

INVITATION TO BID

ANCHORAGE PIONEER HOME South Building Boiler Replacement ANC 13-50C

Bidders are invited to submit sealed bids, in single copy, to: Provide all labor, supervision, materials and permits to remove and install 3 boilers and associated mechanical equipment as per plans and specifications.

Award of this contract is contingent on funds being allocated in FY 2014, which will be made available on July 1, 2013. Project to begin after July 1, 2013.

Bidders may contact Dave Witt, Maintenance Foreman (343-7253) to schedule a date/time to take a look at the project site.

Project related questions or clarifications: Mark Moon, Project Manager at 269-7812 (email: mark.moon@alaska.gov) or Doug Ault, FMS Facilities Manager at 269-7814 (email: doug.ault@alaska.gov).

Bids will be opened publicly at 2:00 pm local time May 31, 2013 at 3601 C Street, Room 578, Anchorage, AK.

Bids, modifications or withdrawals transmitted by mail must be received no later than 30 minutes prior to the scheduled time of bid opening.

Linda Kush at 3601 C Street, Suite 578 Anchorage AK must receive hand-delivered bids, modifications or withdrawals prior to the scheduled time of bid opening.

Faxed bid modifications must be addressed to:
DHSS/FMS/Facilities - ATTN: Linda Kush - Fax number: (907) 334-2689

The Engineer's Estimate: less than \$375,000

The Project completion date: 180 days from issuance of Notice to Proceed

Plans and Specifications may be printed by the Bidder from:

- The State of Alaska website under Public Notices On-line (www.state.ak.us)

OR

- The Bidder may also forward the project website location/address information to the print shop of their choice for printing – all associated printing costs are payable by the Bidder.

Bidders are responsible for checking this website for addenda. Not acknowledging addenda at the time of bid will deem the Bidder non-responsive.

Issued: May 9, 2013

Anchorage Pioneer Home

South Building Boiler Replacement

PROJECT NO. ANC 13-50C

TABLE OF CONTENTS

BIDDING AND CONTRACT REQUIREMENTS - STATE FUNDED PROJECTS

BIDDING REQUIREMENTS

00020 - Invitation for Bids - Form 06D-7 (7/03)
00100 - Information to Bidders - 06D-3
00101 - Supplementary Information to Bidders
00120 - Required Documents, 06D-4 (8/01)
00120a – Alaska Veterans Preference Affidavit - Form 06D-17
00310 - Proposal and Non-Collusion Affidavit - Form 06D-9 (7/03)
00311 - Alaska Products Preference Worksheet
00312 - Bid Schedule
00410 – Bid Security Form 06D-14 (8/01)
00420 - Bid Modification – Form 06D-16 (8/01)
00430 - Subcontractor List - Form 06D-5 (8/01)

CONTRACT FORMS

00510 - Construction Contract - Form 06D-10a (8/01)
00610 - Performance Bond - Form 06D-13 (8/01)
00620 - Payment Bond - Form 06D-12 (8/01)
00670 - Contractor's Questionnaire - Form 06D-8 (8/01)

PROVISIONS OF THE CONTRACT

00700 - General Conditions of the Construction Contract for Buildings
00800 - Supplementary General Conditions
00830 - Laborers' and Mechanics' Minimum Rates of Pay, Pamphlet 600, Issue #26, dated 4/1/13
00850 – Drawing Index

TECHNICAL SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

01005 – Administrative Provisions
01010 - Summary of Work
01020 - Intent of Documents
01027 - Applications for Payment
01028 - Change Order Procedures
01040 - Coordination
01045 - Cutting and Patching
01073 – Explanations: Drawings & Specifications
01090 - Referenced Standards
01120 – Alteration Procedures
01126 - Contractor's Certification of Subcontractors - Subcontractor Certification Form
01200 - Project Meetings
01230 - Alternates
01300 - Submittals
01400 - Quality Control
01500 - Construction Facilities and Temporary Controls
01541 - Facility Keys
01600 - Material and Equipment
01700 - Contract Closeout

Anchorage Pioneer Home

South Building Boiler Replacement

PROJECT NO. ANC 13-50C

TABLE OF CONTENTS CONTINUED

DIVISION 2 – SITEWORK

Not used

DIVISION 3 - CONCRETE

Not used

DIVISION 4 – MASONRY

Not used

DIVISION 5 – METALS

Not used

DIVISION 6 - WOOD AND PLASTICS

Not used

DIVISION 7 - THERMAL AND MOISTURE CONTROL

Not used

DIVISION 8 - DOORS AND WINDOWS

Not used

DIVISION 9 - FINISHES

Not used

DIVISION 10 - SPECIALTIES

Not used

DIVISION 11 - EQUIPMENT

Not used

DIVISION 12 - FURNISHINGS

Not used

DIVISION 13 - SPECIAL CONSTRUCTION

Not used

Anchorage Pioneer Home

South Building Boiler Replacement

PROJECT NO. ANC 13-50C

TABLE OF CONTENTS CONTINUED

DIVISION 14 - CONVEYING SYSTEMS

Not used

DIVISION 15 - MECHANICAL

15010 - BASIC MECHANICAL REQUIREMENTS
15140 - SUPPORTS AND ANCHORS
15170 - MOTORS
15190 - MECHANICAL IDENTIFICATION
15250 - EARTHQUAKE RESTRAINT
15260 - PIPING INSULATION
15290 - DUCTWORK INSULATION
15510 - HYDRONIC PIPING
15514 - FINNED-TUBE WATER BOILERS
15515 - HYDRONIC SPECIALTIES
15540 - HVAC PUMPS
15545 - CHEMICAL (WATER) TREATMENT
15575 - BREECHINGS, CHIMNEYS AND STACKS
15755 - HEAT EXCHANGERS
15875 - VARIABLE FREQUENCY DRIVES
15890 - DUCTWORK
15975 - DIRECT DIGITAL CONTROL SYSTEMS
15980 - INSTRUMENTATION
15985 - SEQUENCE OF OPERATION
15990 - TESTING, ADJUSTING AND BALANCING

DIVISION 16 - ELECTRICAL

16010 - BASIC ELECTRICAL REQUIREMENTS
16060 - ELECTRICAL REMODEL WORK
16111 - CONDUIT
16123 - WIRE AND CABLE
16130 - BOXES
16160 - CABINETS AND ENCLOSURES
16170 - GROUNDING AND BONDING
16180 - EQUIPMENT CONNECTIONS
16190 - SUPPORTING DEVICES
16191 - SEISMIC RESTRAINT
16195 - ELECTRICAL IDENTIFICATION
16440 - DISCONNECT SWITCHES
16480 - MOTOR CONTROLS

DRAWINGS (Bound Separately)

End of Table of Contents



STATE OF ALASKA
DEPARTMENT OF HEALTH & SOCIAL SERVICES

INVITATION TO BID
for Construction Contract

Date May 9, 2013

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C

Project Name and Number

Location of Project: Anchorage, Alaska

Contracting Officer: Jennifer Klein

Issuing Office: Dept. of Health & Social Services, Office of the Commissioner, Finance & Management Services

State Funded [☒]

Federal Aid [☐]

Description of Work:

Bidders are invited to submit sealed bids, in single copy, to: Provide all labor, supervision, materials and permits to remove and install 3 boilers and associated mechanical equipment as per plans and specifications.

Award of this contract is contingent on funds being allocated in FY 2014, which will be made available on July 1, 2013. Project to begin after July 1, 2013.

The Engineer's Estimate is: Less than \$375,000

All work shall be completed in **180 Calendar Days of issuance of Notice to Proceed**

Interim Completion dates, if applicable, will be shown in the Special Provisions.

Bidders are invited to submit sealed bids, in single copy, for furnishing all labor, equipment, and materials and for performing all work for the project described above. Bids will be opened publicly at 2:00 pm local time, at 3601 C Street, Suite 578 Anchorage, AK 99503 on the 31st day of May, 2013.

SUBMISSION OF BIDS

ALL BIDS INCLUDING ANY AMENDMENTS OR WITHDRAWALS MUST BE RECEIVED PRIOR TO BID OPENING. BIDS SHALL BE SUBMITTED ON THE FORMS FURNISHED AND MUST BE IN A SEALED ENVELOPE MARKED AS FOLLOWS:

Bid for Project:

ANC 13-50C

APH South Building Boiler Replacement

ATTN: Linda Kush

State of Alaska

Department of Health and Social Services

Finance & Management Services, Facilities Office

3601 C Street, Suite 578 Anchorage, AK 99503

Bids, amendments or withdrawals transmitted by mail must be received in the above specified post office box no later than **30 minutes** prior to the scheduled time of bid opening. Hand-delivered bids, amendments or withdrawals must be received at **3601 C Street, Suite 578 Anchorage, AK** prior to the scheduled time of bid opening. Faxed bid amendments must be addressed to **Linda Kush**. Fax number: (907) 334-2689.

A bid guaranty is required with each bid in the amount of 5% of the amount bid. (Alternate bid items as well as supplemental bid items appearing on the bid schedule shall be included as part of the total amount bid when determining the amount of bid guaranty required for the project.)

The Department hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this Invitation, Disadvantaged Business Enterprises (DBEs) will be afforded full opportunity to submit bids and will not be discriminated against on the grounds of race, color, national origin, or sex in consideration for an award.

NOTICE TO BIDDERS

Bidders are hereby notified that data to assist in preparing bids is available as follows:

Plans and Specifications may be printed by the Bidder from:

- the State of Alaska website under Public Notices On-line
- OR**
- the Bidder may forward the project website location/address information to the print shop of their choice for printing – all associated printing costs are payable by the Bidder

All questions relating to technical aspects of the project should be directed to the following. Bidders requesting assistance in viewing the project must make arrangements at least 48 hours in advance with:

Mark Moon, Project Manager

Fax: (907) 334-2689 Phone: (907) 269-7812 Email: mark.moon@alaska.gov

All questions concerning bidding procedures should be directed to:

ATTN: Linda Kush

DHSS/Division of Finance & Management Services, Facilities

3601 C Street, Suite Anchorage, AK 99503

Phone: (907) 269-7813 / Email: linda.kush@alaska.gov

Other Information:

Alaska Veterans Preference

To qualify for the Veterans Preference (per AS 36.30.175), the bidder must:

1. Qualify for the Alaska Bidder's Preference
2. Add value by actually performing the services or have prior experience in selling the supplies
3. Qualify as an Alaska Veteran & Complete/sign Alaska Veterans Affidavit (06D-17, dated 4/12)
4. The value of the preference cannot exceed \$5,000.

**STATE OF ALASKA
DEPARTMENT OF HEALTH & SOCIAL SERVICES**

INFORMATION TO BIDDERS

The Department is concerned over the manner in which bids are submitted. Bidders are requested to study and follow the bid assembly instructions as to the method and form for submitting bids so there will be no reason to reject a bid.

EXAMINATION OF CONTRACT REQUIREMENTS

Bidders are expected to examine carefully the plans, specifications and all other documents incorporated in the contract to determine the requirements thereof before preparing bids.

Any explanation desired by bidders regarding the meaning or interpretation of drawings and specifications must be requested in writing and with sufficient time allowed for a reply to reach them before the submission of their bids. Oral explanations or instructions given before the award of the contract will not be binding. Any interpretation made will be in the form of an addendum to the specifications or drawings and will be furnished to all bidders and its receipt by the bidder shall be acknowledged.

CONDITIONS AT SITE OF WORK

Bidders are expected to visit the site to ascertain pertinent local conditions such as the location, accessibility and character of the site, labor conditions, the character and extent of the existing work within or adjacent thereto, and any other work being performed thereon.

PREPARATION OF BIDS

- (a) Bids shall be submitted on the forms furnished, and must be manually signed in ink. If erasures or other changes appear on the forms, each such erasure or change must be initialed by the person signing the proposal.
- (b) The bid schedule will provide for quotation of a price or prices for one or more pay items which may include unit price or lump sum items and alternative, optional or supplemental price schedules or a combination thereof which will result in a total bid amount for the proposed construction.

Where required on the bid form, bidders must quote on all items and **THEY ARE WARNED** that failure to do so will disqualify them. When quotations on all items are not required, bidders should insert the words "no bid" in the space provided for any item not requiring a quotation and for which no quotation is made.

- (c) The bidder shall specify the price or prices bid in figures. On unit price contracts the bidder shall also show the products of the respective unit prices and quantities written in figures in the column provided for the purpose and the total amount of the proposal obtained by adding the amounts of the several items. All the figures shall be in ink or typed.

- (d) Neither conditional nor alternative bids will be considered unless called for.
- (e) Unless specifically called for, telegraphic or telefacsimile bids will not be considered.
- (f) Bid Schedule form should be enclosed in a separate sealed envelope and enclosed with all other bidding forms required at the opening.

BID SECURITY

All bids shall be accompanied by a bid security in the form of an acceptable Bid Bond (Form 06D-14), or a certified check, cashier's check or money order made payable to the State of Alaska. The amount of the bid security is specified on the Invitation to Bid.

Bid Bonds must be accompanied by a legible Power of Attorney.

If the bidder fails to furnish an acceptable bid security with the bid, the bid shall be rejected as non-responsive. Telegraphic notification of execution of Bid Bond does not meet the requirement of bid security accompanying the bid. An individual surety will not be accepted as a bid security.

The bid securities of the two lowest bidders will be held by the Department until the Contract has been executed, after which such bid securities will be returned. All other bid securities will be returned as soon as practicable. If all bids are rejected, all bid securities will be returned as soon as practicable.

BIDDERS QUALIFICATIONS

Before a bid is considered for award, the bidder may be requested by the Department to submit a statement of facts, in detail, as to his previous experience in performing comparable work, his business and technical organization, financial resources, and plant available to be used in performing the contemplated work.

SUBMISSION OF BIDS

Bids must be submitted as directed on the Invitation for Bids. Do not include in the envelope any bids for other work.

ADDENDA REQUIREMENTS

The bid documents provide for acknowledgement individually of all addenda to the drawings and/or specifications on the signature page of the Proposal. All addenda shall be acknowledged on the Proposal or by telegram prior to the scheduled time of bid opening. If no addenda are received by the bidder, the word "None" should be shown as specified.

