranties and product bonds.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Johns Manville.

B. Knauf.

C. Substitutions: Under provisions of Division 01.

2.2 INSULATION - DUCTWORK

A. Type D-A: Exterior FSK Duct Wrap: Flexible glass fiber; ASTM C553; commercial grade; 'k' value of 0.27 at 75º F, 0.6 lb./cu. ft. density. 0.00035 inch vinyl scrim facing with 2” stapling tab. Johns Manville “Microlite Standard Duct Wrap” or equal.

2.3 INSULATION ACCESSORIES

A. Adhesives: Waterproof and fire-retardant type.

B. Impale Anchors: Galvanized steel, 12 gauge, self-adhesive pad.

C. FSK Joint Tape; ASTM C1136 Foil-Scrim-Kraft (FSK) lamination coated with solvent acrylic pressure sensitive adhesive; capable of adhering to fibrous and sheet metal surfaces; tri-directionally reinforced 2x3 squares per inch fiberglass scrim; 9.5 mils thick, -40 to 240º F service temperatures; Venture Tape “1525CW” or approved equal.

PART 3 - EXECUTION

3.1 PREPARATION

A. Install materials ductwork has been tested and approved.

B. Clean surfaces for adhesives.

C. Prepare surfaces in accordance with manufacturer's recommendations.

3.2 INSTALLATION – DUCTWORK INSULATION

A. Install materials in accordance with manufacturer's instructions.

B. Provide insulation with vapor barrier when air conveyed may be below ambient temperature. Continue insulation with vapor barrier through penetration.

C. Exterior Insulation (Type D-A) Application:
   1. Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket.
   2. Secure insulation without vapor barrier with staples, tape, or wires.
   3. Install without sag on underside of ductwork. Use mechanical fasteners to prevent sagging. Secure insulation with mechanical fasteners on 15 inch centers maximum, on bottom and side of ductwork with dimension exceeding 20 inches. Seal vapor barrier penetrations by mechanical fasteners with vapor barrier

adhesive. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

4. Maximum 25% compression.

3.3 SCHEDULE - DUCTWORK

DUCTWORK	TYPE	INSULATION THICKNESS	FINISH
Exhaust Ducts	D-A	1”	FSK

END OF SECTION 23 07 00

SECTION 23 09 93

SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Combination CO/NO_2 Monitor

B. Source Capture Diesel Fume Extraction System.

C. Heat Recover Ventilators.

D. Condensation Lift Pump.

1.2 RELATED SECTIONS

A. Section 23 34 00 – HVAC Fans.

1.3 SYSTEM DESCRIPTION

A. This section defines the manner and method by which controls function. Requirements for each type of control system operation are specified. Equipment, devices, and system components required for control systems are specified in other sections.

1.4 SUBMITTALS

A. Submit under provisions of Division 01.

B. Submit diagrams indicating mechanical system controlled and control system components. Label with settings, adjustable range of control and limits. Include written description of control sequence.

B. Include flow diagrams for each control system, graphically depicting control logic.

1.5 PROJECT RECORD DOCUMENTS

A. Submit documents under provisions of Division 01.

B. Accurately record actual setpoints and settings of controls, including changes to sequences made after submission of shop drawings.

PART 2 – PRODUCTS

2.1 COMBINATION CO/NO_2 MONITOR

A. Enclosure: ASA 61 gray enameled 16 gauge steel

B. Supply Voltage: 120 VAC, 60 Hz

C. Dimensions: 8” x 8” x 5”

D. Weight: 10 lb.

E. Operating Temperature: -4°F to 104°F

F. Storage Temperature: -40°F to 149°F

G. Monitor Warranty: Two years

H. Relay Contacts: 2 or 4 DPDT 10A @ 250 VAC Res.

I. Alarm Thresholds: Set at Sensor Modules

J. Indicators (per Zone):
   1. Red LED – Alarm
   2. Yellow LED – Warning
   3. Green LED
      a. LED On – Run
      b. LED Flashing – Fault
      c. LED Off – Monitor Warranty: Two years

K. Recommended Mounting Height: 4-5 ft. A.F.F.

L. Remote Sensors:
   1. Detectable Gas – CO NO_2
   2. Sensor Type – Electromechanical
   3. Range – 0-100ppm CO, 0-3 ppm NO_2
   4. Sensor Warranty – CO, 3 Years NO_2 1 Year

M. Sensor Model AMC-1222 as manufactured by Armstrong Monitoring.

N. Monitor Model AMC-1AD1/2 Series as manufactured by Armstrong Monitoring.

PART 3 - EXECUTION

3.1 SOURCE CAPTURE DIESEL FUME EXTRACTION SYSTEM

A. Alarms:
   1. None

B. Manual Control and Indication.
   1. Hand, Off, Auto Control and Indication

C. Automatic Control.
   1. Upon detection of vehicle exhaust in either of the flexible exhaust drops the via a duct mounted pressure sensor the pressure blower shall start.
   2. The pressure blower shall run for a minimum of five (5) minutes, (Adjustable).

D. Manual Control.
   1. Upon being placed in manual the pressure blower shall start and operate until turned off.

3.2 APPERATUS BAY EXHAUST EXTRACTION FANS - EF-1 & EF-2

A. Alarms:
   1. None

B. Manual Control and Indication.
   1. On and Off Indication

C. CO/NO2 override sequence.
   1. Upon detection of carbon monoxide greater than 25 ppm and/or nitrogen dioxide greater than 1 ppm from any zone sensor; the outside air control damper shall open and the corresponding exhaust fan unit shall start. System operates for a minimum of 5 minutes until the threshold concentration drops below warning alarm threshold. Once below 25 PPM CO and or 1 PPM NO2 for five minutes the exhaust fan shall stop and the outside air control damper shall close.

D. Manual override sequence.
   1. Upon activation of the countdown timer the outside air damper shall open and the corresponding exhaust fan shall start. Once the time setting has expired the exhaust fan shall stop and the outside air damper shall close.

3.3 HEAT RECOVERY VENTILATORS - HRV-1 & HRV-2

A. Alarms:
   1. None

B. Manual Control and Indication.

1. On-Off indication.
2. Timer setting.

C. Automated Control:

1. The HRV shall run continuously.
2. Push button Initiates high speed ventilation of 20, 40 or 60 minutes

3.4 LIFT PUMP – LP-1

A. Alarms:

1. None

B. Manual Control and Indication.

1. None.

C. Automatic Control.

1. The packaged integral level controls shall cycle the pump on and off.

END OF SECTION 23 09 93

SECTION 23 31 00

HVAC DUCTS AND CASINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Duct Materials.
   2. Ductwork Fabrication.

1.2 RELATED SECTIONS

A. Section 23 07 00 – HVAC Insulation: Product requirements for external ductwork insulation.

B. Section 23 33 00 - Air Duct Accessories: Product requirements for duct accessories for placement by this section.

1.3 DEFINITIONS

A. Duct Sizes: Inside clear dimensions. For lined ducts, maintain sizes inside lining.

B. Low Pressure: Three pressure classifications: ½ inch WG positive or negative static pressure and velocities less than 2,000 fpm; 1 inch WG positive or negative static pressure and velocities less than 2,500 fpm and 2 inch WG positive or negative static pressure and velocities less than 2,500 fpm.

1.4 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.

1.5 SUBMITTALS

A. See General Conditions and the General Requirements in Division 01 regarding submittals.

B. Product Data: Submit data for duct materials, duct liner, duct connector.

1.6 CLOSEOUT SUBMITTALS

A. Division 01 - 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.

1.7 QUALITY ASSURANCE

A. Perform Work in accordance with SMACNA - HVAC Duct Construction Standards - Metal and flexible.

B. Maintain one copy of each document on site.

1.8 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' experience.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Division 01 - 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.

1.10 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.11 WARRANTY

A. Division 01 - Execution and Closeout Requirements: Product warranties and product bonds.

PART 2 - PRODUCTS

2.1 DUCT MATERIALS

A. Galvanized Steel Ducts: ASTM A653/A653M galvanized steel sheet, lock-forming quality, having G90 zinc coating of in conformance with ASTM A90/A90M.

B. Fasteners: Rivets, bolts, or sheet metal screws.

C. Hanger Rod: ASTM A36/A36M; steel threaded both ends, threaded one end, or continuously threaded.

2.2 LOW PRESSURE DUCTWORK FABRICATION

A. Fabricate and support rectangular ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and ASHRAE handbooks, except as indicated. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

B. Size round ducts installed in place of rectangular ducts in accordance with ASHRAE table of equivalent rectangular and round ducts. No variation of duct configuration or sizes permitted except by written permission.

C. 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 turning vanes.

D. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30° divergence upstream of equipment and 45°convergence downstream.

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. Provide easements where low pressure ductwork conflicts with piping and structure. Where easements exceed 10 percent duct area, split into two ducts maintaining original duct area.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Division 01 - 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 12” and smaller.

D. Install duct hangers and supports in accordance with Section 230500.

E. Use double nuts and lock washers on threaded rod supports.

3.3 INTERFACE WITH OTHER PRODUCTS

A. Connect air outlets and inlets to supply ducts directly.

3.4 SCHEDULES

A. Ductwork Material Schedule:

Air System	Material
Supply Air	Steel
Return Air	Steel
Exhaust	Steel

END OF SECTION 23 31 00

SECTION 23 33 00

AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Volume Control Dampers.
   2. Control Dampers
   3. Turning Vanes.
   4. Splitter Vanes.

1.2 RELATED SECTIONS

A. Section 23 31 00 - HVAC Ducts and Casings: Requirements for duct construction and pressure classifications.

1.3 REFERENCES

A. Air Movement and Control Association International, Inc.:
   1. AMCA 500 - Test Methods for Louvers, Dampers, and Shutters.

B. Sheet Metal and Air Conditioning Contractors:
   1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.

1.4 SUBMITTALS

A. Division 01 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data for shop fabricated assemblies and hardware used.

C. Product Data: Submit for the following. Include where applicable electrical characteristics and connection requirements.
   1. Volume control dampers.

1.5 CLOSEOUT SUBMITTALS

A. Division 01 - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of access doors and test holes

1.6 QUALIFICATIONS

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

1.7 DELIVERY, STORAGE, AND HANDLING

A. Division 01 - Product Requirements: Product storage and handling requirements.

B. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly indicating manufacturer and material.

C. Storage: Store materials in a dry area indoor, protected from damage.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.9 COORDINATION

A. Division 01 - Administrative Requirements: Coordination and project conditions.

B. Coordinate Work where appropriate with building control Work.

1.10 WARRANTY

A. Division 01 - Execution and Closeout Requirements: Product warranties and product bonds.

1.11 COMPLETION REQUIREMENTS

A. In accordance with the General Conditions and the General Requirements in Division 01, Project Closeout; before acceptance and final payment, the Contractor shall furnish:
   1. Accurate project record drawings, shown in red ink on prints, showing all changes from the original plans made during installation of the work.
   2. Contractors One Year Warranty.
   3. All Manufacturers' Guarantees.
   4. Operation and Maintenance Manuals.

PART 2 - PRODUCTS

2.1 CONTROL DAMPERS – ACCEPTABLE MANUFACTURERS

A. Manufacturers:
   1. Greenheck.
   2. Ruskin.
   3. Substitutions: Division 01 – Product Requirements.

2.2 VOLUME CONTROL DAMPERS

A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated.

B. Except in round ductwork 12 inches and smaller, provide end bearings. On multiple blade dampers, provide oil-impregnated nylon or sintered bronze bearings.

C. Provide locking, indicating quadrant regulators on single and multi-blade dampers. Where rod lengths exceed 30 inches provide regulator at both ends.

D. On insulated ducts mount quadrant regulators on stand-off mounting brackets, bases, or adapters.

2.3 CONTROL DAMPERS – ACCEPTABLE MANUFACTURERS

A. Manufacturers:
   1. Ruskin.
   2. Greenheck.
   3. Substitutions: Division 01 – Product Requirements.

2.4 CONTROL DAMPERS

A. Multi-blade, opposed blade action, control dampers of extruded aluminum, with airfoil type blades of maximum six inch width, blades positioned across short air opening dimension, field replaceable extruded vinyl sealed edges, linked together in rattle-free manner, non-corrosive molded synthetic bearings, square or hexagonal axles for positive locking connection to blades and linkage, with documented leakage rate not to exceed 6 CFM/sq. ft. at 4” W.G.

2.5 TURNING VANES

A. Single Width: Single galvanized turning vane with 2 inch radius and minimum 1" trailing straight leg.

2.6 SPLITTER VANES

A. Fabricate splitter dampers of material same gauge as duct to 24 inches size in either direction, and two gauges heavier for sizes over 24 inches.

B. Fabricate splitter dampers of single thickness sheet metal to streamline shape. Secure blade with continuous hinge or rod. Operate with minimum 1/4 inch diameter rod in self-aligning, universal joint action flanged bushing with set screw.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Division 01 - Administrative Requirements: Coordination and project conditions.

B. Verify ducts and equipment installations are ready for accessories.

3.2 INSTALLATION

A. Install in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible. Refer to Section 23 31 00 for duct construction and pressure class.

END OF SECTION 23 33 00

SECTION 23 34 00

HVAC FANS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Direct Driven Backward Inclined Centrifugal Inline Fans.
   2. Direct Drive Wall Mounted Centrifugal Exhaust Fans.
   3. Heat Recovery Ventilators.

B. Related Sections:
   1. Section 23 05 00 - Common Work Results for HVAC.
   2. Section 23 05 93 – Testing, Adjusting and Balancing.
   3. Section 23 07 00 - HVAC Insulation.
   4. Section 23 31 00 - HVAC Ducts and Casings.
   5. Section 23 33 00 - Air Duct Accessories.
   6. Division 26 - Equipment Wiring Connections: Execution and product requirements for connecting equipment specified by this section.

1.2 SUBMITTALS

A. Submit product data under provisions of Division 01.

B. Manufacturer's Installation Instructions: Submit manufacturer’s instructions.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

1.4 QUALITY ASSURANCE

A. Performance Ratings: Conform to AMCA 210 [and bear AMCA Certified Rating Seal.]

B. Sound Ratings: AMCA 301, tested to AMCA 300.

C. UL Compliance: UL listed and labeled, designed, manufactured, and tested in accordance with UL 705.

D. Balance Quality: Conform to AMCA 204.

1.5 QUALIFICATIONS

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

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Division 01 in factory-fabricated protective containers, with factory-installed shipping skids and lifting lugs.

B. Protect motors, shafts, and bearings from weather and construction dust.

1.7 FIELD MEASUREMENTS

A. Verify field measurements prior to installation.

1.8 WARRANTY

A. Provide warranty under provisions of Division 01.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACURERS – FANS

A. Greenheck.

B. Acme.

C. Penn.

D. Substitutions: Under the provisions of division 01.

2.2 DIRECT DRIVEN BACKWARD INCLINED CENTRIFUGAL INLINE FANS

A. General Description:
   1. Base fan performance at standard conditions (density 0.075 Lb/ft3).
   2. Normal operating temperature up to 130 Fahrenheit.
   3. Each fan shall bear a permanently affixed manufacture's engraved metal nameplate containing the model number and individual serial number.

B. Wheel:
   1. Non-overloading, backward inclined centrifugal wheel.
   2. Constructed of Aluminum.
   3. Statically and dynamically balanced in accordance to AMCA Standard 204-05.
   4. The wheel cone and fan inlet will be matched and shall have precise running tolerances for maximum performance and operating efficiency.
   5. Single thickness blades are securely riveted or welded to a heavy gauge back plate and wheel cone.

C. Motors:
   1. Electronically Commutated.
   2. Motor enclosure: Open drip proof.
   3. Motor to be a DC electronic commutation type motor (ECM) specifically designed for fan applications.
   4. Motors are permanently lubricated, heavy duty ball bearing type to match with the fan load and pre-wired to the specific voltage and phase.
   5. Internal motor circuitry to convert AC power supplied to the fan to DC power to operate the motor.
   6. Motor shall be speed controllable down to 20% of full speed (80% turndown). Speed shall be controlled by either a potentiometer dial mounted at the motor or by a 0-10 VDC signal.
   7. Motor shall be a minimum of 85% efficient at all speeds.

D. Housing/Cabinet Construction:
   1. Square design constructed of heavy gauge galvanized steel and shall include square duct mounting collars.
   2. Housing and bearing supports shall be constructed of heavy gauge bolted and welded steel construction to prevent vibration and to rigidly support the shaft and bearing assembly.
   3. Galvanized Construction material.

E. Housing Supports and Drive Frame:
   1. Housing supports are constructed of structural steel with formed flanges
   2. Drive frame is welded steel which supports the motor.

F. Disconnect Switches:
   1. NEMA rated: NEMA 1: indoor application no water. Factory standard.
   2. Positive electrical shut-off.
   3. Wired from fan motor to junction box.

G. Duct Collars:
   1. Square design.
   2. Inlet and discharge collars.

H. Access Panel:
   1. Two sided access panels.
   2. Located perpendicular to the motor mounting panel

2.3 DIRECT DRIVE WALL MOUNTED CENTRIFUGAL EXHAUST FANS.

A. General Description:
   1. Discharge air directly away from the mounting surface.
   2. Each fan shall bear a permanently affixed manufacture's engraved metal nameplate containing the model number and individual serial number.

B. Wheel:
   1. Material Type: Aluminum.
   2. Non-overloading, backward inclined centrifugal wheel.
   3. Statically and dynamically balanced in accordance to AMCA Standard 204-05.
   4. The wheel cone and fan inlet will be matched and shall have precise running tolerances for maximum performance and operating efficiency.

C. Motors:
   1. Electronically Commutated Motor.
   2. Motor enclosure: Open drip proof.
   3. Motor to be a DC electronic commutation type motor (ECM) specifically designed for fan applications.
   4. Motors are permanently lubricated, heavy duty ball bearing type to match with the fan load and pre-wired to the specific voltage and phase.
   5. Internal motor circuitry to convert AC power supplied to the fan to DC power to operate the motor.
   6. Motor shall be speed controllable down to 20% of full speed (80% turndown). Speed shall be controlled by either a potentiometer dial mounted at the motor or by a 0-10 VDC signal.
   7. Motor shall be a minimum of 85% efficient at all speeds.

D. Housing:
   1. Constructed of heavy gauge aluminum includes exterior housing, curb cap, windband, and motor compartment housing.
   2. Housing shall have a rigid internal support structure.
   3. Windband to be one piece uniquely spun aluminum construction with rolled bead.
   4. Drive frame assemblies shall be constructed of heavy gauge steel and mounted on vibration isolators.
   5. Breather tube shall be 10 square inches in size for fresh air motor cooling, and designed to allow wiring to be run through it.

E. Motor Cover:
   1. Constructed of aluminum

F. Vibration Isolation:
   1. Double studded or pedestal style true isolators.
   2. No metal to metal contact.
   3. Sized to match the weight of each fan.

G. Disconnect Switches:
   1. NEMA rated: NEMA 3R.
   2. Positive electrical shut-off
   3. Wired from fan motor to junction box installed within motor compartment.

H. Options/Accessories:
   1. Aluminum bird screen.

2.4 ACCEPTABLE MANUFACTURERS – HEAT RECOVER VENTILATORS

A. Lifebreath.

B. Venmar.

C. American Aldes.

D. Substitutions: Under provisions of Division 01.

2.5 HEAT RECOVER VENTILATORS

A. Case: 20 gauge galvanized steel with enameled finish lined with rigid, foil faced fiberglass insulation.

B. Heat Recovery Module: Corrosion proof aluminum core with extended surface area; co-extrusion tracks fitted to each corner ensure low cross leakage.

C. Filters: Washable reticulated foam filters.

D. Controls:
   1. Case mounted on-off rocker switch:
   2. Remote wall mounted controller 20/40/60 minute timer initiates high speed ventilation.

E. Fans: Centrifugal blowers with high efficiency PSC motors.

F. Defrost: Activation of timed defrost mode is based on outside air temperature. During defrost, an insulated damper blocks the outside air supply while allowing warm air from the dorm/dayroom to recirculate.

G. Noise and Vibration: Rubber isolation of motor to housing to case and case to house. Unit is supplied with fabric duct connectors.

H. Balancing: Unit to have integral pressure and balancing components.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install fans and heat recovery ventilators in strict compliance with the manufacturer's instructions.

END OF SECTION 23 34 00

SECTION 23 35 13

SOURCE CAPTURE DIESEL FUME EXTRACTION SYSTEM

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Fume Extraction Accessories.

B. Fume Extraction Ductwork.

1.2 RELATED WORK

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

B. Section 23 31 00 – HVAC Ducts and Casing.

C. Section 23 09 93 – Sequence of Operation.

D. Division 26 - Wiring Connection: Execution requirements for connecting equipment specified by this section.

1.3 REFERENCES

A. American Society for Testing and Materials:
   1. ASTM A90/A90M - Standard Test Method for Weight Mass of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
   2. ASTM A167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
   3. ASTM A569/A569M - Standard Specification for Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip Commercial Quality.
   4. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   5. ASTM A924/A924M - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

B. American Welding Society:
   1. AWS D9.1 - Sheet Metal Welding Code.

C. National Fire Protection Association:
   1. NFPA 91 - Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids.

D. Sheet Metal and Air Conditioning Contractors:
   1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.
   2. SMACNA - Rectangular Industrial Duct Construction Standards.
   3. SMACNA - Round Industrial Duct Construction Standards.

E. Underwriters Laboratories Inc.:
   1. UL 181 - Factory-Made Air Ducts and Connectors.
   2. UL 214 - Tests for Flame-Propagation of Fabrics and Films.

1.4 SUBMITTALS

A. Provide information on fans and flexible hose for equipment connections.

B. Provide technical data and shop drawings for spark detection and extinguishing system.

C. Provide product data for source capture diesel fume extraction system

1.5 OPERATION AND MAINTENANCE MANUAL

A. Submit operation and maintenance data under provision of Division 01.

B. Include installation instruction, operating instruction, assembly views, lubrication instructions, wiring diagrams and replacement parts list.