Every effort will be made by the Department to insure that Contractors receive all addenda when issued. Addenda will be issued to the individual or company to whom bidding documents were issued. Addenda may be issued by any reasonable method such as hand delivery, mail, telefacsimile, telegraph, email, internet download, courier and in special circumstances by phone. Addenda will be issued to the address, telefacsimile number or phone number as stated on the planholder's list unless picked up in person or included with the bid documents. It is the bidder's responsibility to insure that he has received all addenda affecting the Invitation for Bids. No claim

or protest will be allowed based on the bidder's allegation that he did not receive all of the addenda for an Invitation for Bids. The Department is not responsible for issuing addenda to non-registered bidders.

WITHDRAWAL OR REVISION OF BIDS

A bidder may withdraw or revise a bid after it has been deposited with the Department, provided that the request for such withdrawal or revision is received by the designated office, in writing, by telegram, or by telefacsimile, before the time set for opening of bids.

Telegraphic or telefacsimile modifications shall include both the modification of the unit bid price and the total modification of each item modified, but shall not reveal the amount of the total original or revised bids. Form 06D-16 shall be used to submit such modifications.

RECEIPT AND OPENING OF BIDS

- (a) All bids, including any amendment or withdrawal must be received by the Department prior to the scheduled time of bid opening. Any bid, amendment, or withdrawal that has not been actually received by the Department prior to the time of the scheduled bid opening will not be considered.
- (b) No responsibility will be attached to any officer or employee of the Department for the premature opening of, or failure to open, a bid improperly addressed or identified.
- (c) The Department reserves the right to waive any technicality in bids received when such waiver is in the interest of the State.

BIDDERS PRESENT

At the time fixed for bid opening, bids will be publicly opened and read for the information of bidders and others properly interested, who may be present either in person or by representative. The amount of the bid and the name of the bidder shall be compiled and distributed as soon as possible after bid opening. Bids are not open for public inspection until after the Notice of Intent to Award is issued.

BIDDERS INTERESTED IN MORE THAN ONE BID

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

REJECTION OF BIDS

The Department reserves the right to reject any and all bids when such rejection is in the best interest of the State; to reject the bid of a bidder who has previously failed to perform properly, or complete on time, contracts of a similar nature; to reject the bid of a bidder who is not, in the opinion of the Contracting Officer, in a position to perform the contract; and to reject a bid as non-responsive where the bidder fails to furnish the required documents, fails to complete required documents in the manner directed, or makes unauthorized alterations to the bid documents.

AWARD OF CONTRACT

- (a) The letter of award, if the contract is to be awarded, will be issued to the lowest responsible and responsive bidder as soon as practical and usually within 40 calendar days after opening of proposals.
- (b) The successful bidder will be notified of the Department's intent to award the contract and requested to execute certain documents, including the contract form and bonds.
- (c) The contract will be awarded to the successful bidder following receipt by the Department of all required documents, properly executed, within the time specified in the intent to award. Failure to enter into a contract within the specified time shall be grounds for forfeiture of the bid security and consideration of the second low bidder for award.

**STATE OF ALASKA
DEPARTMENT OF HEALTH & SOCIAL SERVICES**

SUPPLEMENTARY INFORMATION TO BIDDERS

This document modifies or adds to the provisions of Department of Health & Social Services form 06D-3, INFORMATION TO BIDDERS.

Following subparagraph (c) under subject area "PREPARATION OF BIDS", add the following subparagraph:

"(C-1) When provided within the supplements to the bid schedule the Bidder shall specify those Alaska bidder and product preferences applicable to their bid. All entries made by the Bidder and designating applicable preferences must conform to the requirements of AS 36.30 and the instructions on the forms to warrant consideration."

Following subject area "REJECTION OF BIDS", add the following subject area:

"CONSIDERATION OF PROPOSALS

After the Proposals are opened and read, they will be compared on the basis identified on the bid schedule and the apparent low Bidder announced. The apparent low Bidder shall, within 5 working days following identification as the apparent low Bidder, submit a list of all firms with which the prime CONTRACTOR intends to execute subcontracts for the performance of the Contract. The list shall include the name, business address, Alaska business license number and contractor's registration number of each proposed Subcontractor.

Upon confirmation of the contents of the proposal the low Bidder will be identified by the DEPARTMENT by telephone and in writing. If the low Bidder differs from the apparent low Bidder then the requirements for Subcontractor listing, as noted above, shall become effective upon the low Bidder at the time of identification.

If a Bidder fails to list a Subcontractor or lists more than one Subcontractor for the same portion of Work and the value of that Work is in excess of one-half of one percent of the total bid, the Bidder agrees that it shall be considered to have agreed to perform that portion of Work without the use of a Subcontractor and to have represented that the Bidder is qualified to perform the Work.

A Bidder who attempts to circumvent the requirements of this section by listing as a Subcontractor another contractor who, in turn, sublets the majority of the Work required under the Contract, violates this section.

If a Contract is awarded to a Bidder who violates this section, the Bidder agrees that the Contracting Officer may:

- (1) cancel the Contract without any damages accruing to the State; or
- (2) after notice and a hearing, assess a penalty on the Bidder in an amount that does not exceed 10 percent of the value of the Subcontract at issue.

A Bidder may replace a listed Subcontractor who:

- (1) fails to comply with AS 08.18;
- (2) files for bankruptcy or becomes insolvent;
- (3) fails to execute a contract with the Bidder involving performance of the Work for which the Subcontractor was listed and the Bidder acted in good faith;
- (4) fails to obtain bonding;
- (5) fails to obtain insurance acceptable to the State;
- (6) fails to perform the Contract with the Bidder involving Work for which the Subcontractor was listed;
- (7) must be substituted in order for the prime CONTRACTOR to satisfy required State and Federal affirmative action requirements;
- (8) refuses to agree or abide with the bidder's labor agreement; or
- (9) is determined by the Contracting Officer to be non-responsive."

Modify subject area "AWARD OF CONTRACT" as follows:

Subparagraph (a) substitute the word "generally" for the phrase "as soon as practical and"

Subparagraph (b) delete and substitute the following:

"All Bidders will be notified of the DEPARTMENT's intent to Award the Contract and the successful Bidder will be requested to execute certain documents, including the Contract form and bonds."



STATE OF ALASKA
DEPARTMENT OF HEALTH & SOCIAL SERVICES

REQUIRED DOCUMENTS

State Funded Contracts

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C

REQUIRED FOR BID. Bids will not be considered if the following documents are not completely filled out and submitted at the time of bidding:

1. **Bid Form (Form 06D-9)**
 2. **Bid Schedule**
 3. **Bid Bond (Form 06D-14)**
 4. Any bid revisions must be submitted by the bidder prior to bid opening on the following form:
Bid Modification (Form 06D-16)
-

REQUIRED AFTER NOTICE OF APPARENT LOW BIDDER. The apparent low bidder is required to complete and submit the following document within 5 working days after receipt of written notification:

1. **Subcontractor List (Form 06D-5)**
-

REQUIRED FOR AWARD. In order to be awarded the contract, the successful bidder must completely fill out and submit the following documents within the time specified in the intent to award letter:

1. **Contract (Form 06D-10A)**
2. **DD Form 214 or NGB Form 22 (if claiming Alaska Veterans Preference under AS 36.30.175(d))**
3. **Payment Bond (Form 06D-12)**
4. **Performance Bond (Form 06D-13)**
5. **Contractor's Questionnaire (Form 06D-8)**
6. **Contractor's Certification of Subcontractors (Form 05)**
7. **Certificate of Insurance (from carrier)**
8. **Dept. of Labor – Notice of Work Form**



STATE OF ALASKA
DEPARTMENT OF HEALTH & SOCIAL SERVICES

ALASKA VETERAN'S PREFERENCE AFFIDAVIT

In response to the Invitation to Bid for:

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C,

I certify under penalty of perjury that _____
(Name) qualifies for the Alaska Veteran's Preference under the following conditions:

(a) If a bidder qualifies under AS 36.30.170(b) as an Alaska bidder and is a qualifying entity, a five percent bid preference shall be applied to the bid price (preference may not exceed \$5,000). In this subsection, "qualifying entity" means a:

- (1) Sole proprietorship owned by an Alaska Veteran;
- (2) Partnership under AS 32.06 or AS 32.11 if a majority of the members are Alaska Veteran's;
- (3) Limited Liability Company organized under AS 10.50 if a majority of the individuals are Alaska Veterans.

(b) To qualify for a preference under this section, a bidder must add value by the bidder itself actually performing, controlling, managing and supervising a significant part of the services provided, or the bidder must have sold supplies of the general nature solicited to other state agencies, governments, or the general public.

(c) In this section, "Alaska Veteran" means an individual who is a:

- (1) Resident of this state; and
- (2) Veteran; means an individual who:

(A) Served in the:

- (i) Armed Forces of the United States, including a reserve unit of the United States armed forces; or
- (ii) Alaska Territorial Guard, the Alaska Army National Guard, the Alaska Air National Guard, or the Alaska Naval Militia; and

(B) Was separated from the service under a condition that was not dishonorable.

Authorized Signature

Printed Name

Date



STATE OF ALASKA
DEPARTMENT OF HEALTH & SOCIAL SERVICES

BID FORM

For

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C

Project Name and Number

By

Company Name

Company Address (Street or PO Box, City, State, Zip)

**To the CONTRACTING OFFICER,
DEPARTMENT OF HEALTH & SOCIAL SERVICES**

In compliance with your Invitation for Bids dated _____, the Undersigned proposes to furnish and deliver all the materials and do all the work and labor required in the construction of the above-referenced Project, located at or near _____, **Alaska**, according to the plans and specifications and for the amount and prices named herein as indicated on the Bid Schedule consisting of _____ sheet(s), which is made a part of this Bid.

The Undersigned declares that he has carefully examined the contract requirements and that he has made a personal examination of the site of the work; that he understands that the quantities, where such are specified in the Bid Schedule or on the plans for this project, are approximate only and subject to increase or decrease, and that he is willing to perform increased or decreased quantities of work at unit prices bid under the conditions set forth in the Contract Documents.

The Undersigned hereby agrees to execute the said contract and bonds within fifteen calendar days, or such further time as may be allowed in writing by the Contracting Officer, after receiving notification of the acceptance of this bid, and it is hereby mutually understood and agreed that in case the Undersigned does not, the accompanying bid guarantee shall be forfeited to the State of Alaska, Department of Health & Social Services as liquidated damages, and the said Contracting Officer may proceed to award the contract to others.

The Undersigned agrees to commence the work within 10 calendar days and to complete the work by 180 days from issuance of Notice to Proceed, unless extended in writing by the Contracting Officer.

The Undersigned proposes to furnish Payment Bond in the amount of **50%** and Performance Bond in the amount of **50%** (of the contract), as surety conditioned for the full, complete and faithful performance of this contract.

The Undersigned acknowledges receipt of the following addenda to the drawings and/or specifications (give number and date of each).

Addenda Number	Date Issued

Addenda Number	Date Issued

Addenda Number	Date Issued

NON-COLLUSION AFFIDAVIT

The Undersigned declares, under penalty of perjury under the laws of the United States, that neither he, nor the firm, association, or corporation of which he is a member, has, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this bid.

The Undersigned has read the foregoing proposal and hereby agrees to the conditions stated therein by affixing his signature below:

Signature of Authorized Company Representative

Typed or Printed Name and Title

Phone Number

Fax Number

Email Address

INSTRUCTIONS FOR ALASKA PRODUCTS PREFERENCE WORKSHEET

Special Note:

All procurements, except those funded from Federal sources, shall contain Contract provisions for the preference of Alaska products. The products listed by the Bidder on this worksheet have been selected for the referenced project from the "Alaska Product Preference List" which was in force 30 days prior to the advertisement date of this contract.

Bidders may obtain a copy of the appropriate listing "Alaska Preference List" by contacting their local DCED office or by writing: Dept. of Commerce & Economic Development, Alaska Products Preference Listing, P.O. Box D, Juneau, AK 99811.

BIDDERS INSTRUCTIONS:

A. **General.** The Contracting Agency may request documentation to support entries made on this form. False presentations may be subject to AS 36.30.687. All Bidder's entries must conform to the requirements covering bid preparations in general. Discrepancies in price extensions shall be resolved by multiplying the declared total value times the preference percentage and adjusting any resulting computation accordingly.

B. **Form Completion - BASIC BIDS.**

(1) Enter project number and name, the words "Basic Bid" and the CONTRACTOR'S name in the heading of each page as provided.

(2) The Bidder shall compare those candidate products appearing on the preference listing (see Special Notice comments above) against the requirements of the technical specifications appearing in the contract documents. If the Bidder determines that a candidate product can suitably meet the contract requirements, then that product may be included in the worksheet as follows.

(3) For each suitable product submitted under the "Basic Bid" enter:

- ! the product name, generic description and its corresponding technical specification section number under the heading "PRODUCT",
- ! the company name of the Alaska producer under the heading "MANUFACTURER", and,
- ! the product class (I, II, or III) and preference percentage (3, 5, or 7%, respectively) under the "CLASS/%" heading.

(4) For each product appearing on the list and to be utilized by the CONTRACTOR enter:

- ! under the heading "TOTAL DECLARED VALUE" the manufacturer's quoted price of the product, (caution: this value is to be the manufacturer's quoted price at the place of origin and shall not include costs for freight, handling or miscellaneous charges of incorporating the product into the Work), and
- ! the resulting preference--ie.: the preference percentage times the total declared value amount -- under the heading "REDUCTION AMOUNT".

(5) Continue for all "suitable" basic bid products. If the listing exceeds one page enter the words "Page #__SUB" in front of the word "TOTAL" and on the first entry line of the following page enter "SUBTOTAL OF REDUCTION AMOUNT FROM PREVIOUS PAGE".

(6) On the final page of the listing enter "BASIC BID PREFERENCE GRAND" immediately before the word "TOTAL".

(7) Total the entries in the "REDUCTION AMOUNT" column for each page by commencing at the first entry for that page. If a continuation page exists, ensure that the subtotal from the previous page is computed into the running total. Number pages as appropriate.

(8) Compute a Grand Total for the Basic Bid Preference. Enter this amount on the final page of the worksheet and at line or column "C" on the Bid Schedule or Bid Schedule Summary Sheet as appropriate. Submit worksheet(s) with Bid Schedule Summary Sheet.

C. **Forms Completion - ALTERNATE BIDS.**

(1) Enter project number and name, the words "ALTERNATE BID #_____", and CONTRACTOR'S name in the heading of each page as provided.