C. Provide as-built information cut-sheets included in original Submittal.

1.6 QUALITY ASSURANCE

A. Provide power connections for all dust collection equipment and associated controls and safeties.

1.7 QUALIFICATIONS

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

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site under provisions of Division 01.

B. Store and protect products under provisions of Division 01.

C. Deliver and store valves in shipping containers with labeling in place.

1.9 COORDINATION

A. Coordinate with all disciplines to provide a complete and operating system.

B. Provide all electrical and control wiring for Source Capture Diesel Fume Extraction System accessories including, but not limited to the control panel and pressure sensors.

PART 2 PRODUCTS

2.1 DIESEL FUME EXTRACTION SYSTEM ACCESSORIES

A. General: Non-combustible or conforming to requirements for Class 1 air duct materials, or UL 181.

B. Equipment Flexible Hose: Type NU flex hose.

2.2 DIESEL FUME EXTRACTION SYSTEM DUCTWORK

A. Galvanized: ASTM A653 with a G90 rating, max. service temperature is 390° F. Finish 304SS or 316SS: Finish meets ASTM A240, Temp rating is 1100° F.

B. Ducting and its components shall have been tested to +/- 80" WG on pipe diameters 3" to 20" and +80" / -50" WG on sizes 22" to 24", using 22ga material thickness

C. Clamping rolled edged duct: Clamps shall be constructed with an over-center, spring-lever action for quick connecting of two pieces of ducting. A retaining pin shall be inserted in the handle and an eyelet on the clamp as a safety feature to ensure the handle does not prematurely come undone. When closing the clamp, the internal seal shall be compressed in such a manner as to cover both rolled beads for optimum sealing capacity in a full 360° pattern.

D. All ductwork to be round ductwork, fabricated and supported in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, 10 inch

pressure class and ACGIH Industrial Ventilation Manual except as indicated on Drawings.

E. Construct T's, bends, and elbows with minimum radius 1-1/2 times duct width at centerline except as noted on the drawings.

F. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.

G. Nordfab QF or approved equal.

PART 3 EXECUTION

3.1 INSTALLATION – DIESEL FUME EXTRACTION SYSTEM

A. Install all products in accordance with manufacturer’s recommendations and listings.

B. Install in accordance with SMACNA Round Industrial Duct Construction Standard except as indicated on Drawings.

C. Provide flex hose connections and apparatus tailpipe adaptors sized to fit apparatus exhaust outlets.

D. Provide appropriate mounting brackets and support legs as required.

E. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

F. Do not operate fans until ductwork is clean.

G. Provide and install all electrical and control wiring for the diesel fume extraction system controller starter box.

END OF SECTION 23 35 13

SECTION 23 37 00

AIR OUTLETS AND INLETS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Round Ceiling Diffusers.

B. Heavy Duty Bar Grilles.

C. Louvers.

1.2 QUALITY ASSURANCE

A. Test and rate performance of air outlets and inlets in accordance with ADC Equipment Test Code 1062 and ASHRAE 70.

B. Test and rate performance of louvers in accordance with AMCA 500.

1.3 REGULATORY REQUIREMENTS

A. Conform to ANSI/NFPA 90A.

B. Earthquake tabs, in seismic zones, in accordance with IBC Standards.

1.4 SUBMITTALS

A. Submit product data under provisions of Division 01.

B. Provide product data for items required for this project.

C. Review requirements of outlets and inlets as to size, finish, and type of mounting prior to submitting product data.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Lifebreath.

B. Titus.

C. American Aldes.

D. Substitutions: Under provisions of Division 01.

2.2 ROUND CEILING OUTLETS/INLETS, Type A & B

A. Suitable for supply and return/exhaust air.

B. Round, adjustable pattern to discharge air in 360 degree pattern.

C. Center adjustable cone spins In and out

D. Cool white, non-corrosive material.

2.3 HEAVY DUTY BAR GRILLE, Type C

A. Steel return bar grille with 38° fixed deflection bars parallel to the lshort dimension of the grille. Construction shall be of steel with a 1¼-inch border width on all sides and a minimum border gauge thickness of 16; bars shall be 14-gauge steel. Bars shall be reinforced by perpendicular, steel support bars spaced on 6-inch maximum centers.

B. Corners shall be welded with full penetration resistance welds with a reinforcing patch for extra strength. Screw holes shall be countersunk for a neat appearance.

C. Optional opposed-blade volume damper shall be constructed of heavy gauge steel. Damper must be operable from the face of the grille.

D. The grille finish shall be white.

2.4 ACCEPTABLE MANUFACTURERS - LOUVERS

A. Ruskin.

B. Greenheck.

C. Substitutions: Under provisions of Division 01.

2.5 LOUVERS

A. Provide 6 inch deep louvers with blades on 45 degree slope with center baffle and return bend, heavy channel frame, non-corroding bird screen with 3/4 inch square mesh.

B. Fabricate of 16 gauge galvanized steel or 12 gauge extruded aluminum, welded assembly, with factory baked enamel finish, color to be selected by Architect.

C. Provide frame type as appropriate for mounting in existing structure.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install items in accordance with manufacturers' instructions.

B. Check location of outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.

C. Install diffusers to ductwork with air tight connection.

D. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, regardless of whether dampers are specified as part of the diffuser, or grille and register assembly.

E. Paint ductwork visible behind air outlets and inlets matte black.

END OF SECTION 23 37 00

SECTION 26 05 00

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. General Requirements specifically applicable to Division 26, in addition to Division 01 provisions.

B. The electrical system equipment and installation shall comply with all provisions and requirements of this specification, as well as any and all applicable national, state and local codes and standards.

1.2 WORK SEQUENCE

A. Construct Work in sequence under provisions of Division 01.

1.3 COORDINATION

A. Coordinate the Work specified in this Division under provisions of Division 01.

1.4 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code, latest adopted edition including all state and local amendments.

B. NECA - Standard of Installation.

C. Electrical Reference Symbols: The Electrical "Legend" on drawings is standardized version for this project. All symbols shown may not be used on drawings. Use legend as reference for symbols used on plans.

D. Electrical Drawings: Drawings are diagrammatic; complimentary to the Architectural drawings; not intended to show all features of work. Install material not dimensioned on drawings in a manner to provide a symmetrical appearance. Do not scale drawings for exact equipment locations. Review Architectural, Civil, Structural, and Mechanical Drawings and adjust work to conform to conditions shown thereon. Field verification of dimensions, locations and levels is directed.

1.5 REGULATORY REQUIREMENTS

A. Conform to ANSI/NFPA 70.

B. Conform to the latest adopted edition of the International Building Code and the International Fire Code including all state and local amendments thereto.

C. Obtain electrical permits, plan review, and inspections from authority having jurisdiction.

1.6 SUBMITTALS

A. Submit inspection and permit certificates under provisions of Division 01.

B. Include certificate of final inspection and acceptance from authority having jurisdiction.

C. Submittal review is for general design and arrangement only and does not relieve the Contractor from any requirements of Contract Documents. Submittal not checked for quantity, dimension, fit or proper operation. Where deviations of substitute product or system performance have not been specifically noted in the submittal by the Contractor, provisions of a complete and satisfactory working installation is the sole responsibility of the Contractor.

D. In addition to requirements referenced in Division 01, the following is required for work provided under this division of the specification.
   1. Provide material and equipment submittals containing complete listings of material and equipment shown on Electrical Drawings and specified herein. Separate from work furnished under other divisions.
   2. Submittals shall be provided in PDF format with each section indexed in the PDF document. Submittals for Division 26 shall be complete and submitted at one time. Unless given prior approval, partial submittals will be returned unreviewed.
   3. Clearly identify all material and equipment by item, name or designation used on drawings and in specifications.
   4. Submit only pages which are pertinent; mark catalog sheets to identify pertinent products, referenced to Specification Section and Article number. Show reference standards, performance characteristics, and capacities; wiring diagrams and controls; component parts; finishes; dimensions; and required clearances.
   5. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the work. Delete information not applicable.
   6. Review submittals prior to transmittal; determine and verify field measurements, field construction criteria, manufacturer's catalog numbers, and conformance of submittal with requirements of Contract Documents.
   7. Coordinate submittals with requirements of work and of Contract Documents.
   8. Certify in writing that the submitted shop drawings and product data are in compliance with requirements of Contract Documents. Notify Architect/Engineer

in writing at time of submittal, of any deviations from requirements of Contract Documents.

9. Do not fabricate products or begin work which requires submittals until return of submittal with Architect/Engineer acceptance.
10. Equipment scheduled by manufacturer's name and catalog designations, manufacturer's published data and/or specification for that item, in effect on bid date, are considered part of this specification. Approval of other manufacturer's item proposed is contingent upon compliance therewith.

1.7 SUBSTITUTIONS

A. In accordance with the General Conditions and the General Requirements, Substitution and Product Options, all substitute items must fit in the available space, and be of equal or better quality including efficiency performance, size, and weight, and must be compatible with existing equipment.

1.8 PROJECT RECORD DRAWINGS

A. Maintain project record drawings in accordance with Division 01.

B. In addition to the other requirements, mark up a clean set of drawings as the work progresses to show the dimensioned location and routing of all electrical work which will become permanently concealed. Show routing of work in permanently concealed blind spaces within the building. Show complete routing and sizing of any significant revisions to the systems shown.

C. Record drawing field mark-ups shall be maintained on-site and shall be available for examination of the Owner’s Representative at all times.

1.9 OPERATION AND MAINTENANCE MANUALS

A. Provide operation and maintenance manuals for training of Owner's Representative in operation and maintenance of systems and related equipment. In addition to requirements referenced in Division 01, the following is required for work provided under this section of the specifications.

B. Manuals shall be separate from work furnished under other divisions. Prepare a separate chapter for instruction of each class of equipment or system. Index and clearly identify each chapter and provide a table of contents.

C. Unless otherwise noted in Division 01, provide one copy of all material for approval.

D. The following is the suggested outline for operation and maintenance manuals and is presented to indicate the extent of items required in manuals.

1. List chapters of information comprising the text. The following is a typical Table of Contents:
   a. Electrical power distribution.
   b. Lighting.
2. Provide the following items in sequence for each chapter shown in Table of Contents:
   a. Describe the procedures necessary for personnel to operate the system including start-up, operation, emergency operation and shutdown.
      1) Give complete instructions for energizing equipment and making initial settings and adjustments whenever applicable.
      2) Give step-by-step instructions for shutdown procedure if a particular sequence is required.
      3) Include test results of all tests required by this and other sections of the specifications.
   b. Maintenance Instructions:
      1) Provide instructions and a schedule of preventive maintenance, in tabular form, for all routine cleaning and inspection with recommended lubricants if required for the following:
         a) Lighting fixtures.
         b) Distribution equipment.
      2) Provide instructions for minor repair or adjustments required for preventive maintenance routines, limited to repairs and adjustments which may be performed without special tools or test equipment and which requires no special training or skills.
      3) Provide manufacturers' descriptive literature including approved shop drawings covering devices used in system, together with illustrations, exploded views, etc. Also include special devices provided by the Contractor.
      4) Provide any information of a maintenance nature covering warranty items, etc., which have not been discussed elsewhere.
      5) Include list of all equipment furnished for project, where purchased, technical representative if applicable and a local parts source with a tabulation of descriptive data of all electrical-electronic spare parts and all mechanical spare parts proposed for each type of equipment or system. Properly identify each part by part number and manufacturer.