(2) On the first entry line enter "ADDITIONAL ALASKA PRODUCTS FOR ALTERNATE BID #_____", and repeat procedures 2 through 5 under part B of these Bidder's instructions except that references to "Basic Bid" shall be replaced with the words "Alternate Bid #_____".

(3) Following the listing of all additional Alaska products enter the words "ADDITIONAL PRODUCTS PREFERENCE FOR ALTERNATE BID #____--SUBTOTAL" and enter a subtotal amount for all additional products as listed. Subtotal amount to be determined by adding all additional product entries in the "REDUCTION AMOUNT" column.

(4) Skip three lines and enter "LESS THE FOLLOWING NON-APPLICABLE ALASKA PRODUCTS".

(5) Beginning on the next line enter the product name and manufacturer of each Alaska Product appearing on the "Basic Bid" listing which would be deleted or reduced from the Project should the "Alternate Bid" be selected. Details of entry need only be sufficient to clearly reference the subject product. (ie. "Prehung Doors by Alaska Door Co. in lieu of "Prehung Solid Core Wood Door, model "Super Door", Section 08210, by Alaska Door Co., Anchorage.) Products being reduced shall specify the amount of the reduction. Should no products require deletion enter "None". When a product is listed as a "NON-APPLICABLE ALASKA PRODUCT" for this alternate bid and if under the basic bid the Bidder received a preference on his basic bid as a result of that product, then the applicable entries under the headings "TOTAL DECLARED VALUE" and "REDUCTION AMOUNT" (for each product and from the basic bid listing) shall also be entered into the corresponding headings of this form. Where only a portion of the product has been deleted, the entry (which will differ from those on the basic bid listing) may be "pro-rated" or as otherwise substantiated.

(6) Following the listing of all non-applicable Alaska products enter the words "NON-APPLICABLE PRODUCTS PREFERENCE FORM BASIC BID --SUBTOTAL" and enter a subtotal amount for all non-applicable products as listed. Subtotal amount to be determined by adding all non-applicable entries in the "REDUCTION AMOUNT" column.

(7) At the bottom of the final page enter the words "ALTERNATE BID #____PREFERENCE GRAND" immediately before the word "TOTAL".

(8) Compute a Grand Total for the Alternate Bid Preference (for Alternate #____) by subtracting the non-applicable product preference subtotal from the additional product preference subtotal. Enter on the final page as provided and at the corresponding line in column "C" on the Bid Schedule Summary Sheet. Submit worksheet(s) with the Bid Schedule Summary Sheet.

(9) A separate listing for each alternate bid is required.

BID SCHEDULE

Project: **Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C**

Bidders Please Note: Before preparing this bid schedule, read carefully, "Information to Bidders", "Supplementary Information to Bidders", and the following:

The Bidder shall insert a fixed price in figures opposite each pay item that appears in the bid schedule to furnish all labor, material, equipment, supervision, and provide all work for each item listed. No price is to be entered or tendered for any item not appearing in the bid schedule. Conditioned or qualified bids will be considered non-responsive.

PAY ITEM	DESCRIPTION OF PAY ITEM	TOTAL BID PRICE, IN FIGURES

1. BASIC BID All work described in the Specifications and Construction Documents for the Project # **ANC 13-50C**

a.	Lump Sum Total Basic Bid	\$ _____
b.	Alaska Bidder's Preference - (5% of Basic Bid)	\$ _____
c.	Alaska Veterans Preference - 5% of Basic Bid (May not exceed \$5,000)	\$ _____
d.	Alaska Products Preference - (Attach worksheet(s))	\$ _____
e.	Adjusted Basic Bid: (a – b – c – d)	\$ _____

Contractor's Name (Printed)

Alaska Contractor's Registration #

Expires

Alaska Business License #

Expires



STATE OF ALASKA
DEPARTMENT OF HEALTH & SOCIAL SERVICES

BID BOND

For

Anchorage Pioneer Home South Building Boiler Replacement - ANC 13-50C

Project Name and Number

DATE BOND EXECUTED: _____

PRINCIPAL (Legal name and business address):

TYPE OF ORGANIZATION:

	☐ Individual	☐ Partnership
	☐ Joint Venture	☐ Corporation
STATE OF INCORPORATION:		

SURETY(IES) (Name and business address):

A.	B.	C.
PENAL SUM OF BOND:		DATE OF BID:

We, the PRINCIPAL and SURETY above named, are held and firmly bound to the State (State of Alaska), in the penal sum of the amount stated above, for the payment of which sum will be made, we bind ourselves and our legal representatives and successors, jointly and severally, by this instrument.

THE CONDITION OF THE FOREGOING OBLIGATION is that the Principal has submitted the accompanying bid in writing, date as shown above, on above-referenced Project in accordance with contract documents filed in the office of the Contracting Officer, and under the Invitation for Bids therefore, and is required to furnish a bond in the amount stated above.

If the Principal's bid is accepted and he is offered the proposed contract for award, and if the Principal fails to enter into the contract, then the obligation to the State created by this bond shall be in full force and effect.

If the Principal enters into the contract, then the foregoing obligation is null and void.

PRINCIPAL

Signature(s)	1.	2.	3.
Name(s) & Title(s) (Typed)	1.	2.	3.
See Instructions on Reverse			
Corporate Seal			

CORPORATE SURETY(IES)

Surety A	Name of Corporation	State of Incorporation	Liability Limit \$
Signature(s)	1.	2.	Corporate Seal
Name(s) & Titles (Typed)	1.	2.	

Surety B	Name of Corporation	State of Incorporation	Liability Limit \$
Signature(s)	1.	2.	Corporate Seal
Name(s) & Titles (Typed)	1.	2.	

Surety C	Name of Corporation	State of Incorporation	Liability Limit \$
Signature(s)	1.	2.	Corporate Seal
Name(s) & Titles (Typed)	1.	2.	

INSTRUCTIONS

1. This form shall be used whenever a bid bond is submitted.
2. Insert the full legal name and business address of the Principal in the space designated. If the Principal is a partnership or joint venture, the names of all principal parties must be included (e.g., "Smith Construction, Inc. and Jones Contracting, Inc. DBA Smith/Jones Builders, a joint venture"). If the Principal is a corporation, the name of the state in which incorporated shall be inserted in the space provided.
3. Insert the full legal name and business address of the Surety in the space designated. The Surety on the bond may be any corporation or partnership authorized to do business in Alaska as an insurer under AS 21.09. Individual sureties will not be accepted.
4. The penal amount of the bond may be shown either as an amount (in words and figures) or as a percent of the contract bid price (a not-to-exceed amount may be included).
5. The scheduled bid opening date shall be entered in the space marked Date of Bid.
6. The bond shall be executed by authorized representatives of the Principal and Surety. Corporations executing the bond shall also affix their corporate seal.
7. Any person signing in a representative capacity (e.g., an attorney-in-fact) must furnish evidence of authority if that representative is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved.
8. The states of incorporation and the limits of liability of each surety shall be indicated in the spaces provided.
9. The date that bond is executed must not be later than the bid opening date.



STATE OF ALASKA
DEPARTMENT OF HEALTH AND SOCIAL SERVICES

BID MODIFICATION

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C

Project Name and Number

Modification Number: _____

Note: All revisions shall be made to the unadjusted bid amount(s).

Changes to the adjusted bid amounts will be computed by the Department.

PAY ITEM NO.	PAY ITEM DESCRIPTION	REVISION TO UNIT BID PRICE +/-	REVISION TO BID AMOUNT +/-
		N/A	

TOTAL REVISION: \$ _____

Name of Bidding Firm

Responsible Party Signature

Date

This form may be duplicated if additional pages are needed.



STATE OF ALASKA
DEPARTMENT OF HEALTH & SOCIAL SERVICES

SUBCONTRACTOR LIST

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C
Project Name and Number

The apparent low bidder shall complete this form and submit it so as to be received by the Contracting Officer prior to the close of business on the fifth working day after receipt of written notice from the Department.

Failure to submit this form with all required information by the due date will result in the bidder being declared non-responsive and may result in the forfeiture of the Bid Security.

Scope of work must be clearly defined. If an item of work is to be performed by more than one firm, indicate the portion or percent of work to be done by each.

Check as applicable:

☐ All work on the below-referenced project will be accomplished without subcontracts greater than ½ of 1% of the contract amount.

OR

☐ Subcontractor List is as follows:

FIRM NAME, ADDRESS, & PHONE No.	AK BUSINESS LICENSE No. & CONTRACTOR'S REGISTRATION No.	SCOPE OF WORK TO BE PERFORMED

CONTINUE SUBCONTRACTOR INFORMATION ON REVERSE

I hereby certify the listed Alaska Business licenses and Contractor's registrations were valid at the time bids were opened for this project.

Signature of Authorized Company Representative

Title

Company Name

Company Address (Street or PO Box, City, State, Zip)

Date

Phone Number

FIRM NAME, ADDRESS, & PHONE No.	AK BUSINESS LICENSE No. & CONTRACTOR'S REGISTRATION No.	SCOPE OF WORK TO BE PERFORMED



STATE OF ALASKA
DEPARTMENT OF HEALTH & SOCIAL SERVICES

CONSTRUCTION CONTRACT

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C

Project Name and Number

This CONTRACT, between the STATE OF ALASKA, DEPARTMENT OF HEALTH & SOCIAL SERVICES, herein called the Department, acting by and through its Contracting Officer, and

Company Name

Company Address (Street or PO Box, City, State, Zip)

a/an ☐ Individual ☐ Partnership ☐ Joint Venture ☐ Sole Proprietorship ☐ Corporation incorporated under the laws of the State of _____, its successors and assigns, herein called the Contractor, is effective the date of the signature of the Contracting Officer on this document.

WITNESSETH: That the Contractor, for and in consideration of the payment or payments herein specified and agreed to by the Department, hereby covenants and agrees to furnish and deliver all the materials and to do and perform all the work and labor required in the construction of the above-referenced project at the prices bid by the Contractor for the respective estimated quantities aggregating approximately the sum of

_____ Dollars
(\$ _____), and such other items as are mentioned in the original Bid, which Bid and prices named, together with the Contract Documents are made a part of this Contract and accepted as such.

It is distinctly understood and agreed that no claim for additional work or materials, done or furnished by the Contractor and not specifically herein provided for, will be allowed by the Department, nor shall the Contractor do any work or furnish any material not covered by this Contract, unless such work is ordered in writing by the Department. In no event shall the Department be liable for any materials furnished or used, or for any work or labor done, unless the materials, work, or labor are required by the Contract or on written order furnished by the Department. Any such work or materials which may be done or furnished by the Contractor without written order first being given shall be at the Contractor's own risk, cost, and expense and the Contractor hereby covenants and agrees to make no claim for compensation for work or materials done or furnished without such written order.

The Contractor further covenants and agrees that all materials shall be furnished and delivered and all labor shall be done and performed, in every respect, to the satisfaction of the Department, on or before: 180 Days from issuance of Notice to Proceed.

It is expressly understood and agreed that in case of the failure on the part of the Contractor, for any reason, except with the written consent of the Department, to complete the furnishing and delivery of materials and the doing and performance of the work before the aforesaid date, the Department shall have the right to deduct from any money due or which may become due the Contractor, or if no money shall be due, the Department shall have the right to recover

Five Hundred dollars (\$500.00) per day for each calendar day elapsing between the time stipulated for the completion and the actual date of completion in accordance with the terms hereof; such deduction to be made, or sum to be recovered, not as a penalty but as liquidated damages.

The bonds given by the Contractor in the sum of \$_____ Payment Bond, and \$_____ Performance Bond, to secure the proper compliance with the terms and provisions of this Contract, are submitted herewith and made a part hereof.

IN WITNESS WHEREOF, the parties hereto have executed this Contract and hereby agree to its terms and conditions.

CONTRACTOR

Company Name

Signature of Authorized Company Representative

Typed or Printed Name and Title

Date

(Corporate Seal)

**STATE OF ALASKA
DEPARTMENT OF HEALTH & SOCIAL SERVICES**

Signature of Contracting Officer

Jennifer Klein, FMS Facilities Chief/Contracting Officer

Typed or Printed Name

Date



STATE OF ALASKA
DEPARTMENT OF HEALTH & SOCIAL SERVICES

PERFORMANCE BOND

Bond No. _____

For

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C

Project Name and Number

KNOW ALL WHO SHALL SEE THESE PRESENTS:

That _____
of _____ as Principal,
and _____
of _____ as Surety,
firmly bound and held unto the State of Alaska in the penal sum of _____ Dollars

(\$ _____) good and lawful money of the United States of America for the payment whereof,
well and truly to be paid to the State of Alaska, we bind ourselves, our heirs, successors, executors, administrators, and assigns,
jointly and severally, firmly by these presents.

WHEREAS, the said Principal has entered into a written contract with said State of Alaska, on the _____ of _____
A.D., 20____, for construction of the above-named project, said work to be done according to the terms of said contract.

Now, THEREFORE, the conditions of the foregoing obligation are such that if the said Principal shall well and truly perform and
complete all obligations and work under said contract and if the Principal shall reimburse upon demand of the Department of
Transportation and Public Facilities any sums paid him which exceed the final payment determined to be due upon completion of the
project, then these presents shall become null and void; otherwise they shall remain in full force and effect.

IN WITNESS WHEREOF, we have hereunto set our hands and seals at _____,
_____ this _____ day of _____ A.D., 20____.

Principal: _____

Address: _____

By: _____

Contact Name: _____

Phone: () _____

Surety: _____

Address: _____

By: _____

Contact Name: _____

Phone: () _____

The offered bond has been checked for adequacy under the applicable statutes and regulations:

Alaska Department of Health & Social Services Authorized Representative

Date

INSTRUCTIONS

1. This form shall be used whenever a performance bond is required. There shall be no deviation from this form without approval from the Contracting Officer.
2. The full legal name, business address, phone number, and point of contact of the Principal and Surety shall be typed on the face of the form. Where more than a single surety is involved, a separate form shall be executed for each surety.
3. The penal amount of the bond, or in the case of more than one surety the amount of obligation, shall be typed in words and in figures.
4. Where individual sureties are involved, a completed Affidavit of Individual Surety shall accompany the bond. Such forms are available upon request from the Contracting Officer.
5. The bond shall be signed by authorized persons. Where such person is signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved, evidence of authority must be furnished.