1.10 DEMONSTRATION OF ELECTRICAL SYSTEMS

A. During substantial completion inspection:
   1. Conduct operating test for approval under provisions of Division 01.
   2. Demonstrate installation to operate satisfactorily in accordance with requirements of Contract Documents.
   3. Should any portion of installation fail to meet requirements of Contract Documents, repair or replace items failing to meet requirements until items can be demonstrated to comply.

4. Have instruments available for measuring light intensities, voltage and current values, and for demonstration of continuity, grounds, or open circuit conditions.
5. Provide personnel to assist in taking measurements and making tests.

1.11 WARRANTY

A. In addition to the requirements of Division 01, or as specified in other sections. Warrant all materials, installation and workmanship for one (1) year from date of acceptance.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. All Materials and Equipment shall be new.

B. All Materials and Equipment shall be listed by Underwriter's Laboratories or equivalent third party listing agency for the use intended.

C. Materials and Equipment shall be acceptable to the authority having jurisdiction as suitable for the use intended when installed per listing and labeling instructions.

D. No materials or equipment containing asbestos in any form shall be used. Where materials or equipment provided by this Contractor are found to contain asbestos such items shall be removed and replaced with non-asbestos containing materials and equipment at no cost to the Owner.

E. In describing the various items of equipment, in general, each item will be described singularly, even though there may be numerous similar items.

PART 3 - EXECUTION

3.1 WORKMANSHIP

A. Install Work using procedures defined in NECA Standard of Installation and/or the manufacturer's installation instructions.

3.2 TESTS

A. Notify the Owner’s representative at least 72 hours prior to conducting any tests.

B. Perform additional tests required under other sections of these specifications.

C. Perform all tests in the presence of the Owner's representative.

3.3 PENETRATIONS OF FIRE BARRIERS

A. Related information to this section appears in Division 07, Fire Stopping.

END OF SECTION 26 05 00

SECTION 26 05 05

SELECTIVE DEMOLITION FOR ELECTRICAL

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Electrical Demolition.

1.2 RELATED SECTIONS

A. Division 01 - Alteration Project Procedures.

B. Division 02 - Minor Demolition for Remodeling.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching and extending work: As specified in individual Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify field measurements and circuiting arrangements are as shown on Drawings.

B. Verify that abandoned wiring and equipment serve only abandoned facilities.

C. Demolition Drawings are based on a non-destructive walkthrough. Report discrepancies to Architect/Engineer before disturbing existing installation.

D. Beginning of demolition means installer accepts existing conditions.

3.2 PREPARATION

A. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.

B. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

3.3 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Demolish and extend existing electrical work under provisions of Division 01, Division 02, and this Division.

B. Remove, relocate, and extend existing installations to accommodate new construction.

C. Remove abandoned wiring to source of supply.

D. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.

E. Where abandoned conduit is installed below existing slab not scheduled for demolition, remove the conductors, cut conduit flush with floor, and patch surface.

F. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.

G. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

H. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.

I. Repair adjacent construction and finishes damaged during demolition and extension work. T-bar ceiling tiles damaged under normal construction conditions or having voids where junction boxes were removed shall be replaced by the Contractor.

J. Maintain access to existing electrical installations which remain active.

K. Extend existing installations using materials and methods as specified.

L. Where materials or equipment are to be turned over to Owner or reused and installed by the Contractor, it shall be the Contractor’s responsibility to maintain condition of materials and equipment equal to the existing condition of the equipment before the work began. Repair or replace damaged materials or equipment at no additional cost to the Owner.

M. Relocate existing lighting fixtures as indicated on Drawings. Test fixture to see if it is in good working condition before installation at new location.

3.4 EXISTING PANELBOARDS

A. Ring out circuits in existing panel affected by the Work. Where additional circuits are needed, reuse circuits available for reuse. Install new breakers.

B. Tag unused circuits as spare.

C. Where existing circuits are indicated to be reused, use sensing measuring devices to verify circuits feeding Project area or are not in use.

D. Remove existing wire no longer in use from panel to equipment.

E. Provide new updated directories where more than three circuits have been modified or rewired.

3.5 CLEANING AND REPAIR

A. Clean and repair existing materials and equipment which remain or are to be reused.

B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions.

3.6 INSTALLATION

A. Install relocated materials and equipment under the provisions of Division 01.

3.7 DISPOSAL

A. Dispose of all hazardous waste in accordance with all local, State and Federal requirements.

END OF SECTION 26 05 05

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Building Wire.

B. Cable.

C. Wiring Connections and Terminations.

1.2 RELATED SECTIONS

A. Section 26 05 53 – Identification for Electrical Systems.

1.3 REFERENCES

A. Federal Specification FS-A-A59544 – Cable and Wire, Electrical (Power, Fixed Installation).

B. Federal Specification FS-J-C-30B – Cable Assembly, Power, Electrical.

C. ANSI/NEMA WC 70-2009 – Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy.

D. NETA ATS – Acceptance testing specifications for Electrical Power Distribution and Systems.

E. NFPA 70 – National Electrical Code.

F. NFPA 262 – Standard Method of test for flame travel and smoke of wires and cables for use in air-handling spaces.

G. UL 62 – Flexible Cords and Cables.

H. UL 83 – Thermoplastic Insulated Wire and Cable.

I. UL 1479 – Standard for Fire Tests of Through Wall Penetration Fire Stops.

J. UL 1569 – Standard for Metal Clad Cable.

K. UL 1581 – Reference Standard for Electrical Wires, Cables and Flexible Cords.

1.4 SUBMITTALS

A. Submittals are not required for this Section.

1.5 QUALITY ASSURANCE

A. Provide wiring materials located in plenums with peak optical density not greater than 0.5, average optical density not greater than 0.15, and flame spread not greater than 5 feet (1.5m) when tested in accordance with NFPA 262.

PART 2 - PRODUCTS

2.1 BUILDING WIRE

A. Thermoplastic-insulated Building Wire: NEMA WC 70.

B. Feeders and Branch Circuits 6 AWG and Smaller: Copper conductor, 600 volt insulation, THHN/THWN or XHHW-2. 6 and 8 AWG, stranded conductor; smaller than 8 AWG, solid or stranded conductor.

C. Branch Circuit Wire Color Code:
   1. Color code wires by line or phase as follows:
      a. Black, red, blue and white for 120/208V systems.
   2. For conductors 6 AWG and smaller, insulation shall be colored. For conductors 4 AWG and larger, identify with colored phase tape at all terminals, splices, and boxes.
   3. Grounding conductors 6 AWG and smaller shall have green colored insulation.

D. Control Circuits: Copper, stranded conductor 600 volt insulation, THHN/THNN or XHHW-2.

E. Fire Alarm Notification Appliance Circuits: Copper, solid or stranded conductor 600 volt insulation, THHN/THNN or XHHW-2.

2.2 METAL CLAD CABLE

A. UL 83, 1063, 1479, 1569, and 1581 listed, meets Federal Specification A-A-59544 (formerly J-C-30B). UL rated for installation in cable trays and environmental air handling spaces. Fire wall rated for 1, 2, and 3-hour through penetrations.

B. Type MC Cable, Size 12 Through 10 AWG: Solid copper conductor, 600 volt thermoplastic insulation, rated 90º C dry, 75º wet, insulated green grounding conductor, and galvanized steel or aluminum armor over mylar.

C. Type MC Cable, Size 8 Through 1 AWG: Stranded copper conductor, 600 volt thermoplastic insulation, rated 90º C dry, 75º wet, insulated green grounding conductor, and galvanized steel or aluminum armor over mylar.

D. All metal clad cable shall be provided with color-coded insulation on all ungrounded conductors in accordance with NEC 210.5(C) and Part 3 of this section.

2.3 REMOTE CONTROL AND SIGNAL CABLE

A. Control Cable for Class 1 Remote Control and Signal Circuits: Copper conductor, 600 volt insulation, rated 90º C, individual conductors twisted together, shielded, and covered with an overall PVC jacket; UL listed.

B. Control Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 90º C, individual conductors twisted together, shielded or unshielded (as required), and covered with a PVC jacket; UL listed.

C. Plenum Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 90º C, individual conductors twisted together, shielded or unshielded (as required), and covered with a nonmetallic jacket; UL listed for use in air handling ducts, hollow spaces used as ducts, and plenums.

2.4 WIRING CONNECTIONS AND TERMINATIONS

A. For conductors 8 AWG and smaller:
   1. Dry interior areas: Spring wire connectors, pre-insulated “twist-on” rated 105 degrees C per UL 468C. Where stranded conductors are terminated on screw type terminals, install crimp insulated fork or ring terminals. Thomas & Betts Sta-Kon or equal.
   2. Motor connections: Spring wire connectors, pre-insulated “twist-on” rated 105 degrees C per UL 468C. Provide a minimum of 8 wraps of Scotch 33+ electrical tape around conductors and connector to eliminate connector back off.
   3. Wet or exterior: Spring wire connectors, pre-insulated “twist-on”, resin filled rated for direct burial per UL 486D.

B. For conductors 6 AWG and larger:
   1. Bus lugs and bolted connections: 600 V, 90 degrees C., two hole long barrel irreversible compression copper tin plated. Thomas & Betts or approved equal.
   2. Motor connection: 600 V, 90 degrees C., copper tin plated compression motor pigtail connector, quick connect/disconnect, slip on insulator. Thomas & Betts or approved equal.

3. Two way connector for splices or taps: 600 V, 90 degrees C., compression long barrel, copper tin plated. Thomas & Betts or approved equal. Insulate with Scotch 23 rubber insulating base covering and Scotch 33+ outer wrap.

PART 3 - EXECUTION

3.1 GENERAL WIRING METHODS

A. Use no wire smaller than 12 AWG for power and lighting circuits, and no smaller than 18 AWG for control wiring.

B. Use 10 AWG conductor for 20 ampere, 120 volt branch circuit home runs longer than 75 feet.

C. Splice only in junction or outlet boxes.

D. Neatly train and lace wiring inside boxes, equipment, and panelboards.

E. Wiring in lighting fixture channels shall be rated for 90º C minimum.

F. Do not share neutral conductors. Provide a dedicated neutral conductor for each branch circuit that requires a neutral.

3.2 WIRING INSTALLATION IN RACEWAYS

A. Pull all conductors into a raceway at the same time. Verify that raceway is complete and properly supported prior to pulling conductors. Use UL listed wire pulling lubricant for pulling 4 AWG and larger wires.