STATE OF ALASKA
DEPARTMENT OF HEALTH & SOCIAL SERVICES

PAYMENT BOND

Bond No. _____

For

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C

Project Name and Number

KNOW ALL WHO SHALL SEE THESE PRESENTS:

That _____
of _____ as Principal,
and _____
of _____ as Surety,
firmly bound and held unto the State of Alaska in the penal sum of _____ Dollars

(\$ _____) good and lawful money of the United States of America for the payment whereof,
well and truly to be paid to the State of Alaska, we bind ourselves, our heirs, successors, executors, administrators, and assigns,
jointly and severally, firmly by these presents.

WHEREAS, the said Principal has entered into a written contract with said State of Alaska, on the _____ of _____
A.D., 20____, for construction of the above-referenced project, said work to be done according to the terms of said contract.

Now, THEREFORE, the conditions of the foregoing obligation are such that if the said Principal shall comply with all requirements
of law and pay, as they become due, all just claims for labor performed and materials and supplies furnished upon or for the work
under said contract, whether said labor be performed and said materials and supplies be furnished under the original contract, any
subcontract, or any and all duly authorized modifications thereto, then these presents shall become null and void; otherwise they
shall remain in full force and effect.

IN WITNESS WHEREOF, we have hereunto set our hands and seals at _____,
_____ this _____ day of _____ A.D., 20____.

Principal: _____

Address: _____

By: _____

Contact Name: _____

Phone: () _____

Surety: _____

Address: _____

By: _____

Contact Name: _____

Phone: () _____

The offered bond has been checked for adequacy under the applicable statutes and regulations:

Alaska Department of Health & Social Services Authorized Representative

Date

INSTRUCTIONS

1. This form, for the protection of persons supplying labor and material, shall be used whenever a payment bond is required. There shall be no deviation from this form without approval from the Contracting Officer.
2. The full legal name, business address, phone number, and point of contact of the Principal and Surety shall be typed on the face of the form. Where more than a single surety is involved, a separate form shall be executed for each surety.
3. The penal amount of the bond, or in the case of more than one surety the amount of obligation, shall be typed in words and in figures.
4. Where individual sureties are involved, a completed Affidavit of Individual Surety shall accompany the bond. Such forms are available upon request from the Contracting Officer.
5. The bond shall be signed by authorized persons. Where such persons are signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved, evidence of authority must be furnished.



CONTRACTOR’S QUESTIONNAIRE

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C

Project Name and Number

A. FINANCIAL

1. Have you ever failed to complete a contract due to insufficient resources?
[] No [] Yes If YES, explain:

2. Describe any arrangements you have made to finance this work: _____
- _____
- _____

B. EQUIPMENT

1. Describe below the equipment you have available and intend to use for this project.

ITEM	QUAN.	MAKE	MODEL	SIZE/ CAPACITY	PRESENT MARKET VALUE

2. What percent of the total value of this contract do you intend to subcontract? _____ %

3. Do you propose to purchase any equipment for use on this project?
[] No [] Yes If YES, describe type, quantity, and approximate cost:

4. Do you propose to rent any equipment for this work?
[] No [] Yes If YES, describe type and quantity:

5. Is your bid based on firm offers for all materials necessary for this project?
[] Yes [] No If NO, please explain:

C. EXPERIENCE

1. Have you had previous construction contracts or subcontracts with the State of Alaska?
[] Yes [] No

Describe the most recent or current contract, its completion date, and scope of work:

2. List, as an attachment to this questionnaire, other construction projects you have completed, the dates of completion, scope of work, and total contract amount for each project completed in the past 12 months.

I hereby certify that the above statements are true and complete.

Name of Contractor

Name and Title of Person Signing

Signature

Date

**STATE OF ALASKA
DEPARTMENT OF HEALTH AND SOCIAL SERVICES
DOCUMENT 00700 - ISSUED JULY 1985**

**GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT FOR
BUILDINGS**

- ARTICLE 1 - DEFINITIONS**
- ARTICLE 2 - AUTHORITIES AND LIMITATIONS**
- 2.1 Authorities and Limitations
 - 2.2 Evaluations by Contracting Officer
 - 2.3 Means and Methods
 - 2.4 Visits to Site
- ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE**
- 3.1 Incomplete Contract Documents
 - 3.2 Copies of Contract Documents
 - 3.3 Scope of Work
 - 3.4 Intent of Contract Documents
 - 3.5 Discrepancy in Contract Documents
 - 3.6 Clarifications and Interpretations
 - 3.7 Reuse of Documents
- ARTICLE 4 - LANDS AND PHYSICAL CONDITIONS**
- 4.1 Availability of Lands
 - 4.2 Visit to Site/Place of Business
 - 4.3 Explorations and Reports
 - 4.4 Utilities
 - 4.5 Damaged Utilities
 - 4.6 Utilities Not Shown or Indicated
 - 4.7 Survey Control
- ARTICLE 5 - BONDS AND INSURANCE**
- 5.1 Delivery of Bonds
 - 5.2 Bonds
 - 5.3 Replacement of Bond and Surety
 - 5.4 Insurance Requirements
 - 5.5 Indemnification
- ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES**
- 6.1 Supervision of Work
 - 6.2 Superintendence by CONTRACTOR
 - 6.3 Character of Workers
 - 6.4 CONTRACTOR to Furnish
 - 6.5 Materials and Equipment
 - 6.6 Anticipated Schedules
 - 6.7 Finalizing Schedules¹
 - 6.8 Adjusting Schedules
 - 6.9 Substitutes or "Or-Equal" Items
 - 6.10 Substitute Means and Methods
 - 6.11 Evaluation of Substitution
 - 6.12 Dividing the Work
 - 6.13 Subcontractors
 - 6.14 Use of Premises
 - 6.15 Structural Loading

- 6.16 Record Documents
- 6.17 Safety and Protection
- 6.18 Safety Representative
- 6.19 Emergencies
- 6.20 Shop Drawings and Samples
- 6.21 Shop Drawing and Sample Review
- 6.22 Maintenance During Construction
- 6.23 Continuing the Work
- 6.24 Consent to Assignment
- 6.25 Use of Explosives
- 6.26 CONTRACTOR's Records

ARTICLE 7 - LAWS AND REGULATIONS

- 7.1 Laws to be Observed
- 7.2 Permits, Licenses, and Taxes
- 7.3 Patented Devices, Materials and Processes
- 7.4 Compliance of Specifications and Drawings
- 7.5 Accident Prevention
- 7.6 Sanitary Provisions
- 7.7 Business Registration
- 7.8 Professional Registration and Certification
- 7.9 Local Building Codes
- 7.10 Air Quality Control
- 7.11 Archaeological or Paleontological Discoveries
- 7.12 Applicable Alaska Preferences
- 7.13 Preferential Employment
- 7.14 Wages and Hours of Labor
- 7.15 Overtime Work Hours and Compensation
- 7.16 Covenant Against Contingent Fees
- 7.17 Officials Not to Benefit
- 7.18 Personal Liability of Public Officials

ARTICLE 8 - OTHER WORK

- 8.1 Related Work at Site
- 8.2 Access, Cutting, and Patching
- 8.3 Defective Work by Others
- 8.4 Coordination

ARTICLE 9 - CHANGES

- 9.1 DEPARTMENT's Right to Change
- 9.2 Authorization of Changes within the General Scope
- 9.3 Directive
- 9.4 Change Order
- 9.5 Shop Drawing Variations
- 9.6 Changes Outside the General Scope; Supplemental Agreement
- 9.7 Unauthorized Work
- 9.8 Notification of Surety
- 9.9 Differing Site Conditions

ARTICLE 10- CONTRACT PRICE; COMPUTATION AND CHANGE

- 10.1 Contract Price
- 10.2 Claim for Price Change
- 10.3 Change Order Price Determination
- 10.4 Cost of the Work
- 10.5 Excluded Costs
- 10.6 CONTRACTOR's Fee

- 10.7 Cost Breakdown
- 10.8 Cash Allowances
- 10.9 Unit Price Work
- 10.10 Determinations for Unit Prices
- 10.11 Disadvantaged and Women Business Enterprises (DBE and WBE) Program

ARTICLE 11- CONTRACT TIME, COMPUTATION AND CHANGE

- 11.1 Commencement of Contract Time; Notice to Proceed
- 11.2 Starting the Work
- 11.3 Computation of Contract Time
- 11.4 Time Change
- 11.5 Extension Due to Delays
- 11.6 Essence of Contract
- 11.7 Reasonable Completion Time
- 11.8 Delay Damages

ARTICLE 12 - QUALITY ASSURANCE

- 12.1 Warranty and Guaranty
- 12.2 Access to Work
- 12.3 Tests and Inspections
- 12.4 Uncovering Work
- 12.5 DEPARTMENT May Stop the Work
- 12.6 Correction or Removal of Defective Work
- 12.7 One Year Correction Period
- 12.8 Acceptance of Defective Work
- 12.9 DEPARTMENT may Correct Defective Work

ARTICLE 13- PAYMENTS TO CONTRACTOR AND COMPLETION

- 13.1 Schedule of Values
- 13.2 Preliminary Payments
- 13.3 Application for Progress Payment
- 13.4 Review of Applications for Progress Payments
- 13.5 Stored Materials and Equipment
- 13.6 CONTRACTOR's Warranty of Title
- 13.7 Withholding of Payments
- 13.8 Retainage
- 13.9 Request for Release of funds
- 13.10 Substantial Completion
- 13.11 Access Following Substantial Completion
- 13.12 Final Inspection
- 13.13 Final Completion and Application for Payment
- 13.14 Final Payment
- 13.15 Final Acceptance
- 13.16 CONTRACTOR's Continuing Obligation
- 13.17 Waiver of Claims by CONTRACTOR
- 13.18 No Waiver of Legal Rights

ARTICLE 14- SUSPENSION OF WORK AND TERMINATION

- 14.1 DEPARTMENT May Suspend Work
- 14.2 Default of Contract
- 14.3 Rights or Remedies
- 14.4 Convenience Termination

ARTICLE 15- CLAIMS AND DISPUTES

- 15.1 Notification
- 15.2 Presenting Claim

- 15.3 C1aim Validity, Additional Information & Project Manager's Action
- 15.4 Contracting Officer's Decision

ACKNOWLEDGMENT

"The State of Alaska, General Conditions of the Construction Contract for Buildings " is based on the "Standard General Conditions of the Construction Contract" as published by the National Society of Professional Engineers (document number 1910-8, 1983 edition) on behalf of the Engineers Joint Construction Documents Committee. Portions of the NSPE General Conditions are reprinted herein by the express permission of NSPE. Modifications to the NSPE text are made to provide for State laws, regulations, and established procedures.

The granting of permission by NSPE to allow the State of Alaska to preprint portions of the NSPE document 1910-8, 1983 edition does not constitute approval of the State of Alaska General Conditions of the Construction Contract for Buildings.

ARTICLE 1 - DEFINITIONS

Wherever used in the Contract Documents the following terms, or pronouns in place of them, are used, the intent and meaning, unless a different intent or meaning is clearly indicated, shall be interpreted as set forth below.

The titles and headings of the articles, sections, and subsections herein are intended for convenience of reference and shall not be considered as having bearing on their interpretation.

Whenever used in the Specifications or other Contract Documents the following terms have the meaning indicated which are applicable to both the singular and plural thereof. Working titles which have a masculine gender, are intended to refer to persons of either sex.

Terms not defined below shall have their ordinary accepted meanings within the context which they are used. Words which have a well-known technical or trade meaning when used to describe work, materials or equipment shall be interpreted in accordance with such meaning. Words defined in Article 1 are capitalized throughout these General Conditions.

Addenda - All clarifications, corrections, or changes issued graphically or in writing by the DEPARTMENT after the Advertisement but prior to the opening of Proposals.

Advertisement - The public announcement, as required by law, inviting bids for Work to be performed or materials to be furnished.

Application for Payment - The form provided by the DEPARTMENT which is to be used by the CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

Approved or Approval - Means written approval by the Contracting Officer or his authorized representative as defined in Article 2.1.

A.S - Initials which stand for Alaska Statute.

Award - The acceptance, by the DEPARTMENT, of the successful bid.

Bid Bond - A type of Proposal Guaranty.

Bidder - Any individual, firm, corporation or any acceptable combination thereof, or joint venture submitting a bid for the advertised Work.

Calendar Day - Every day shown on the calendar, beginning and ending at midnight.

Change Order - A written order by the DEPARTMENT directing changes to the Contract Documents, within their general scope.

Conditions of the Contract - Those portions of the Contract Documents which define the rights and responsibilities of the contracting parties and of others involved in the Work. The Conditions of the Contract include General Conditions, Supplementary Conditions and other conditions.

Consultant - The person, firm, or corporation retained directly by the DEPARTMENT to prepare Contract Documents, perform construction administration services, or other Project related services.

Contingent Sum Work Item - When the bid schedule contains a Contingent Sum Work Item, the Work covered shall be performed only upon the written Directive of the Project Manager. Payment shall be made as provided in the Directive.

Contract - The written agreement between the DEPARTMENT and the CONTRACTOR setting forth the obligations of the parties and covering the Work to be performed, all as required by the Contract Documents.

Contract Documents - The Contract form, Addenda, the bidding requirements and CONTRACTOR's bid (including all appropriate bid tender forms), the bonds, the Conditions of the Contract and all other Contract requirements, the Specifications, and the Drawings furnished by the DEPARTMENT to the CONTRACTOR, together with all Change Orders and documents approved by the Contracting Officer, for inclusion, modifications and supplements issued on or after the Effective Date of the Contract.

Contracting Officer - The person authorized by the Commissioner to enter into and administer the Contract on behalf of the DEPARTMENT. He has authority to make findings, determinations and decisions with respect to the Contract and, when necessary, to modify or terminate the Contract. The Contracting Officer is identified on the construction Contract.

CONTRACTOR - The individual, firm, corporation or any acceptable combination thereof, contracting with the DEPARTMENT for performance of the Work.

Contract Price - The total moneys payable by the DEPARTMENT to the CONTRACTOR under the terms of the Contract Documents.

Contract Time - The number of Calendar Days or the date specified in the construction Contract and authorized time extensions which identify how much time the CONTRACTOR is allowed to achieve Final Completion.