B. Install wire in raceway after interior of building has been physically protected from the weather and all mechanical work likely to injure conductors has been completed.

C. Do not install XHHW-2 conductors when ambient temperatures are below –5 degrees C and THHN/THWN conductors when ambient temperatures are below 0 degrees C.

D. Conductors shall be carefully inspected for insulation defects and protected from damage as they are installed in the raceway. Where the insulation is defective or damaged, the cable section shall be repaired or replaced at the discretion of the Owner and at no additional cost to the Owner.

E. Place an equal number of conductors for each phase of a circuit in same raceway or cable.

F. Route conductors from each system in independent raceway system and not intermix in the same raceway, enclosure, junction box, wireway, or gutter as another system unless otherwise shown on the plans.

G. No more than six current carrying conductors shall be installed in any homerun unless otherwise indicated on the drawings or without prior approval from the Engineer.

H. When two or more neutrals are installed in one conduit, identify each with the proper circuit number in accordance with Section 26 05 53.

3.3 CABLE INSTALLATION

A. Provide protection for exposed cables where subject to damage.

B. Support cables above accessible ceilings; do not rest on ceiling tiles. Use spring metal clips or cable ties to support cables from structure. Do not support cables from ceiling suspension system. Include bridle rings or drive rings.

C. Use suitable cable fittings and connectors.

3.4 WIRING CONNECTIONS AND TERMINATIONS

A. Stranded wire shall not be wrapped around screw terminals.

B. Splice only in accessible junction boxes.

C. Thoroughly clean wires before installing lugs and connectors.

D. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

E. Terminate spare conductors with twist on connectors or heat shrink insulation to proper voltage rating.

F. Control systems wiring in conjunction with mechanical, electrical or miscellaneous equipment to be identified in accordance with wiring diagrams furnished with equipment.

G. Do not exceed manufacturer's recommended pull tensions.

3.5 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Division 01.

B. Inspect wire and cable for physical damage and proper connection.

C. Torque conductor connections and terminations to manufacturer's recommended values.

3.6 WIRE AND CABLE INSTALLATION SCHEDULE

A. All Locations: Building wire and/or remote control and signal cable in raceways.

B. At the Contractor’s option, Metal Clad cable may be used for branch circuit wiring where installed concealed behind walls and/or above accessible ceilings. Exposed/surface routed MC cable is not permitted.

END OF SECTION 26 05 19

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Power System Grounding.

B. Electrical Equipment and Raceway Grounding and Bonding.

1.2 RELATED SECTIONS

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements, Section 26 05 00 – Common Work Results for Electrical, Division 27 and Division 28.

B. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.

1.3 REFERENCE STANDARDS

A. ANSI/NFPA 70 – National Electrical Code.

B. ASTM B 3 – Standard Specification for Soft or Annealed Copper Wire.

C. IEEE Std 142 – Recommended Practice for Grounding of Industrial and Commercial Power System.

D. UL 467 – Standard for Grounding and Bonding Equipment.

1.4 SUBMITTALS

A. Submittals not required for this Section.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Bonding Conductors: Solid bare copper wire for sizes No. 8 AWG and smaller diameter. Stranded bare copper wire for sizes No. 6 AWG and larger diameter. Conductors may be insulated conductors if used provide green insulation.

B. Grounding Conductors: Copper conductor bare or green insulated.

C. Mechanical Grounding and Bonding Connectors: Non-reversible crimp type lugs only. Use factory made compression lug for all terminations.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide a separate, insulated equipment-grounding conductor in all feeder and branch circuits. Terminate each end on a grounding lug, bus, or bushing. Multiple conductors on single lug not permitted. Each grounding conductor shall terminate on its own terminal lug.

B. Bond together exposed non-current carrying metal parts of electrical equipment, metal raceway systems, grounding conductor in raceways and cables, receptacle ground connectors, and plumbing and fuel systems.

C. Grounding conductors for branch circuits shall be sized in accordance with NEC, except minimum size grounding conductor shall be No. 12 AWG.

D. Grounding conductor is in addition to neutral conductor and in no case shall neutral conductor serve as grounding means.

3.2 FIELD QUALITY CONTROL

A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.

B. Continuity Test: Continuity test shall be performed on all power receptacles to ensure that the ground terminals are properly grounded to the facility ground system.

END OF SECTION 26 05 26

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Conduit Supports.

B. Formed Steel Channel.

C. Spring Steel Clips.

1.2 RELATED SECTIONS

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements, and Section 26 05 00 – Common Work Results for Electrical.

1.3 REFERENCES

A. International Building Code (IBC), Chapter 16 – Structural Design.

1.4 SUBMITTALS

A. Submittals not required for this Section.

1.5 QUALITY ASSURANCE

A. Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry.

PART 2 - PRODUCTS

2.1 CONDUIT SUPPORTS

A. Manufacturers:

1. Allied Tube & Conduit Corp.
2. Minerallac Fastening Systems.
3. O-Z Gedney Co.
4. Substitutions: per Division 01

B. Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.

C. Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.

D. Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt to tighten.

E. Conduit clamps - general purpose: One-hole malleable iron for surface mounted conduits.

F. Cable Ties: High strength nylon temperature rated to 185 degrees F. self-locking.

2.2 FORMED STEEL CHANNEL

A. Manufacturers:
1. B-Line Systems.
2. Allied Tube & Conduit Corp.
3. Unistrut Corp.
4. Substitutions: per Division 01.

B. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

PART 3 - EXECUTION

3.1 PREPARATION

A. Obtain permission from Owner’s Representative before using powder-actuated anchors.

B. Obtain permission from Owner’s Representative before drilling or cutting structural members.

3.2 INSTALLATION - GENERAL

A. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using precast insert system, expansion anchors, preset inserts, beam clamps, or spring steel clips.

B. Use toggle bolts or hollow wall fasteners in hollow masonry partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.

C. Do not support raceways, low voltage pathways, cables, telecommunication pathways or boxes from ceiling suspension wires or suspended ceiling systems. Provide support from building structure independently to allow ceiling removal and replacement without removal of electrical system. If dedicated support wires are used, wires and wire clips must be painted or color-coded.

D. Do not fasten supports to piping, ductwork, mechanical equipment, conduit, or ceiling suspension system.

E. Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.

F. Securely fasten fixtures and equipment to building structure in accordance with manufacturer's recommendations and to provide necessary earthquake anchorage.

G. Provide wall attached fixtures and equipment weighing less than 50 pounds with backing plates of at least 1/8" x 10" sheet steel or 2" x 10" fire retardant treated wood securely built into the structural walls. Submit attachment details of heavier equipment for approval.

H. Earthquake Anchorages:
   1. Equipment weighing more than 50 pounds shall be adequately anchored to the building structure to resist lateral earthquake forces.
   2. Total lateral (earthquake) forces shall be 1.5 times the equipment weight acting laterally in any direction through the equipment center of gravity. Provide adequate backing at structural attachment points to accept the forces involved.

I. Power-driven fasteners are prohibited for tension load applications (such as supporting luminaries or conduit racks from ceiling above). Use drilled-in expansion anchors, or drilled and screw-in anchors such as Kwik-Con II or Tapcon.

END OF SECTION 26 05 29

SECTION 26 05 33

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Metal Conduit.

B. Flexible Metal Conduit.

C. Liquidtight Metal Conduit.

D. Electrical Metallic Tubing.

E. Fittings and Conduit Bodies.

F. Wall and Ceiling Outlet Boxes.

G. Pull and Junction Boxes.

1.2 RELATED SECTIONS

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 - General Requirements and Section 26 05 00 – Common Work Results for Electrical.

B. Division 07 - Thermal and Moisture Protection.

C. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.

D. Section 26 05 26 – Grounding and Bonding for Electrical Systems.

E. Section 26 05 29 – Hangers and Supports for Electrical Systems.

F. Section 26 05 53 – Identification for Electrical Systems.

G. Section 26 27 26 – Wiring Devices.

1.3 REFERENCES

A. American National Standards Institute (ANSI):
   1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
   2. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.

B. American Society for Testing and Materials (ASTM):
   1. ASTM A 123 – Specification for Zinc Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strip.

C. National Electrical Manufacturers Association (NEMA):
   1. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
   2. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
   3. NEMA TC 2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).
   4. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

D. Underwriters Laboratory (UL):
   1. UL 6 - Rigid Steel Conduit, Zinc Coated.
   2. UL 514B – Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.

E. National Fire Protection Association (NFPA):
   1. NFPA 70 - National Electrical Code.

F. International Building Code (IBC):
   1. IBC chapters 16 and 17 seismic requirements.

1.4 RACEWAY AND BOX INSTALLATION SCHEDULE

A. Raceway Minimum Size:
   1. Above Grade or Slab on Grade: Provide 1/2 inch minimum, unless otherwise noted. Raceway may be reduced to ½ inch for final connection of raceway up to 6 feet for connection to fixture or device where maximum conduit entry size is ½ inch.

B. Concealed Dry Locations:
   1. Raceway: Provide rigid steel conduit, intermediate metal conduit, or electrical metallic tubing.
   2. Boxes and Enclosures: Provide sheet-metal boxes.
   3. Fittings: Provide galvanized malleable iron and steel.

C. Exposed Dry Locations:
   1. Raceway: Provide rigid steel conduit or intermediate metal conduit. EMT conduit may be used where it is not subject to physical damage or where installed on the ceiling or a minimum of ten feet above the floor.

2. Boxes and Enclosures: Provide sheet-metal boxes with raised steel covers.
3. Fittings: Provide galvanized malleable iron and steel.

D. Hazardous Locations (Classified Wiring):
1. Raceway: Provide rigid steel conduit.
2. Boxes and Enclosures: Provide galvanized malleable iron rated Class 1 Division 1, NEMA FB1.

E. Equipment Connections: Provide short extensions (three feet maximum) of flexible metal conduit for connections to light fixtures, motors, transformers, vibrating equipment or equipment that requires removal for maintenance or replacement. Use Liquidtight flexible conduit and fittings for motors and equipment in damp or wet locations or subject to spilling of liquids as at pumps, kitchen equipment, in mechanical rooms, boiler rooms, pump rooms, etc.

F. Liquidtight flexible nonmetallic conduit and electrical nonmetallic tubing are not approved raceway systems for this project.

1.5 DESIGN REQUIREMENTS

A. Raceway Minimum Size:
1. Line Voltage Circuits: Raceway is sized on the drawings for copper conductors with 600-Volt type XHHW insulation, unless otherwise noted. Where a raceway size is not shown on the drawings, it shall be calculated to not exceed the percentage fill specified in the NEC Table 1, Chapter 9 using the conduit dimensions of the NEC Table 4, Chapter 9 and conductor properties of the NEC Table 5, Chapter 9.
2. Low-Voltage Circuits: Where installed in raceways, the raceway size shall be calculated to not exceed the percentage fill specified in the NEC Table 1, Chapter 9, using the conduit dimensions of the NEC Table 4, Chapter 9, and cable diameter provided by the manufacturer.

B. Box Minimum Size: Provide all boxes sized and configured per NEC Article 370 and as specified in this section.

C. Seismic Support: Provide support in accordance with section 26 05 29 – Hangers and Supports for Electrical Systems.

1.6 SUBMITTALS

A. Submittals not required for this Section.

PART 2 - PRODUCTS

2.1 RIGID METAL CONDUIT (RMC)

A. Rigid Steel Conduit: ANSI C80.1, UL 6.

B. Fittings and Conduit Bodies: NEMA FB 1, UL 514B; Galvanized malleable iron with threaded hubs for all conduit entries. Provide threaded connections and couplings only. Set Screw and running thread fittings are not permitted.

C. Provide insulated throat bushings at all conduit terminations.

2.2 INTERMEDIATE METAL CONDUIT (IMC)

A. Product Description: ANSI C80.6, UL 1242; Galvanized Steel Conduit.

B. Fittings and Conduit Bodies: NEMA FB 1, UL 514B; use fittings and conduit bodies specified above for rigid steel conduit.

C. Provide insulated throat bushings at all conduit terminations.

2.3 FLEXIBLE METAL CONDUIT (FMC)

A. Product Description: UL 1, FS WW-C-566; galvanized or zinc-coated flexible steel, full or reduced-wall thickness.

B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel or malleable iron with insulated throat bushings. Die cast zinc or threaded inside throat fittings are not acceptable.

2.4 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Product Description: UL 360, flexible metal conduit with interlocked steel construction and PVC jacket.

B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; liquid tight steel or malleable iron with insulated throat bushings. Die cast fittings are not acceptable.

2.5 ELECTRICAL METALLIC TUBING (EMT)

A. Product Description: ANSI C80.3, UL 797; galvanized steel tubing.

B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel or malleable iron, compression type with insulated throat bushings. Zinc die cast, set screw, or indentor fittings are not acceptable.

C. Maximum size shall be 2". Provide factory elbows on sizes 1-½" and larger.

2.6 OUTLET BOXES

A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1, UL514A galvanized steel, with plaster ring where applicable.
   1. Minimum Size: 4 inches square or octagonal, 1-1/2 inches deep, unless otherwise noted.
   2. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2 inch male fixture studs where required. Minimum Size: 4 inches square or octagonal, 2-1/8 inches deep.

B. Cast Boxes: NEMA FB 1, Type FD, galvanized malleable iron. Furnish gasketed cover by box manufacturer. Furnish threaded hubs. “Bell” boxes are not acceptable.

C. Wall Plates: As specified in Section 26 27 26.

2.7 PULL AND JUNCTION BOXES

A. Sheet Metal Pull and Junction Boxes: ANSI/NEMA OS 1, UL514A galvanized steel.
   1. Minimum Size: 4 inches square or octagonal, 1-1/2 inches deep, unless otherwise noted.

B. Nonmetallic Pull and Junction Boxes: ANSI/NEMA OS 2, thermoset, phenolic with 150°C fire rating.
   1. Minimum Size: 6 inches square, 4 inches deep, unless otherwise noted.

C. Sheet Metal Boxes Larger Than 12 Inches in Any Dimension: Hinged enclosure, Hoffman or approved equal.

2.8 EXPANSION FITTINGS

A. Galvanized malleable iron, galvanized with grounding bond jumper.

2.9 RACEWAY SEALING FITTINGS

A. Galvanized malleable iron, galvanized filled with sealing compound.
   1. Class 1 Division 1 boundary lines and isolation of arcing devices use Class 1 Division 1 sealing compound.

2.10 BUSHINGS

A. Non-grounding: Threaded impact resistant plastic.

B. Grounding: Insulated galvanized malleable iron/steel with hardened screw bond to raceway and conductor lug.

2.11 LOCKNUTS

A. Threaded Electro Zinc Plated Steel designed to cut through protective coatings for ground continuity.

2.12 WIREWAY

A. Product Description: General purpose type wireway. Size per NEC minimum fill capacity required.

B. Knockouts: Field-installed, no factory knockouts acceptable.

C. Cover: Screw cover.

D. Fittings and Accessories: Include factory couplings, offsets, elbows, adapters and support straps required for a complete system. Provide internal ground bonding jumper bonded to each section.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Ground and bond raceway and boxes in accordance with Section 26 05 26.

B. Provide seismic support and fasten raceway and box supports to structure and finishes in accordance with Section 26 05 29.

C. Identify boxes with origin in accordance with Section 26 05 53.

D. Unless otherwise noted, do not inter-mix conductors from separate panelboards or any other system in the same raceway system or junction boxes.

3.2 INSTALLATION - GENERAL RACEWAY

A. Install raceway for all systems, unless otherwise noted.

B. Install an equipment grounding conductor inside of all raceways containing line voltage conductors.

C. Provide raceways concealed in construction unless specifically noted otherwise, or where installed at surface cabinets, motor and equipment connections and in Mechanical and Electrical Equipment rooms. Do not route conduits on roofs, outside of exterior walls, or along the surface of interior finished walls unless specifically noted on the plans.

D. Raceway routing and boxes are shown in approximate locations unless dimensioned. Where raceway routing is not denoted, field-coordinate to provide complete wiring system.

E. Do not route raceways on floor. Arrange raceway and boxes to maintain a minimum of 6 feet 6 inches of headroom and present a neat appearance. Install raceways level and square to a tolerance of 1/8” per 10 feet. Route exposed raceways and raceways above accessible ceilings parallel and perpendicular to walls, ceiling, and adjacent piping.

F. Maintain minimum 6-inch clearance between raceway and mechanical and piping and ductwork. Maintain 12-inch clearance between raceway and heat sources such as flues, steam pipes, heating pipes, heating appliances, and other surfaces with temperatures exceeding 104 degrees F.

G. Do not install raceway imbedded in spray applied fire proofing. Seal raceway penetrations of fire-rated walls, ceilings, floors in accordance with the requirements of Section 26 05 00 and Division 07.

H. Where raceway penetrates fire-rated walls and floors, install in accordance with Section 07 84 00 Firestopping.

I. Arrange raceway supports to prevent misalignment during wiring installation. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

J. Do not attach raceway to ceiling support wires or other piping systems and do not fasten raceway with wire or perforated pipe straps. Remove all wire used for temporary raceway support during construction, before conductors are pulled. Raceway shall be installed to permit ready removal of equipment, piping, ductwork, or ceiling tiles.

K. Group raceway in parallel runs where practical and use conduit rack constructed of steel channel with conduit straps or clamps, as specified in Section 26 05 29. Provide space on each rack for 25 percent additional raceway.

L. Cut conduit square; de-burr cut ends. Bring conduit to the shoulder of fittings and couplings and fasten securely. Where locknuts are used, install with one inside box and one outside with dished part against box.

M. Install no more than the equivalent of three 90-degree bends between boxes.

N. Install conduit bodies to make sharp changes in direction, such as around beams. “Goosenecks” in conduits are not acceptable.

O. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 2 inch size.

P. Provide protective plastic bushings or insulated throat bushings at each raceway termination not installed to an enclosure. Bushings shall be threaded to the raceway end or connector.

Q. Install fittings and flexible metal conduit to accommodate 3-axis movements where raceway crosses seismic joints.

R. Install fittings designed and listed to accommodate expansion and contraction where raceway crosses control and expansion joints.

S. Use cable sealing fittings forming a watertight non-slip connection to pass cords and cables into conduit. Size cable sealing fitting for the conductor outside diameter. Use Appleton CG series or equal cable sealing fittings.

T. Use suitable caps to protect installed raceway against entrance of dirt and moisture.

U. Provide nylon "jet-line" or approved equal pull string in empty raceway, except sleeves and nipples.

V. Paint all exposed conduit to match surface to which it is attached or crosses. Clean greasy or dirty conduit prior to painting in accordance with paint manufacturer's instructions. Where raceway penetrates non-rated ceilings, floors or walls, provide patching, paint and trim to retain architectural aesthetics similar to surroundings.

3.3 INSTALLATION – GENERAL BOXES

A. Provide electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and code compliance. All electrical box locations shown on Drawings are approximate unless dimensioned.

B. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only. Where installation is inaccessible, install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaries. Coordinate locations and sizes of required access doors with Division 08.

C. Coordinate layout and installation of boxes to provide adequate headroom and working clearance. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.

D. Align wall-mounted outlet boxes for switches, thermostats, and similar devices.

E. Use multiple-gang boxes where more than one device are mounted together; do not use sectional boxes. Provide barriers to separate wiring of different voltage systems and where normal and emergency power circuits occur in the same box.

F. Verify location of floor boxes in offices and work areas prior to rough-in. Set boxes level and flush with finish flooring material.

G. Adjust box location up to 6 feet prior to rough-in to accommodate intended purpose.

H. Orient boxes to accommodate wiring devices oriented as specified in Section 26 27 26.

I. Unless otherwise specifically noted, locate outlet boxes for light switches within 6 inches of the door jamb on the latch side of the door.

J. Position outlets to locate luminaires as shown on reflected ceiling plans.

K. Locate and install boxes to maintain headroom and to present a neat appearance.

L. Locate flush-mounted box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

M. Provide knockout closures for unused openings.

N. Install boxes in walls without damaging wall insulation or reducing its effectiveness.

O. Provide recessed outlet boxes in finished areas; secure boxes to interior wall and partition studs, accurately positioning to allow for surface finish thickness. For outlet boxes in walls with combustible finished surfaces such as wood paneling or fabric wall coverings, position box to be flush with finished surface per NEC requirements.

P. Use stamped steel stud bridges for flush outlets in hollow stud wall, and adjustable steel channel fasteners for flush ceiling outlet boxes. Accurately position bridges to allow for surface finish thickness.

Q. Do not install flush mounted boxes back-to-back in walls; install with minimum 6 inches separation.

R. Install with minimum 24 inches separation in fire rated walls. Limit penetrations in fire rated walls to 16 square inches each and a maximum total combined penetration area of 100 square inches in any given 100 square feet of wall. Where penetrations are in excess of these requirements provided UL listed fire stop wrap acceptable to Authority having Jurisdiction.

S. Do not fasten boxes to ceiling support wires or other piping systems.

T. Support boxes independently of conduit.

U. Clean interior of boxes to remove dust, debris, and other material and clean exposed surfaces and restore finish.

V. Provide blank covers or plates for all boxes that do not contain devices.

END OF SECTION 26 05 33

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Nameplates and Tape Labels.

B. Wire and Cable Markers.

C. Wire Markers.

1.2 RELATED SECTIONS

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements, and Section 26 05 00 – Common Work Results for Electrical.

B. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.

C. Section 26 05 33 – Raceway and Boxes for Electrical Systems.

D. Section 26 27 26 – Wiring Devices.

1.3 SUBMITTALS

A. Submittals not required for this Section.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Install labels and nameplates only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

PART 2 - PRODUCTS

2.1 NAMEPLATES

A. Product Description: Laminated three-layer plastic with engraved white letters on black background. Nameplate for service disconnect shall be engraved white letters on red background.