Controlling Item - Any feature of the Work considered at the time by the Contracting Officer as essential to the orderly completion of the Work and which, if delayed, will delay the time of Final Completion of the Contract (such as an item of Work on the critical path of a network schedule).

Defective - An adjective which refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or Approval referred to in the Contract Documents, or has been damaged prior to the DEPARTMENT's Approval.

DEPARTMENT - The Alaska Department of Health and Social Services. References to "Owner", "State", "Contracting Agency", mean the DEPARTMENT.

Directive - A written communication to the CONTRACTOR from the Contracting Officer interpreting or enforcing a Contract requirement or ordering commencement of an item of Work.

Drawings - The Drawings which show the character and scope of the Work to be performed and which have been furnished by the DEPARTMENT or the DEPARTMENT's Consultant and are by reference made a part of the Contract Documents.

Effective Date of the Contract - The date on which the Contract is fully executed by both CONTRACTOR and the DEPARTMENT.

Final Acceptance - The DEPARTMENT's written acceptance of the Work following Final Completion and the performance of all Contract requirements by the CONTRACTOR.

Final Completion - The Project (or specified part thereof) has progressed to the point that all required Work is complete as determined by the Contracting Officer.

General Requirements - Sections of Division I of the Specifications which contain administrative and procedural requirements as well as requirements for temporary facilities which apply to Specification Divisions 2 through 16.

Holidays - In the State of Alaska, Legal Holidays occur on:

1. New Years Day - January 1
2. Martin Luther King's Birthday - Third Monday in January
3. President's Day - Third Monday in February
4. Seward's Day - Last Monday in March
5. Memorial Day - Last Monday in May
6. Independence Day - July 4
7. Labor Day - First Monday in September
8. Alaska Day - October 18
9. Veteran's Day - November 11
10. Thanksgiving Day - Fourth Thursday in November
11. Christmas Day - December 25
12. Every Sunday
13. Every day designated by public proclamation by the President of the United States or the Governor of the State as a legal Holiday.

If any Holiday listed above falls on a Saturday, Saturday and the preceding Friday are both legal Holidays. If the Holiday should fall on a Sunday, except (12) above, Sunday and the following Monday are both legal Holidays. See Title 44, Alaska Statutes.

Install - Means to build into the Work, ready to be used in complete and operable condition and in compliance with Contract Documents.

Invitation for Bids - A portion of the bidding documents soliciting bids for the Work to be performed.

Notice of Intent to Award - The written notice by the DEPARTMENT to all Bidders identifying the apparent successful Bidder and establishing the DEPARTMENT's intent to execute the Contract when all conditions required for execution of the Contract are met.

Notice to Proceed - A written notice to the CONTRACTOR to begin the Work and establishing the date on which the Contract Time begins.

Payment Bond - The security furnished by the CONTRACTOR and his Surety to guarantee payment of the debts covered by the bond.

Performance Bond - The security furnished by the CONTRACTOR and his Surety to guarantee performance and completion of the Work in accordance with the Contract.

Project - The total construction, of which the Work performed under the Contract Documents is the whole or a part, where such total construction may be performed by more than one CONTRACTOR.

Project Manager - The authorized representative of the Contracting Officer who is responsible for administration of the Contract.

Proposal - The offer of a Bidder, on the prescribed forms, to perform the Work at the prices quoted.

Proposal Guaranty - The security furnished with a Proposal to guarantee that the bidder will enter into a Contract if his Proposal is accepted by the DEPARTMENT.

Regulatory Requirements - Laws, rules, regulations, ordinances, codes and/or orders.

Schedule of Values - The DEPARTMENT's document, submitted by the CONTRACTOR and reviewed by the Contracting Officer, which shall serve as the basis for computing payment and for establishing the value of separate items of Work which comprise the Contract Price.

Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for the CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by the CONTRACTOR to illustrate material, equipment, fabrication, or erection for some portion of the Work.

Specifications - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative and procedural details applicable thereto.

Subcontractor - An individual, firm, or corporation to whom the CONTRACTOR or any other Subcontractor sublets part of the Contract.

Substantial Completion - Although not fully completed, the Work (or a specified part thereof) has progressed to the point where, in the opinion of the Contracting Officer, as evidence by the DEPARTMENT's written notice, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended. The terms "Substantially Complete" and "Substantially Completed" as applied to any Work refer to Substantial Completion thereof.

Supplemental Agreement - A written agreement between the CONTRACTOR and the DEPARTMENT covering work that is not within the general scope of the Contract.

Supplementary Conditions - The part of the Contract Documents which amends or supplements these General Conditions.

Supplier - A manufacturer, fabricator, distributor, materialman or vendor of materials or equipment.

Surety - The corporation, partnership, or individual, other than the CONTRACTOR, executing a bond furnished by the CONTRACTOR.

Unit Price Work - Work to be paid for on the basis of unit prices.

Using Agency - The entity who will occupy or use the completed Project.

Work - Work is the act of, and the result of, performing services, furnishing labor, furnishing and incorporating materials and equipment into the Project and performing other duties and obligations, all as required by the Contract Documents. Such Work, however incremental, will culminate in the entire completed Project, or the various separately identifiable parts thereof.

ARTICLE 2 - AUTHORIZATION AND LIMITATIONS

2.1 Authorities and Limitations

- 2.1.1 The Contracting Officer alone, shall have the power to bind the DEPARTMENT and to exercise the rights, responsibilities, authorities and functions vested in the Contracting Officer by the Contract Documents, except that the Contracting Officer shall have the right to designate in writing authorized representatives to act for him. Wherever any provision of the Contract Documents specifies an individual or organization, whether governmental or private, to perform any act on behalf of or in the interest of the DEPARTMENT that individual or organization shall be deemed to be the Contracting Officer's authorized representative under this Contract but only to the extent so specified. The Contracting Officer may, at any time during the performance of this Contract, vest in any such authorized representatives additional power and authority to act for the Contracting Officer or designate additional representatives, specifying the extent of their

authority to act for the Contracting Officer; a copy of each document vesting additional authority in or removing that authority from an authorized representative or designating an additional authorized representative shall be furnished to the CONTRACTOR. The head of the Contracting Agency reserves the right to appoint a new Contracting Officer without affecting any of the CONTRACTOR's obligations to the DEPARTMENT under this Contract.

- 2.1.2 The CONTRACTOR shall perform the Work in accordance with any written order (including but not limited to instruction, direction, interpretation or determination) issued by an authorized representative in accordance with the authorized representative's authority to act for the Contracting Officer. The CONTRACTOR assumes all the risk and consequences of performing the Work in accordance with any order (including but not limited to instruction, direction, interpretation or determination) of anyone not authorized to issue such order, and of any order not in writing.
- 2.1.3 Should the Contracting Officer or his authorized representative designate Consultant(s) to act for the DEPARTMENT as provided for in Paragraph 2.1.1, the performance or nonperformance of the Consultant under such authority to act, shall not give rise to any contractual obligation or duty of the Consultant to the CONTRACTOR, any Subcontractor, any Supplier, or any other organization performing any of the Work or any Surety representing them.
- 2.1.4 The term "Contracting Officer" when used in the text of these General Conditions or other Contract Documents following this section shall also mean any duly authorized representative of the Contracting Officer when authorized in accordance with Paragraph 2.1.1.

2.2 Evaluations by Contracting Officer:

- 2.2.1 The Contracting Officer will decide all questions which may arise as to:
- a. Quality and acceptability of materials furnished;
 - b. Quality and acceptability of Work performed;
 - c. Compliance with the schedule of progress;
 - d. Interpretation of Contract Documents;
 - e. Acceptable fulfillment of the Contract on the part of the CONTRACTOR.
- 2.2.2 In order to avoid cumbersome terms and confusing repetition of expressions in the Contract Documents the terms "as ordered", "as directed", "as required", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper" or "satisfactory" or adjectives of like effect or import are used it shall be understood as if the expression were followed by the words "the Contracting Officer".
- When such terms are used to describe a requirement, direction, review or judgment of the Contracting Officer as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise).
- 2.2.3 The use of any such term or adjective shall not be effective to assign to the DEPARTMENT any duty of authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraphs 2.3 or 2.4.

2.3 Means & Methods:

The means, methods, techniques, sequences or procedures of construction, or safety precautions and the program incident thereto, and the failure to perform or furnish the Work in accordance with the Contract Documents are the sole responsibility of the CONTRACTOR.

2.4 Visits to Site/Place of Business:

The Contracting Officer will make visits to the site and approved remote storage sites at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. The Contracting Officer may, at reasonable times, inspect that part of the plant or place of business of the CONTRACTOR or Subcontractor that is related to the performance of the Contract. Such observations or the lack of such observations shall in no way relieve the CONTRACTOR from his duty to perform the Work in accordance with the Contract Documents.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.1 Incomplete Contract Documents:

The submission of a bid by the Bidder is considered a representation that the Bidder examined the Contract Documents to make certain that all sheets and pages were provided and that the Bidder is satisfied as to the conditions to be encountered in performing the Work. The DEPARTMENT expressly denies any responsibility or liability for a bid submitted on the basis of an incomplete set of Contract Documents.

3.2 Copies of Contract Documents:

The DEPARTMENT shall furnish to the CONTRACTOR up to ten copies of the Contract Documents. Additional copies will be furnished, upon request, at the cost of reproduction.

3.3 Scope of Work:

The Contract Documents comprise the entire Contract between the DEPARTMENT and the CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the Regulatory Requirements of the place of the Project.

It is specifically agreed between the parties executing this Contract that it is not intended by any of the provisions of the Contract to create in the public or any member thereof a third party benefit, or to authorize anyone not a party to this Contract to maintain a suit pursuant to the terms or provisions of the Contract.

3.4 Intent of Contract Documents:

- 3.4.1 It is the intent of the Contract Documents to describe a functionally complete Project to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied, without any adjustment in Contract Price or Contract Time, whether or not specifically called for.
- 3.4.2 Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the Regulatory Requirements of any governmental authority, whether such reference be specific or by implication, shall mean the edition stated in the Contract Documents or if not stated the latest standard specification, manual, code or Regulatory Requirements in effect at the time of Advertisement for the Project (or, on the Effective Date of the Contract if there was no Advertisement). However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of the DEPARTMENT and the CONTRACTOR, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to the DEPARTMENT or any of the DEPARTMENT's Consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraphs 2.3 or 2.4.

3.5 Discrepancy in Contract Documents:

3.5.1 Before undertaking the Work, the CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures, and dimensions shown thereon and all applicable field measurements. Work in the area by the CONTRACTOR shall imply verification of figures, dimensions and field measurements. If, during the above study or during the performance of the Work, the CONTRACTOR finds a conflict, error, discrepancy or omission in the Contract Documents, or a discrepancy between the Contract Documents and any standard specification, manual, code, or Regulatory Requirement which affects the Work, the CONTRACTOR shall promptly report such discrepancy in writing to the Contracting Officer. The CONTRACTOR shall obtain a written interpretation or clarification from the Contracting Officer before proceeding with any Work affected thereby. Any adjustment made by the CONTRACTOR without this determination shall be at his own risk and expense. However, the CONTRACTOR shall not be liable to the DEPARTMENT for failure to report any conflict, error or discrepancy in the Contract Documents unless the CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

3.5.2 Discrepancy - Order of Precedence:

When conflicts, errors, or discrepancies within the Contract Documents exist, the order of precedence from most governing to least governing will be as follows:

- Contents of Addenda
- Supplementary Conditions
- General Conditions
- General Requirements
- Technical Specifications
- Drawings
- Recorded dimensions will govern over scaled dimensions
- Large scale details over small scale details
- Schedules over plans
- Architectural drawings over structural drawings
- Structural drawings over mechanical and electrical drawings

3.6 Clarifications and Interpretations:

The Contracting Officer will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents as the Contracting Officer may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

3.7 Reuse of Documents:

Neither the CONTRACTOR nor any Subcontractor, or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with the DEPARTMENT shall have or acquire any title to or ownership rights in any of the Contract Documents (or copies thereof) prepared by or for the DEPARTMENT and they shall not reuse any of the Contract Documents on extensions of the Project or any other project without written consent of the Contracting Officer.

Contract Documents prepared by the CONTRACTOR in connection with the Work shall become the property of the DEPARTMENT.

ARTICLE 4 - LANDS AND PHYSICAL CONDITIONS

4.1 Availability of Lands:

The DEPARTMENT shall furnish as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for use of the CONTRACTOR in connection with the Work. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by the DEPARTMENT, unless otherwise provided in the Contract Documents. The CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2 Visit to Site:

The submission of a bid by the CONTRACTOR is considered a representation that the CONTRACTOR has visited and carefully examined the site and is satisfied as to the conditions to be encountered in performing the Work and as to the requirements of the Contract Documents.

4.3 Explorations and Reports:

1. Reference is made to the Supplementary Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by the DEPARTMENT in preparation of the Contract Documents. The CONTRACTOR may for his purposes rely upon the accuracy of the factual data contained in such reports, but not upon interpretations or opinions drawn from such factual data contained therein or for the completeness or sufficiency thereof. Except as indicated in the immediately preceding sentence and in paragraphs 4.4 and 9.9, CONTRACTOR shall have full responsibility with respect to surface and subsurface conditions at the site.

2. **Hazardous Materials:**

The CONTRACTOR is to be aware under 29 CFR 1926.1101(k)(2)(ii) Construction Industry Standards, any building or facility constructed prior to 1980 may contain suspected Hazardous Materials. All known or perceived known Hazardous Materials information will be provided by the DEPARTMENT's facility staff to the CONTRACTOR upon request. Any new suspected Hazardous Materials encountered by the CONTRACTOR shall be made known to the DEPARTMENT within 3 business days of discovery. Once notified the DEPARTMENT will have an Environmental Assessment completed to verify if hazardous materials exist.

4.4 Utilities:

The horizontal and vertical locations of known underground utilities as shown or indicated by the Contract Documents are approximate and are based on information and data furnished to the DEPARTMENT by the owners of such underground utilities.

4.4.2 The CONTRACTOR shall have full responsibility for:

- a. Reviewing and checking all information and data concerning utilities.
- b. Locating all underground utilities shown or indicated in the Contract Documents which are affected by the Work.
- c. Coordination of the Work with the owners of all utilities during construction.
- d. Safety and protection of all utilities as provided in paragraph 6.17.
- e. Repair of any damage to utilities resulting from the Work in accordance with 4.4.4 and 4.5.

4.4.3 If Work is to be performed by any utility owner, the CONTRACTOR shall cooperate with such owners to facilitate the Work.

- 4.4.4 In the event of interruption to any utility service as a result of accidental breakage or as result of being exposed or unsupported, the CONTRACTOR shall promptly notify the utility owner and the Contracting Officer. If service is interrupted, repair work shall be continuous until the service is restored. No Work shall be undertaken around fire hydrants until provisions for continued service has been approved by the local fire authority.

4.5 Damaged Utilities:

When utilities are damaged by the CONTRACTOR, the utility owner shall have the choice of repairing the utility or having the CONTRACTOR repair the utility. In the following circumstances, the CONTRACTOR shall reimburse the utility owner for repair costs or provide at no cost to the utility owner or the DEPARTMENT, all materials, equipment and labor necessary to complete repair of the damage:

- a. When the utility is shown or indicated in the Contract Documents.
- b. When the utility has been located by the utility owner.
- c. When no locate was requested by the CONTRACTOR for utilities shown or indicated in the Contract Documents.
- d. All visible utilities.
- e. When the CONTRACTOR could have, otherwise, reasonably been expected to be aware of such utility.

4.6 Utilities Not Shown or Indicated:

If, while directly performing the Work, an underground utility is uncovered or revealed at the site which was not shown or indicated in the Contract Documents and which the CONTRACTOR could not reasonably have been expected to be aware of, the CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency as permitted by paragraph 6.19) identify the owner of such underground utility and give written notice thereof to that owner and to the Contracting Officer. The Contracting Officer will promptly review the underground utility to determine the extent to which the Contract Documents and the Work should be modified to reflect the impacts of the discovered utility. The Contract Documents will be amended or supplemented in accordance with paragraph 9.2 and to the extent necessary through the issuance of a change document by the Contracting Officer. During such time, the CONTRACTOR shall be responsible for the safety and protection of such underground utility as provided in paragraph 6.17. The CONTRACTOR may be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are directly attributable to the existence of any underground utility that was not shown or indicated in the Contract Documents and which the CONTRACTOR could not reasonably have been expected to be aware of.

4.7 Survey Control:

The DEPARTMENT will identify sufficient horizontal and vertical control data to enable the CONTRACTOR to survey and layout the Work. All survey work shall be performed under the direct supervision of a registered land surveyor when required by paragraph 7.8. Copies of all survey notes will be provided the DEPARTMENT on a weekly basis with variations between the Contract Documents and actual field conditions identified. Survey notes are to be in a format acceptable to the DEPARTMENT.

ARTICLE 5 - BONDS, INSURANCE, AND INDEMNIFICATION

5.1 Delivery of Bonds:

When the CONTRACTOR delivers the executed Contract to the Contracting Officer, the CONTRACTOR

shall also deliver to the Contracting Officer such bonds as the CONTRACTOR may be required to furnish in accordance with paragraph 5.2.

5.2 Bonds:

5.2.1 The CONTRACTOR shall furnish Performance and Payment Bonds, each in an amount as shown on the Contract as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These bonds shall remain in effect for one year after the date of Final Acceptance and until all obligations under this Contract, except special guarantees as per 12.7, have been met. All bonds shall be furnished on forms provided by the DEPARTMENT (or copies thereof) and shall be executed by such Sureties as are authorized to do business in the State of Alaska. The Contracting Officer may at his option copy the Surety with notice of any potential default or liability.

5.2.2 At the option of the CONTRACTOR, bonds may be provided by individual Surety the adequacy of which shall be determined by the Contracting Officer. Any costs incurred by the CONTRACTOR or individual Surety shall be borne by the CONTRACTOR. Where individual Sureties are used, two individual Sureties must each provide the State of Alaska with security equal to the amount of each bond by one, or a combination of, the following methods:

- a. Escrow account in the name of the DEPARTMENT for the duration of the Contract. Acceptable securities would include, but not necessarily be limited to: Cash; treasury notes; bearer instruments having a specific value, or; money market certificates.
- b. First *Deed of Trust* with the DEPARTMENT designated as beneficiary, against the unencumbered value of the real property located within the State of Alaska or an agreement by any second party, including deeds of trust, mortgage, lien or judgment interests to subrogate their interests to that of the State of Alaska in the real property which has been offered by the individual Surety.

A title insurance policy with the State of Alaska as a named beneficiary and a current (within 3 months) professional appraisal or assessed valuation will be required to ascertain the true value of the property offered as collateral. If buildings or other valued improvements are involved then fire and casualty insurance with the State of Alaska as a named insured and in limits and coverages acceptable to the Contracting Officer shall be required. The appraiser shall acknowledge in writing that the appraisal is prepared for the benefit of the DEPARTMENT and the DEPARTMENT has the right to rely on its contents. This *Deed* must be recorded in the recording office where the property is located.

With respect to clauses "a" and "b" above the *Deed of Trust* or other accepted security shall not be released until 12 months after Final Acceptance of the Project and settlement of all outstanding claims.

5.3 Replacement of Bond and Surety:

If the Surety on any bond furnished in connection with this Contract is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.2, or otherwise becomes unacceptable to the DEPARTMENT, or if any such Surety fails to furnish reports as to his financial condition as requested by the DEPARTMENT, the CONTRACTOR shall within five days thereafter substitute another bond and Surety, both of which must be acceptable to DEPARTMENT.

An individual Surety may be replaced by a corporate Surety during the course of the Contract period. If the Surety desires to dispose of the collateral posted, the DEPARTMENT may, at its option, accept substitute collateral.

5.4 Insurance Requirements:

5.4.1 The CONTRACTOR shall provide evidence of insurance with a carrier or carriers satisfactory to the

DEPARTMENT covering injury to persons and/or property suffered by the State of Alaska or a third party, as a result of operations which arise both out of and during the course of this Contract by the CONTRACTOR or by any Subcontractor. This coverage will also provide protection against injuries to all employees of the CONTRACTOR and the employees of any Subcontractor engaged in Work under this Contract.

- 5.4.2 The CONTRACTOR shall maintain in force at all times during the performance of Work under this agreement the following policies of insurance. Where specific limits and coverages are shown, it is understood that they shall be the minimum acceptable. The requirements of this paragraph shall not limit the CONTRACTOR's responsibility to indemnify under paragraph 5.5. Additional insurance requirements specific to this Contract are contained in the Supplementary Conditions, when applicable.

a. Worker's Compensation Insurance:

The Contractor shall provide and maintain, for all employees engaged in work under this contract, statutory limits coverage as required by AS 23.30.045.

The policy must waive subrogation against the State and include Employer's Liability Protection with policy limits not less than:

\$500,000 each accident,
\$500,000 each disease.

b. Commercial General Liability Insurance: on an occurrence policy form covering all operations by or on behalf of the CONTRACTOR with combined single limits not less than:

\$1,000,000 each occurrence

\$1,000,000 for Personal Injury Liability

\$2,000,000 aggregate for Products-Completed Operations

\$2,000,000 general aggregate

The State of Alaska shall be named as additional insured. This insurance shall be considered to be primary and non-contributory to any other insurance carried by the State through self insurance or otherwise.

c. Automobile Liability Insurance: covering all vehicles used by the Contractor in the performance of services under this agreement with combined single limits not less than:

\$1,000,000 each occurrence

d. Builder's Risk Insurance: Coverage shall be on an "All Risk" completed value basis including "quake and flood" and protect the interests of the DEPARTMENT, the CONTRACTOR and Subcontractors at all tiers. Coverage shall include all materials, supplies and equipment that are intended for specific installation in the Project while such materials, supplies and equipment are located at the Project site, in transit from port of arrival to job site, or while temporarily located away from the Project site.

In addition to providing the above coverages the CONTRACTOR shall require that all indemnities obtained from any SUBCONTRACTORS be extended to include the State as an additional named indemnitee. CONTRACTOR shall further require that the State be named as an additional insured on all liability insurance policies maintained by all SUBCONTRACTORS

under their contracts with CONTRACTOR, and that an appropriate waiver of subrogation in favor of the State be obtained with respect to all other insurance policies.

e. Other Coverages: As specified in the Supplementary Conditions.

5.4.3 All insurance policies shall comply with, and be issued by insurers licensed to transact the business of insurance under AS 21. Failure to maintain insurance may, at the option of the Contracting Officer, be deemed Defective Work and remedied in accordance with the Contract.

Evidence of Insurance, consisting of a certificate of insurance or the policy declaration page with required endorsements attached thereto - all of which have been executed by the insurer's representative and issued to the DEPARTMENT - shall denote the type, amount, class of operations covered, effective (and retroactive) dates, and dates of expiration. Evidence of Insurance must provide for a 30-day prior notice of cancellation, nonrenewal or material change of conditions.

Evidence pertaining to Worker's Compensation, Commercial General Liability, or Automobile Liability is required for Award. All other coverages shall be evidenced prior to commencement of WORK. Acceptance by the DEPARTMENT of deficient evidence does not constitute a waiver of Contract requirements as provided for the Conditions of the Contract.

If a certificate of insurance is submitted as evidence it shall contain the following statement:

"This is to certify that the policies described herein comply with all aspects of the insurance requirements of (Contract Name and Number, and Project Number)."

5.5 Indemnification:

The CONTRACTOR shall indemnify, save harmless, and defend the DEPARTMENT, its agents and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from the CONTRACTOR or SUBCONTRACTOR's performance of WORK under this Contract; however, this provision has no effect if, but only if, the sole proximate cause of the injury or damage is the DEPARTMENT's negligence.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.1 Supervision of Work:

The CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. All Work under this Contract shall be performed in a skillful and workmanlike manner. The CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction.

6.2 Superintendence by CONTRACTOR:

The CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent. The Contracting Officer shall be advised in writing of the superintendent's name, local address, and telephone number. This written advice is to be kept current until Final Acceptance by the DEPARTMENT. The superintendent will be the CONTRACTOR's representative at the site and shall have full authority to act and sign documents on behalf of the CONTRACTOR.

All communications given to the superintendent shall be as binding as if given to the CONTRACTOR. The CONTRACTOR shall cooperate with the Contracting Officer in every way possible.

6.3 Character of Workers:

The CONTRACTOR shall provide a sufficient number of competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. The CONTRACTOR shall at all times maintain good discipline and order at the site. The Contracting Officer may, in writing, require the CONTRACTOR to remove from the Work any employee the Contracting Officer deems incompetent, careless, or otherwise detrimental to the progress of the Work, but the Contracting Officer shall have no duty to exercise this right.

6.4 CONTRACTOR to Furnish:

Unless otherwise specified in the General Requirements, the CONTRACTOR shall furnish and assume full responsibility for all materials, equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance testing, start-up and completion of the Work.

6.5 Materials and Equipment:

All materials and equipment shall be of specified quality and new, except as otherwise provided in the Contract Documents. If required by the Contracting Officer, the CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to the DEPARTMENT or any of the DEPARTMENT's Consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraphs 2.3 or 2.4.

6.6 Anticipated Schedules:

- 6.6.1 Within reasonable time prior to the preconstruction conference the CONTRACTOR shall submit to the Contracting Officer for review an anticipated progress schedule indicating the starting and completion dates of the various stages of the Work.
- 6.6.2 Within fifteen days after the date of the Notice to Proceed, the CONTRACTOR shall submit to the Contracting Officer for review:

Anticipated schedule of Shop Drawing submissions; and

Anticipated Schedule of Values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by the CONTRACTOR at the time of submission.

6.7 Finalizing Schedules:

Prior to processing the first Application for Payment the Contracting Officer and the CONTRACTOR will finalize schedules required by paragraph 6.6. The finalized progress schedule will be acceptable to the DEPARTMENT as providing information related to the orderly progression of the Work to completion within the Contract Time; but such acceptance will neither impose on the DEPARTMENT nor relieve the CONTRACTOR from full responsibility for the progress or scheduling of the Work. If accepted, the finalized schedule of Shop Drawing and other required submissions will be acknowledged by the DEPARTMENT as providing a workable arrangement for processing the submissions. If accepted, the finalized Schedule of Values will be acknowledged by the DEPARTMENT as an approximation of anticipated value of Work accomplished over the anticipated Contract Time. Receipt and acceptance of a schedule submitted by the CONTRACTOR shall not be construed to assign responsibility for performance or contingencies to the

DEPARTMENT or relieve the CONTRACTOR of his responsibility to adjust his forces, equipment, and work schedules as may be necessary to insure completion of the Work within prescribed Contract Time. Should the prosecution of the Work be discontinued for any reason, the CONTRACTOR shall notify the Contracting Officer at least 24 hours in advance of resuming operations.

6.8 Adjusting Schedules:

Upon substantial changes to the schedule or upon request the CONTRACTOR shall submit to the Contracting Officer for acceptance (to the extent indicated in paragraph 6.7 and the General Requirements) adjustments in the schedules to reflect the actual present and anticipated progress of the Work.

6.9 Substitutes or "Or-Equal" Items:

- 6.9.1 Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that substitution is limited or not permitted, materials or equipment of other Suppliers may be accepted by the Contracting Officer only if sufficient information is submitted by the CONTRACTOR which clearly demonstrates to the Contracting Officer that the material or equipment proposed is equivalent or equal in all aspects to that named. The procedure for review by the Contracting Officer will include the following as supplemented in the General Requirements.
- 6.9.2 Requests for review of substitute items of material and equipment will not be accepted by the Contracting Officer from anyone other than the CONTRACTOR.
- 6.9.3 If the CONTRACTOR wishes to furnish or use a substitute item of material or equipment, the CONTRACTOR shall make written application to the Contracting Officer for Approval thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as the specified. The application will state that the evaluation and Approval of the proposed substitute will not delay the CONTRACTOR's timely achievement of Substantial or Final Completion, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with the DEPARTMENT for Work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty.
- 6.9.4 All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by the DEPARTMENT in evaluating the proposed substitute. The DEPARTMENT may require the CONTRACTOR to furnish at the CONTRACTOR's expense additional data about the proposed substitute. The Contracting Officer may reject any substitution request which the Contracting Officer determines is not in the best interest of the DEPARTMENT.

6.10 Substitute Means and Methods:

If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, the CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to the Contracting Officer, if the CONTRACTOR submits sufficient information to allow the Contracting Officer to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by the Contracting Officer will be similar to that provided in paragraph 6.9 as applied by the Contracting Officer and as may be supplemented in the General Requirements.