B. Letter Size:
   1. 1/4-inch high letters for identifying individual panel or equipment.
   2. 1/8-inch high letters for remaining lines with 1/8 inch spacing between lines.

C. Minimum nameplate size: 1/8 inch thick with a consistent length and height for each type of nameplate wherever installed on the project.

2.2 TAPE LABELS

A. Product Description: Adhesive tape labels, with 3/16 inch Bold Black letters on clear background made using Dymo Rhino series label printer or approved equal.

B. Embossed adhesive tape will not be permitted for any application.

2.3 WIRE MARKERS

A. Power and Lighting Description: Machine printed heat-shrink tubing, cloth or wrap-on type, for all neutrals and Phase conductors.

B. Low Voltage System Description: Self-adhesive machine printed label with unique wire number that is shown on shop drawing for system.

C. Telecommunications Cable Markers: Self-laminating vinyl with translucent band and minimum 1”W x .5”H printable area with matte white finish. Brady #B-427 series or approved equal.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

A. Degrease and clean surfaces to receive nameplates and tape labels.

B. Install nameplates and tape labels parallel to equipment lines.

3.2 NAMEPLATE INSTALLATION

A. Secure nameplates to equipment fronts using machine screws tapped and threaded into panelboard, or using rivets. The use of adhesives is not acceptable. Machine screws to not protrude more than 1/16 inch on back side.

B. Disconnects, Starters, or Contactors:
   1. Provide nameplate for each device with the following information:
      a. Line 1: Load served.
      b. Line 2: Panelboard and circuit number from which the device is fed.
      c. Line 3: Fuse or Circuit amperage and poles. Where fused disconnect is installed, denote the maximum fuse size to be installed.

C. Control or Low Voltage System Panels:
   1. Provide nameplate for each control panel with the following information:
      a. Line 1: Unique panel name as shown on the shop drawings.
      b. Line 2: System description such as Fire Alarm, Intercom, BAS, Security, etc.
      c. Line 3: Panelboard and circuit number from which the panel is fed if applicable.

3.3 WIRE IDENTIFICATION

A. Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Identification shall be as follows:
   1. Markers shall be located within one inch of each cable end, except at panelboards, where markers for branch circuit conductors shall be visible without removing panel deadfront.
   2. Each wire and cable shall carry the same labeled designation over its entire run, regardless of intermediate terminations.
   3. Color code phases, neutral, and ground per NEC requirements and Section 26 05 19.
   4. Color-code all low-voltage system wires and cables in accordance with the individual sections in which they are specified.
   5. For power and lighting circuits, identify with branch circuit or feeder number.
   6. Control Circuits: Control wire number as indicated on schematic and shop drawings.

3.4 JUNCTION BOX IDENTIFICATION

A. Label each lighting and power junction box with the panelboard name and circuit number.

B. For junction boxes above ceilings, mark the box cover with the circuit or system designation using permanent black marker. For junction boxes in finished areas, mark the inside of the cover with the circuit or system designation using permanent black marker.

3.5 DEVICE PLATE IDENTIFICATION

A. Label each receptacle device plate or point of connection denoting the panelboard name and circuit number.

B. Install adhesive label on the top of each plate.

3.6 PANELBOARD IDENTIFICATION

A. Provide updated panelboard circuit directories denoting all changes under this project.

3.7 LOW-VOLTAGE SYSTEM IDENTIFICATION

A. Install all labeling in accordance with the requirements of this section and of each section where the individual systems are specified.

END OF SECTION 26 05 53

SECTION 26 05 83

WIRING CONNECTIONS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Electrical connections to equipment specified under other Sections or furnished by Owner.

1.2 RELATED SECTIONS

A. Division 01 - Administrative Requirements; Summary: Owner-furnished equipment.

B. Division 08 - Overhead Coiling Doors, Overhead Sectional Doors, Automatic Entrances, Revolving Door Entrances, Door Hardware.

C. Division 11 – Appliances.

D. Division 22 – Plumbing Equipment.

E. Division 23 – HVAC Equipment.

F. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.

G. Section 26 05 33 - Raceway and Boxes for Electrical Systems.

H. Section 26 29 13 - Enclosed Controllers.

1.3 REFERENCES

A. FS W-C-596 - Electrical Power Connector, Plug, Receptacle, and Cable Outlet.

B. National Electrical Manufacturers Association:
   1. NEMA WD 1 - General Purpose Wiring Devices.
   2. NEMA WD 5 - Specific-Purpose Wiring Devices.

1.4 SUBMITTALS

A. Submit data under provisions of Division 01 and Section 26 05 00.

B. Product Data: Submit wiring device manufacturer's catalog information showing dimensions, configurations, and construction.

1.5 COORDINATION

A. Division 01 - Administrative Requirements: Coordination and project conditions.

B. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.

C. Determine connection locations and requirements.

D. Sequence rough-in of electrical connections to coordinate with installation of equipment.

E. Sequence electrical connections to coordinate with start-up of equipment.

PART 2 - PRODUCTS

2.1 CORDS AND CAPS

A. Straight-blade Attachment Plug: NEMA WD 1.

B. Locking-blade Attachment Plug: NEMA WD 5.

C. Attachment Plug Configuration: Match receptacle configuration at outlet provided for equipment.

D. Cord Construction: Oil-resistant thermoset insulated Type SO multiconductor flexible cord with identified equipment grounding conductor, suitable for extra hard usage in damp locations.

E. Cord Size: Suitable for connected load of equipment and rating of branch circuit overcurrent protection.

PART 3 - EXECUTION

3.1 PREPARATION

A. Review equipment submittals prior to installation and electrical rough-in. Verify location, size, and type of connections. Coordinate details of equipment connections with supplier and installer.

3.2 INSTALLATION

A. Use wire and cable with insulation suitable for temperatures encountered in heat-producing equipment.

B. Make conduit connections to equipment that is subject to vibration or movement using flexible conduit. Use Liquidtight flexible conduit in damp or wet locations.

C. Install pre-finished cord set where connection with attachment plug is indicated or specified by the equipment manufacturer's installation instructions, or use attachment plug with suitable strain-relief clamps.

D. Provide suitable strain-relief clamps for cord connections to outlet boxes and equipment connection boxes.

E. Make wiring connections in control panel or in wiring compartment of pre-wired equipment in accordance with manufacturer's instructions. Provide interconnecting wiring where required.

F. Install disconnect switches, controllers, control stations, and control devices such as limit switches and temperature switches and connect with conduit and wiring as indicated in the equipment manufacturer's installation instructions.

G. Where reconnecting existing equipment, extend connections using materials and methods compatible with existing electrical installations, or as specified.

END OF SECTION 26 05 83

SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Wall Switches.

B. Receptacles.

C. Device Plates and Box Covers.

1.2 RELATED SECTIONS

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 - General Requirements and Section 26 05 00 – Common Work Results for Electrical.

B. Section 26 05 26 – Grounding and Bonding for Electrical Systems.

C. Section 26 05 33 – Raceway and Boxes for Electrical Systems.

D. Section 26 05 33.16 – Boxes for Electrical Systems.

E. Section 26 05 53 – Identification for Electrical Systems.

1.3 REFERENCE STANDARDS

A. FS W-C-596 – Federal Specification for Electrical Power Connector, Plug, Receptacle, and Cable Outlet.

B. FS W-S-896 – Federal Specification for Switches, Toggle (Toggle and Lock), Flush Mounted.

C. NEMA WD 1 - General Color Requirements for Wiring Devices.

D. ANSI/NEMA WD 6 – Wiring Devices – Dimensional Requirement.

E. UL 20 – General-Use Snap Switches.

F. UL 498 - Attachment Plugs and Receptacles.

G. UL 943 – Ground-Fault-Circuit-Interrupters.

1.4 SUBMITTALS

A. Product Data: Submit product data for all components provided that are specified in this section showing configurations, finishes, and dimensions. Each catalog sheet should be clearly marked to indicate exact part number provided, including all options and accessories.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS - WALL SWITCHES

A. Hubbell.

B. Leviton.

C. Pass & Seymour.

D. Arrow Hart

E. Substitutions: Under provisions of Division 01.

2.2 WALL SWITCHES

A. Wall Switches for Lighting Circuits: UL 20; NEMA WD 1; and Federal Specification FS W-S-896 AC industrial grade snap switch with toggle handle, rated 20 amperes and 120-277 volts AC. Handle: White [ivory] nylon. Provide single-pole, 3-way, or 4-way switches as indicated on Plans.

2.3 ACCEPTABLE MANUFACTURERS - RECEPTACLES

A. Hubbell.

B. Leviton.

C. Pass & Seymour.

D. Arrow Hart

E. Substitutions: Under provisions of Division 01.

2.4 RECEPTACLES

A. Convenience and Straight-blade Receptacles: UL 498, NEMA WD 1 and Federal Specification FS W-C-596 industrial grade receptacle.

B. Locking-Blade Receptacles: NEMA WD 5.

C. Convenience Receptacle Configuration: NEMA WD 1; Type 5-20R, white [ivory] nylon face.

D. Specific-use Receptacle Configuration: NEMA WD 1 or WD 5; type as indicated on Drawings, black phenolic face.

E. GFCI Receptacles: 20A, duplex convenience receptacle with integral class 'A' ground fault current interrupter, LED indicator lamp and integral lockout.

2.5 DEVICE PLATES

A. Decorative Cover Plate: Smooth 430 or 302 stainless steel or white impact resistant thermoplastic, with metal, counter sunk screws to match device plate. Match plate type/color with other existing faceplates, as required.

B. Exposed Work Cover Plate: ½ inch raised, square, pressed, galvanized or cadmium plated steel cover plate supporting devices independent of the outlet box.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install wall switches 48 inches above floor, OFF position down.

B. Unless otherwise noted install wall switches within 6 inches of the door jamb on the strike side.

C. Install convenience receptacles 18 inches above floor, 4 inches above counters or backsplash, grounding pole on bottom, unless otherwise noted on the Drawings.

D. Install specific-use receptacles at heights as required to accommodate the equipment.

E. Unless otherwise noted, mounting heights are for finished floor to center line of outlet.

F. Drill opening for poke-through fitting installation in accordance with manufacturer's instructions.

G. Install decorative plates on switch, receptacle, and blank outlets in finished areas. Use midsize or jumbo plates for outlets installed in masonry walls, where required to cover up imperfections in the wall opening.

H. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface-mounted outlets.

I. Install devices and wall plates flush and level.

J. Ground receptacles to boxes with a grounding wire. Grounding through the yoke or screw contact is not an acceptable alternate to the ground wire.

K. Install circuit label on each receptacle and light switch in accordance with Section 26 05 53.

END OF SECTION 26 27 26

SECTION 26 29 13

ENCLOSED CONTROLLERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Manual Motor Starters.

1.2 RELATED SECTIONS

A. Division 23 – Heating, Ventilating, and Air Conditioning (HVAC).

B. Section 26 05 29 – Hangers and Supports for Electrical Systems.

C. Section 26 05 53 – Identification for Electrical Systems.

1.3 REFERENCES

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements.