6.11 Evaluation of Substitution:

The Contracting Officer will be allowed a reasonable time within which to evaluate each proposed substitute. The Contracting Officer will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without the Contracting Officer's prior written Approval which will be evidenced by either a Change Order or a Shop Drawing Approved in accordance with Sections 6.20 and 6.21. The Contracting Officer may require the CONTRACTOR to furnish at the CONTRACTOR's expense a special performance guarantee or other Surety with respect to any substitute.

6.12 Dividing the Work:

The divisions and sections of the Specifications and the identifications of any Drawings shall not control the CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.13 Subcontractors:

The CONTRACTOR may utilize the services of appropriately licensed Subcontractors on those parts of the Work which, under normal contracting practices, are performed by Subcontractors, in accordance with the following conditions:

- 6.13.1 The CONTRACTOR shall not award any Work to any Subcontractor without prior written Approval of the Contracting Officer. This Approval will not be given until the CONTRACTOR submits to the Contracting Officer a written statement concerning the proposed award to the Subcontractor which shall contain required Equal Employment Opportunity documents, evidence of insurance whose limits are acceptable to the CONTRACTOR, and an executed copy of the subcontract. All subcontracts submitted for Approval must contain provisions for payment for Work done by the Subcontractor within 7 days of receipt of payment by the CONTRACTOR. No acceptance by the Contracting Officer of any such Subcontractor shall constitute a waiver of any right of the DEPARTMENT to reject Defective Work.
- 6.13.2 The CONTRACTOR shall be fully responsible to the DEPARTMENT for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions.
- 6.13.3 All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate written agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of the DEPARTMENT and contains waiver provisions as required by paragraph 13.17 and termination provisions as required by Article 14.
- 6.13.4 Nothing in the Contract Documents shall create any contractual relationship between the DEPARTMENT and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of the DEPARTMENT to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Regulatory Requirements. The DEPARTMENT will not undertake to settle any differences between or among the CONTRACTOR, Subcontractors, or Suppliers.
- 6.13.5 The CONTRACTOR and Subcontractors shall coordinate their work and cooperate with other trades so to facilitate general progress of Work. Each trade shall afford other trades every reasonable opportunity for installation of their work and storage of materials. If cooperative work of one trade must be altered due to lack of proper supervision, or failure to make proper provisions in time by another trade, such conditions shall be remedied by the CONTRACTOR with no change in Contract Price or Contract Time.
- 6.13.6 The CONTRACTOR shall include on his own payrolls any person or persons working on this Contract who are not covered by written subcontract, and shall ensure that all Subcontractors include on their payrolls all persons performing Work under the direction of the Subcontractor.

6.14 Use of Premises:

The CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project limits and approved remote storage sites and lands and areas identified in and permitted by Regulatory Requirements, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. The CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against the DEPARTMENT by any such owner or occupant because of the performance of the Work, the CONTRACTOR shall hold the DEPARTMENT harmless.

6.15 Structural Loading:

The CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.16 Record Documents:

The CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Directives, Change Orders, Supplemental Agreements, and written interpretations and clarifications (issued pursuant to paragraph 3.6) in good order and annotated to show all changes made during construction. These record documents together with all Approved samples and a counterpart of all Approved Shop Drawings will be available to the Contracting Officer for reference and copying. Upon completion of the Work, the annotated record documents, samples and Shop Drawings will be delivered to the Contracting Officer. Record documents shall accurately record variations in the Work which vary from requirements shown or indicated in the Contract Documents.

6.17 Safety and Protection:

The CONTRACTOR alone shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. The CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

- 6.17.1 All employees on the Work and other persons and organizations who may be affected thereby;
- 6.17.2 All the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and
- 6.17.3 Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation or replacement in the course of construction.

The CONTRACTOR shall comply with all applicable Regulatory Requirements of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. The CONTRACTOR shall notify owners of adjacent property and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by the CONTRACTOR with no change in Contract Price or Contract Time except as stated in 4.6, except damage or loss attributable to unforeseeable causes beyond the control of and without the fault or negligence of the CONTRACTOR, including but not restricted to acts of God, of the public enemy or governmental authorities. The CONTRACTOR's duties and responsibilities for the safety and protection of the Work shall continue until Final Acceptance (except as otherwise expressly provided in connection with Substantial Completion).

6.18 Safety Representative:

The CONTRACTOR shall designate a responsible safety representative at the site. This person shall be the CONTRACTOR's superintendent unless otherwise designated in writing by the CONTRACTOR to the Contracting Officer.

6.19 Emergencies:

In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, the CONTRACTOR, without special instruction or authorization from the DEPARTMENT, is obligated to act to prevent threatened damage, injury or loss. The CONTRACTOR shall give the Contracting Officer prompt written notice if the CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If the DEPARTMENT determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a change will be authorized by one of the methods indicated in Paragraph 9.2, as determined appropriate by the Contracting Officer.

6.20 Shop Drawings and Samples:

- 6.20.1 After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, the CONTRACTOR shall submit to the Contracting Officer for review and Approval in accordance with the accepted schedule of Shop Drawing submissions the required number of all Shop Drawings, which will bear a stamp or specific written indication that the CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as the Contracting Officer may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable the Contracting Officer to review the information as required.
- 6.20.2 The CONTRACTOR shall also submit to the Contracting Officer for review and Approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that the CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.
- 6.20.3 Before submission of each Shop Drawing or sample the CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.
- 6.20.4 At the time of each submission the CONTRACTOR shall give the Contracting Officer specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on each Shop Drawing submitted to the Contracting Officer for review and Approval of each such variation. All variations of the proposed Shop Drawing from that specified will be identified in the submission and available maintenance, repair and replacement service will be indicated. The submittal will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such variation, including costs of redesign and claims of other Contractors affected by the resulting change, all of which shall be considered by the DEPARTMENT in evaluating the proposed variation. If the variation may result in a change of Contract Time or Price, or Contract responsibility, and is not minor in nature; the CONTRACTOR must submit a written request for Change Order with the variation to notify the DEPARTMENT of his intent. The DEPARTMENT may require the CONTRACTOR to furnish at the CONTRACTOR's expense additional data about the proposed variation. The Contracting Officer may reject any variation request which the Contracting Officer determines is not in the best interest of the DEPARTMENT.

6.21 Shop Drawing and Sample Review:

- 6.21.1 The Contracting Officer will review with reasonable promptness Shop Drawings and samples, but the Contracting Officer's review will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review of a separate item as such will not indicate acceptance of the assembly in which the item functions. The CONTRACTOR shall make corrections required by the Contracting Officer and shall return the required number of corrected copies of Shop Drawings and submit as required new samples for review. The CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by the Contracting Officer on previous submittals.
- 6.21.2 The Contracting Officer's review of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless the CONTRACTOR has in writing advised the Contracting Officer of each such variation at the time of submission as required by paragraph 6.20.4. The Contracting Officer if he so determines, may give written Approval of each such variation by Change Order, except that, if the variation is minor and no Change Order has been requested a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample review comments shall suffice as a modification. Approval by the Contracting Officer will not relieve the CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 6.20.3.
- 6.21.3 The DEPARTMENT shall be responsible for all DEPARTMENT review costs resulting from the initial submission and the resubmittal. The CONTRACTOR shall, at the discretion of the Contracting Agency, pay all review costs incurred by the DEPARTMENT as a result of any additional re-submittals.
- 6.21.4 Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to the Contracting Officer's review and Approval of the pertinent submission will be the sole expense and responsibility of the CONTRACTOR.

6.22 Maintenance During Construction:

The CONTRACTOR shall maintain the Work during construction and until Substantial Completion, at which time the responsibility for maintenance shall be established in accordance with paragraph 13.10.

6.23 Continuing the Work:

The CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with the DEPARTMENT. No Work shall be delayed or postponed pending resolution of any disputes, disagreements, or claims except as the CONTRACTOR and the Contracting Officer may otherwise agree in writing.

6.24 Consent to Assignment:

The CONTRACTOR shall obtain the prior written consent of the Contracting Officer to any proposed assignment of any interest in, or part of this Contract. The consent to any assignment or transfer shall not operate to relieve the CONTRACTOR or his Sureties of any of his or its obligations under this Contract or the Performance Bonds. Nothing herein contained shall be construed to hinder, prevent, or affect an assignment of monies due, or to become due hereunder, made for the benefit of the CONTRACTOR's creditors pursuant to law.

6.25 Use of Explosives:

- 6.25.1 When the use of explosives is necessary for the prosecution of the Work, the CONTRACTOR shall exercise the utmost care not to endanger life or property, including new Work and shall follow all Regulatory Requirements applicable to the use of explosives. The CONTRACTOR shall be responsible for all damage resulting from the use of explosives.
- 6.25.2 All explosives shall be stored in a secure manner in compliance with all Regulatory Requirements, and all such storage places shall be clearly marked. Where no Regulatory Requirements apply, safe storage shall be provided not closer than 1,000 feet from any building, camping area, or place of human occupancy.
- 6.25.3 The CONTRACTOR shall notify each public utility owner having structures in proximity to the site of his intention to use explosives. Such notice shall be given sufficiently in advance to enable utility owners to take such steps as they may deem necessary to protect their property from injury. However, the CONTRACTOR shall be responsible for all damage resulting from the use of the explosives, whether or not, utility owners act to protect their property.

6.26 CONTRACTOR's Records:

- 6.26.1 Records of the CONTRACTOR and Subcontractors relating to personnel, payrolls, invoices of materials, and any and all other data relevant to the performance of this Contract, must be kept on a generally recognized accounting system. Such records must be available during normal work hours to the Contracting Officer for purposes of investigation to ascertain compliance with Regulatory Requirements and provisions of the Contract Documents.
- 6.26.2 Payroll records must contain the name and address of each employee, his correct classification, rate of pay, daily and weekly number of hours of work, deductions made, and actual wages paid. The CONTRACTOR and Subcontractors shall make employment records available for inspection by the Contracting Officer and representatives of the U.S. and/or State Department of Labor and will permit such representatives to interview employees during working hours on the Project.
- 6.26.3 Records of all communications between the DEPARTMENT and the CONTRACTOR and other parties, where such communications affected performance of this Contract, must be kept by the CONTRACTOR and maintained for a period of three years from Final Acceptance. The DEPARTMENT or its assigned representative may perform an audit of these records during normal work hours after written notice to the CONTRACTOR.

ARTICLE 7 - LAWS AND REGULATIONS

7.1 Laws to be Observed

The CONTRACTOR shall keep fully informed of all federal and state Regulatory Requirements and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the Work, or which in any way affect the conduct of the Work. The CONTRACTOR shall at all times observe and comply with all such Regulatory Requirements, orders and decrees; and shall protect and indemnify the DEPARTMENT and its representatives against claim or liability arising from or based on the violation of any such Regulatory Requirement, order, or decree whether by the CONTRACTOR, Subcontractor, or any employee of either. Except where otherwise expressly required by applicable Regulatory Requirements, the DEPARTMENT shall not be responsible for monitoring CONTRACTOR's compliance with any Regulatory Requirements.

7.2 Permits, Licenses, and Taxes

- 7.2.1 The CONTRACTOR shall procure all permits and licenses, pay all charges, fees and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the Work. As a condition of performance of this Contract, the CONTRACTOR shall pay all federal, state and local taxes incurred by

the CONTRACTOR, in the performance of this Contract. Proof of payment of these taxes is a condition precedent to final payment by the DEPARTMENT under this Contract.

- 7.2.2 The CONTRACTOR's certification that taxes have been paid (as contained in the *Release of Contract*) will be verified with the Department of Revenue and Department of Labor, prior to final payment.
- 7.2.3 If any federal, state or local tax is imposed, charged, or repealed after the date of bid opening and is made applicable to and paid by the CONTRACTOR on the articles or supplies herein contracted for, then the Contract shall be increased or decreased accordingly by a Change Order.

7.3 Patented Devices, Materials and Processes

If the CONTRACTOR employs any design, device, material, or process covered by letters of patent, trademark or copyright, the CONTRACTOR shall provide for such use by suitable legal agreement with the patentee or owner. The CONTRACTOR and the Surety shall indemnify and save harmless the DEPARTMENT, any affected third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the DEPARTMENT for any costs, expenses, and damages which it may be obliged to pay by reason of any infringement, at any time during the prosecution or after the completion of the Work.

7.4 Compliance of Specifications and Drawings:

If the CONTRACTOR observes that the Specifications and Drawings supplied by the DEPARTMENT are at variance with any Regulatory Requirements, CONTRACTOR shall give the Contracting Officer prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 9.2. as determined appropriate by the Contracting Officer. If the CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such Regulatory Requirements, and without such notice to the Contracting Officer, the CONTRACTOR shall bear all costs arising therefrom; however, it shall not be the CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings supplied by the DEPARTMENT are in accordance with such Regulatory Requirements.

7.5 Accident Prevention:

The CONTRACTOR shall comply with AS 18.60.075 and all pertinent provisions of the Construction Code Occupational Safety and Health Standards issued by the Alaska Department of Labor.

7.6 Sanitary Provisions:

The CONTRACTOR shall provide and maintain in a neat and sanitary condition such accommodations for the use of his employees and DEPARTMENT representatives as may be necessary to comply with the requirements of the State and local Boards of Health, or of other bodies or tribunals having jurisdiction.

7.7 Business Registration:

Comply with AS 08.18.011, as follows: "it is unlawful for a person to submit a bid or work as a contractor until he has been issued a certificate of registration by the Department of Commerce. A partnership or joint venture shall be considered registered if one of the general partners or venturers whose name appears in the name under which the partnership or venture does business is registered."

7.8 Professional Registration and Certification:

All craft trades, architects, engineers and land surveyors, electrical administrators, and explosive handlers employed under the Contract shall specifically comply with applicable provisions of AS 08.18, 08.48, 08.40, and 08.52. Provide copies of individual licenses within seven days following a request from the Contracting Officer.

7.9 Local Building Codes:

The CONTRACTOR shall comply with AS 35.10.025 which requires construction in accordance with applicable local building codes to include the obtaining of required permits.

7.10 Air Quality Control:

The CONTRACTOR shall comply with all applicable provisions of AS 46.03.04 as pertains to Air Pollution Control.