B. ANSI/NEMA ICS 6 - Enclosures for Industrial Controls and Systems.

C. NEMA ICS 2 - Industrial Control Devices, Controllers, and Assemblies.

1.4 SUBMITTALS

A. Submit product data under provisions of Division 01.

B. Provide product data on motor starters.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS - MOTOR STARTERS

A. Square D.

B. Allen Bradley.

C. Siemens.

D. Cutler Hammer.

E. Substitutions: Under provisions of Division 01.

2.2 MANUAL MOTOR STARTERS

A. Fractional Horsepower Manual Starter: NEMA ICS 2; AC general-purpose Class A manually operated, number of poles as required by the load served, full-voltage controller for fractional horsepower induction motors, with thermal overload unit, red pilot light, and toggle operator.

B. Enclosure: ANSI/NEMA ICS 6; Type 1 or 3R as required.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install motor control equipment in accordance with manufacturer's instructions.

B. Select and install heater elements in motor starters to match installed motor characteristics.

C. Motor Data: Provide neatly typed label inside each motor starter enclosure door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating.

D. After final connections are made, check and correct the rotation of all motors.

E. Motor starters shall be coordinated for use with the motors specified under Division 23.

END OF SECTION 26 29 13

SECTION 26 50 00

LIGHTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Interior Luminaires and Accessories.

B. Lamp Modules.

C. Drivers.

D. Emergency Lighting Units.

1.2 RELATED SECTIONS

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under General Conditions of the Contract General Requirements, and Section 26 05 00 – Common Work Results for Electrical.

B. Division 09 – Finishes: Painting and Ceilings.

C. Section 26 05 19 – Low Voltage Electrical Power Conductors and Cables.

D. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

E. Section 26 05 29 - Hangers and Supports for Electrical Systems.

F. Section 26 05 33 – Raceway and Boxes for Electrical Systems.

G. Section 26 05 53 – Identification for Electrical Systems.

H. Section 26 27 26 – Wiring Devices.

1.3 DEFINITIONS

A. CCT: Correlated Color Temperature.

B. CRI: Color Rendering Index.

C. Driver: LED Power Supply.

D. Fixture: See "Luminaire."

E. IES: Illuminating Engineering Society of North America

F. IP: International Protection or Ingress Protection Rating.

G. Lamp Module: Replaceable LED board array/light engine including a plug-in connector.

H. LED: Light-emitting diode.

I. Lumen: Measured output of lamp and luminaire, or both.

J. Luminaire: Complete lighting unit, including lamp or lamp module, driver, reflector, and housing.

K. THD: Total Harmonic Distortion.

1.4 REFERENCE STANDARDS

A. NECA/IESNA 500 – Recommended Practice for Installation Indoor Commercial Lighting System.

B. IES TM-21-11 Projecting Long Term Lumen Maintenance of LED Light Sources.

C. IES LM-80 IES Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules.

D. UL 924 - Emergency Lighting and Power Equipment.

1.5 SUBMITTALS

A. Product Data: Submit the following:
   1. Luminaires: Include manufacturer’s product data sheets and/or shop drawings including outline drawings showing support points, weights, and accessory information for each luminaire type. Clearly indicate all options being provided. Arrange data for luminaires in the order of fixture designation.
   2. Prior to preparing submittals, coordinate with the reflected ceiling plan for ceiling finishes and provide all necessary kits, brackets, stems, trim, etc. to install the specified fixtures in the ceilings provided. Clearly note these configurations on the product data sheets.

B. Shop Drawings: Provide detailed shop drawings for specialty luminaires as required by the manufacturer.

C. Warranty: Provide copies of manufacturer's warranty information for each luminaire. If warranty information is the same for a group of manufacturer's luminaires, provide a letter or schedule clearly indicating what warranty applies to each fixture.

D. LED Luminaire Substitutions: Due to the constantly evolving technology, it is difficult to evaluate a true "equal" LED luminaire since the wattage, lamp life, lumen output, lamp life, etc. vary significantly from fixture to fixture, even for luminaires that have a similar shape and style. The luminaires shown on the Plans in the Fixture Schedule are not intended to be sole sourced but are considered a Basis of Design. If a substitution is proposed by the contractor, it will be evaluated based on the following criteria:
   1. Does it have the same basic shape/style and characteristics? Note that there may be space constraints above the ceiling.
   2. Does the light have the same (or superior) light output and distribution? If not, would it still produce enough light to illuminate the space per minimum IES recommendations or other project specific lighting levels? Note that the Engineer may request .ies files or lighting calculations be provided by the Contractor to evaluate substitution requests.
   3. Does it use the same (or less) wattage than the specified fixture? If it uses slightly more power, does it provide enough value to the Owner by adding additional light to offset the additional power used? Is that appropriate for the project compliance requirements. (LEED, ASHRAE 90.1, etc.)
   4. Does it have the same nominal color temperature and CRI values? Note that for certain luminaires this may be more important where [medical procedures are being performed or where] artwork or merchandise is illuminated.
   5. Does it have an equal or better lamp life as calculated in accordance with IES TM-21 and LM-80?
   6. Does the manufacturer offer an equal or better warranty than the specified fixture?
   7. Are the LED lamps modules and LED boards field changeable? What guarantees does the manufacturer have that replacement parts will be available in the future?

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site, store and protect in a clean, dry environment under provisions of General Conditions of the Contract.

PART 2 - PRODUCTS

2.1 INTERIOR LUMINAIRES AND ACCESSORIES

A. Luminaires: Provide UL listed luminaires as scheduled on the drawings or as approved equal.

B. Listing: Luminaires shall be listed for use in the environment in which they are installed. For example, luminaires installed in return air plenums, direct contact with insulation, or in hazardous, wet, damp, or corrosive locations shall be UL listed for such application.

C. Accessories: Provide all mounting kits, supports, interconnecting wiring, power supplies, trim kits, gaskets, etc. for a complete installation.

D. Housing:
1. Metal parts shall be free of burrs and sharp corners and edges. Form and support to prevent warping and sagging.
2. Doors, Frames and Other Internal Access: Smooth operating, free of light leakage under operating conditions. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.
3. Luminaires shall be factory painted and free of discoloration. Color as scheduled.

2.2 LAMP MODULES – LED

A. All LED's shall be nominal 400 Kelvin within a 3-step MacAdam Ellipse unless special circumstances require a different color temperature application, see Luminaire Schedule on Plans.

B. Color Rendering: Minimum CRI as scheduled on the Plans for each fixture. Under no circumstances shall the CRI be less than 70.

C. Lamp Life: Minimum lamp life shall be calculated in accordance with IES LM-80. Lamp life for each luminaire shall be equal or greater than scheduled on the Plans. Under no circumstances shall an interior luminaire have a minimum rated life (L70) less than 50,000 hours at 75 degrees F average indoor ambient temperature and an outdoor luminaire less than 75,000 hours at 40 degrees F average outdoor ambient temperature.

D. Replaceable: Unless otherwise scheduled, all LED modules shall be field replaceable with quick disconnect connections.

2.3 DRIVERS - LED

A. LED Driver: Provide UL listed power supply as recommended by the LED fixture manufacturer for operation of the specified LED lamps. Power supply shall be integral to the luminaire unless otherwise noted on the Plans. Power supply shall be dual voltage (120/277V) where available or operate at the supply voltage indicated on the Plans.

B. LED Dimming Driver: UL listed 0-10V dimming driver as recommended by the LED fixture manufacturer for operation of the specified LED lamps, fully compatible with the dimming system or dimming switch controlling the fixture. Driver shall be integral to the

fixture and capable of dimming the luminaire down to 1% output unless otherwise scheduled on the Plans. Power supply shall be dual voltage (120/277V) where available and operate at the supply voltage indicated on the Plans.

2.4 EMERGENCY LIGHTING UNITS

A. Luminaires: Provide UL listed emergency lighting units as scheduled on the drawings or as approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Coordinate layout and installation of ceiling-mounted devices with other construction items that penetrate ceilings or are supported by them, including luminaires, occupancy sensors, HVAC equipment, smoke detectors, fire-suppression system, IP video cameras, and partition assemblies. Adjust locations as required.

B. Unless otherwise noted on Plans, provide drivers integral to luminaires, pre-wired and installed at the factory, suitable for use with the selected LED lamps.

C. Support surface-mounted luminaires directly from building structure. Install level and parallel/perpendicular with ceiling or wall surfaces.

D. Install recessed luminaires to permit removal from below. Use plaster frames in hard ceilings.

E. Support luminaires in suspended ceilings from structure above in accordance with Section 26 05 29.

F. Rigidly align continuous rows of lighting fixtures for true in-line appearance.

G. Provide luminaire disconnecting means in the wiring compartment of each luminaire. Where the luminaire is fed from a multi-wire branch circuit, provide multi-pole disconnect to simultaneously break all supply conductors to the ballast, including the grounded conductor.

H. LED Power Supplies: Install power supplies to be readily accessible. Where power supplies are installed in plenum areas, provide plenum rated listing. Where remote power supplies are used, install in concealed, accessible locations or in utility room that provides adequate sound dampening. Locate driver to allow free air movement in accordance with manufacturer’s installation instructions and securely mount to structure.

I. Tandem wiring: Provide factory harness for all tandem mounted light fixtures.

J. Aim directional lampheads of emergency lighting units to illuminate the path of egress.

K. Coordinate location of wall mounted emergency lighting units with mechanical equipment, ductwork, piping, or any other obstruction that would impact the lighting output.

3.2 RELAMPING

A. Re-lamp or replace luminaires that have failed lamps at completion of work.

3.3 ADJUSTING AND CLEANING

A. Align luminaires and clean lenses and diffusers at completion of work. Clean paint splatters, dirt, and debris from installed luminaires.

B. Touch up luminaire finish at completion of work.

3.4 FIELD QUALITY CONTROL

A. Tests: Perform tests listed below according to manufacturer's written instructions. Test unit functions, operations, and protective features. Adjust to ensure operation complies with Specifications. Perform tests required by NFPA 70, Articles 700 and 701. Perform tests on completion of unit installation and after building circuits have been energized. Provide instruments to permit accurate observation of tests. Include the following tests:
   1. Simulate power outage: Verify proper operation of each individual emergency power supply.
   2. Verify emergency supply duration.
   3. Verify operation of remote test switches.
   4. Provide reports for load test conducted on individual batteries.

B. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.

3.5 ADJUSTING

A. Aim lamps on wall-mounted emergency lighting units to obtain the following illumination of egress pathway:
   1. An average of 1 foot-candle.
   2. A minimum at any point of 0.1 foot-candle measured along the path of egress at floor level.
   3. Maximum-to-minimum illumination uniformity ratio of 40 to 1 shall not be exceeded.

B. Test emergency lighting equipment in accordance with the manufacturer's instructions and NECA/IESNA 500.

3.6 DEMONSTRATION

A. Walk owner's representative through the emergency lighting system. Note how to maintain, test and troubleshoot all units. Provide maintenance schedule for NFPA required testing and note locations of remote test switches, and which units have self-diagnostic features.

END OF SECTION 26 50 00