7.11 Archaeological or Paleontological Discoveries:

When the CONTRACTOR's operation encounters prehistoric artifacts, burials, remains of dwelling sites, or paleontological remains, such as shell heaps, land or sea mammal bones or tusks, the CONTRACTOR shall cease operations immediately and notify the Contracting Officer. No artifacts or specimens shall be further disturbed or removed from the ground and no further operations shall be performed at the site until so directed. Should the Contracting Officer order suspension of the CONTRACTOR's operations in order to protect an archaeological or historical finding, or order the CONTRACTOR to perform extra Work, such shall be covered by an appropriate Contract change document.

7.12 Applicable Alaska Preferences:

- 7.12.1 In determining the low bidder for State funded projects, a 5% bid preference has been given to "Alaska bidders", as required under AS 36.30.170. "Alaska bidder" means a person who:
- (1) holds a current Alaska business license;
 - (2) submits a bid for goods, services, or construction under the name as appearing on the person's current Alaska business license
 - (3) has maintained a place of business within the state staffed by the bidder or an employee of the bidder for a period of six months immediately preceding the date of the bid;
 - (4) is incorporated or qualified to do business under the laws of the state, is a sole proprietorship, and the proprietor is a resident of the state or is a partnership, and all partners are residents of the state; and
 - (5) if a joint venture, is composed entirely of ventures that qualify under (1) through (4), above.
- 7.12.2 In determining the low bidder for State funded projects, a 5% bid preference has been given to "Alaska Veteran bidders", as required under AS 36.30.175 for Alaska veteran-owned businesses. To qualify for the Veterans Preference (per AS 36.30.175), the bidder must:
- (1) Qualify for the Alaska Bidder's Preference
 - (2) Add value by actually performing the services or have prior experience in selling the supplies
 - (3) Qualify as an Alaska Veteran
 - (4) The value of the preference cannot exceed \$5,000.
- 7.12.3 In determining the low bidder for State funded projects, an "Alaska products" preference has been given as required under AS 36.30.326 - 36.30.332, when the bid documents designate the use of Alaska products. If the successful Bidder/CONTRACTOR proposes to use an Alaska product and does not do so, a penalty will be assessed against the successful Bidder/CONTRACTOR in an amount equal to the product preference percentage granted to the successful Bidder/CONTRACTOR plus one percent multiplied by the total declared value of the Alaska products proposed but not used.
- 7.12.4 Pursuant to AS 36.15.050 and AS 36.30.322, "agricultural/wood" products harvested in Alaska shall be used in State funded projects whenever they are priced no more than seven percent above agricultural/wood products harvested outside the state and are of a like quality as compared with agricultural/wood products harvested outside the state, when such products are not utilized, the CONTRACTOR shall document the efforts he made towards obtaining agricultural/wood products harvested in Alaska and include in this documentation a written statement that he contacted the manufacturers and suppliers identified on the Department of Commerce and Economic Development's list of suppliers of Alaska forest products concerning the availability of agricultural/wood products harvested in Alaska and, if available, the product

prices. The CONTRACTOR's use of agricultural/wood products that fail to meet the requirements of this section shall be subject to the provisions of paragraphs 12.6 through 12.9 relating to Defective Work.

- 7.12.5 The CONTRACTOR shall maintain records, in a format acceptable to the Contracting Officer, which establish the type and extent of "agricultural/wood" and "Alaska" products utilized. All record keeping and documentation associated with the requirements 7.12.2 and 7.12.3 of this paragraph, must be provided to the DEPARTMENT upon written request or as otherwise provided within the Contract Documents.

7.13 Preferential Employment:

The CONTRACTOR shall comply with all applicable and valid laws and regulations regarding the hiring of Alaska residents now in effect or that might subsequently take effect during the term of this Contract. In order to ensure that CONTRACTOR's Subcontractors will comply with all applicable laws and regulations regarding the hiring of Alaska residents now in effect or that might subsequently take effect, the CONTRACTOR shall include in its contracts with Subcontractors under this Contract language that is substantially the same as the first sentence of this provision.

7.14 Wages and Hours of Labor:

- 7.14.1 One certified copy of all payrolls shall be submitted weekly to the State Department of Labor and, upon request, to the Contracting Officer to assure to assure compliance with AS 36.05.040, *Filing Schedule of Employees Wages Paid and Other Information*. The CONTRACTOR shall be responsible for the submission of certified copies of payrolls of all Subcontractors. The certification shall affirm that the payrolls are current and complete, that the wage rates contained therein are not less than the applicable rates referenced in these Contract Documents, and that the classification set forth for each laborer or mechanic conforms with the Work he performed. The CONTRACTOR and his Subcontractors shall attend all hearings and conferences and produce such books, papers, and documents all as requested by the Department of Labor. Should federal funds be involved, the appropriate federal agency shall also receive a copy of the CONTRACTOR's certified payrolls.
- 7.14.2 The following labor provisions shall also apply to this Contract:
- a. The CONTRACTOR and his Subcontractors shall pay all employees unconditionally and not less than once a week;
 - b. wages may not be less than those stated under AS 36.05.010, regardless of the contractual relationship between the CONTRACTOR or Subcontractors and laborers, mechanics, or field surveyors;
 - c. 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;
 - d. the DEPARTMENT 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
 1. The rates of wages required by the Contract to be paid laborers, mechanics, or field surveyors on the Work, and
 2. The rates of wages in fact received by laborers, mechanics or field surveyors.

7.15 Overtime Work Hours and Compensation:

Pursuant to 40 U.S.C. 327-330 and AS 23.10.060 -.110, the CONTRACTOR shall not require nor permit any laborer or mechanic in any workweek in which he is employed on any Work under this Contract to work in excess of eight hours in any Calendar Day or in excess of forty hours in such workweek on Work subject to the provisions of the *Contract Work Hours and Safety Standards Act* unless such laborer or mechanic receives compensation at a rate not less than one and one half times his basic rate of pay for all such hours worked in excess of eight hours in any Calendar Day or in excess of forty hours in such workweek whichever is the greater number of overtime hours. In the event of any violation of this provision, the CONTRACTOR shall be liable to

any affected employee for any amounts due and penalties and to the DEPARTMENT for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic employed in violation of this provision in the sum of \$10.00 for each Calendar Day on which such employee was required or permitted to be employed on such Work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by this paragraph.

7.16 Covenant Against Contingent Fees:

The CONTRACTOR warrants that no person or selling agent has been employed or retained to solicit or secure this Contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the CONTRACTOR for the purpose of securing business. For breach or violation of this warrant, the DEPARTMENT shall have the right to annul this Contract without liability or, in its discretion, to deduct price of consideration from the Contract or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee.

7.17 Officials Not to Benefit:

No member of or delegate to the U.S. Congress, the Alaska State Legislature or other state official shall be admitted to any share or part of this Contract, nor to any benefit that may arise there from. However, this provision shall not be construed to extend to this Contract if made with a corporation for its general benefit.

7.18 Personal Liability of Public Officials:

In carrying out any of the provisions thereof, or in exercising any power or authority granted to the Contracting Officer by the Contract, there will be no liability upon the Contracting Officer nor upon state employees authorized as his representatives, either personally or as officials of the State of Alaska, it being always understood that in such matters they act as agents and representatives of the DEPARTMENT.

ARTICLE 8 - OTHER WORK

8.1 Related Work at Site:

- 8.1.1 The DEPARTMENT reserves the right at any time to contract for and perform other or additional work on or near the Work covered by the Contract.
- 8.1.2 When separate contracts are let within the limits of the Project, the CONTRACTOR shall conduct his Work so as not to interfere with or hinder the work being performed by other contractors. The CONTRACTOR when working on the same Project with other contractors shall cooperate with such other contractors. The CONTRACTOR shall join his Work with that of the others in an acceptable manner and shall perform it in proper sequence to that of others.
- 8.1.3 If the fact that other such work is to be performed is identified or shown in the Contract Documents the CONTRACTOR shall assume all liability, financial or otherwise, in connection with this Contract and indemnify and save harmless the DEPARTMENT from any and all damages or claims that may arise because of inconvenience, delay, or loss experienced by the CONTRACTOR because of the presence and operations of other contractors.
- 8.1.4 If the fact that such other work is to be performed was not identified or shown in the Contract Documents, written notice thereof will be given to the CONTRACTOR prior to starting any such other work. If the CONTRACTOR believes that such performance will require an increase in Contract Price or Contract Time, the CONTRACTOR shall notify the Contracting Officer of such required increase within fifteen (15) calendar days following receipt of the Contracting Officer's notice. Should the Contracting Officer find such increase(s) to be justified, a Change Order will be executed.

8.2 Access, Cutting, and Patching:

The CONTRACTOR shall afford each utility owner and any other contractor who is a party to such a direct contract with the DEPARTMENT (or the DEPARTMENT, if the DEPARTMENT is performing the additional work with the DEPARTMENT's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the Work with the work of others. The CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work, the CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter such other work with the written consent of the Contracting Officer. The duties and responsibilities of the CONTRACTOR under this paragraph are for the benefit of other contractors to the extent that there are comparable provisions for the benefit of the CONTRACTOR in said direct contracts between the DEPARTMENT and other contractors.

8.3 Defective Work by Others:

If any part of the CONTRACTOR's Work depends for proper execution or results upon the work of any such other contractor, utility owner, or the DEPARTMENT, the CONTRACTOR shall inspect and promptly report to the Contracting Officer in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. The CONTRACTOR's failure to so report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR's Work except for latent or nonapparent defects and deficiencies in the other work.

8.4 Coordination:

If the DEPARTMENT contracts with others for the performance of other work at the site, Contracting Officer will have authority and responsibility for coordination of the activities among the various prime contractors.

ARTICLE 9 - CHANGES

9.1 DEPARTMENT's Right to Change

Without invalidating the Contract and without notice to any Surety, the DEPARTMENT may, at any time or from time to time, order additions, deletions or revisions in the Work within the general scope of the Contract, including but not limited to changes:

- 9.1.1 In the Contract Documents;
- 9.1.2 In the method or manner of performance of the Work;
- 9.1.3 In State-furnished facilities, equipment, materials, services, or site;
- 9.1.4 Directing acceleration in the performance of the Work.

9.2 Authorization of Changes within the General Scope.

Additions, deletions, or revisions in the Work within the general scope of the Contract as specified in 9.1 shall be authorized by one or more of following ways:

- 9.2.1 Directive (pursuant to paragraph 9.3)
- 9.2.2 A Change Order (pursuant to paragraph 9.4)
- 9.2.3 DEPARTMENT's acceptance of Shop Drawing variations from the Contract Documents as specifically identified by the CONTRACTOR as required by paragraph 6.20.4.

9.3 Directive

- 9.3.1 The Contracting Officer shall provide written clarification or interpretation of the Contract Documents (pursuant to paragraph 3.6).

- 9.3.2 The Contracting Officer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents.
- 9.3.3 The Contracting Officer may order the Contractor to correct Defective Work or methods which are not in conformance with the Contract Documents.
- 9.3.4 The Contracting Officer may direct the commencement or suspension of Work or emergency related Work (as provided in paragraph 6.19).
- 9.3.5 Upon the issuance of a Directive to the CONTRACTOR by the Contracting Officer, the CONTRACTOR shall proceed with the performance of the Work as prescribed by such Directive.
- 9.3.6 If the CONTRACTOR believes that the changes noted in a Directive may cause an increase in the Contract Price or an extension of Contract Time, the CONTRACTOR shall immediately provide written notice to the Contracting Officer depicting such increases before proceeding with the Directive, except in the case of an emergency. If the Contracting Officer finds the increase in Contract Price or the extension of Contract Time justified, a Change Order will be issued. If however, the Contracting Officer does not find that a Change Order is justified, the Contracting Officer may direct the CONTRACTOR to proceed with the Work. The CONTRACTOR shall cooperate with the Contracting Officer in keeping complete daily records of the cost of such Work. If a Change Order is ultimately determined to be justified, in the absence of agreed prices and unit prices, payment for such Work will be made on a "cost of the work basis" as provided in 10.4

9.4 Change Order

A change in Contract Time, Contract Price, or responsibility may be made for changes within the scope of the Work only by Change Order. Upon receipt of an executed Change Order, the CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents except as otherwise specifically provided. Changes in Contract Price and Contract Time shall be made in accordance with Articles 10 and 11.

9.5 Shop Drawing Variations

Variations by shop drawings shall only be eligible for consideration under 9.4 when the conditions affecting the price, time, or responsibility are identified by the CONTRACTOR in writing and a request for a Change Order is submitted as per 6.20.4.

9.6 Changes Outside the General Scope; Supplemental Agreement

Any change which is outside the general scope of the Contract, as determined by the Contracting Officer, must be authorized by a Supplemental Agreement signed by the appropriate representatives of the DEPARTMENT and the CONTRACTOR.

9.7 Unauthorized Work:

The CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in this Article 9, except in the case of an emergency as provided in paragraph 6.19 and except in the case of uncovering Work as provided in paragraph 12.4.2.

9.8 Notification of Surety:

If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any bond to be given to a Surety, the giving of any such notice will be the CONTRACTOR's responsibility, and the amount of each applicable bond will be adjusted accordingly.

9.9 Differing Site Conditions:

- 9.9.1 The CONTRACTOR shall promptly, and before such conditions are disturbed (except in an emergency as permitted by paragraph 6.19), notify the Contracting Officer in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in the Contract, and which could not have been discovered by a careful examination of the site, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract. The Contracting Officer shall promptly investigate the conditions, and if the Contracting Officer finds that such conditions do materially so differ and cause an increase or decrease in the CONTRACTOR's cost of, or time required for, performance of this Contract, an equitable adjustment shall be made and the Contract modified in writing accordingly.
- 9.9.2 Any claim for additional compensation by the CONTRACTOR under this clause shall be made in accordance with Article 15. In the event that the Contracting Officer and the CONTRACTOR are unable to reach an agreement concerning an alleged differing site condition, the CONTRACTOR will be required to keep an accurate and detailed record which will indicate the actual "cost of the work" done under the alleged differing site condition. Failure to keep such a record shall be a bar to any recovery by reason of such alleged differing site conditions. The Contracting Officer shall be given the opportunity to supervise and check the keeping of such records.

ARTICLE 10 - CONTRACT PRICE; COMPUTATION AND CHANGE

10.1 Contract Price:

The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to the CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by the CONTRACTOR shall be at his expense without change in the Contract Price. The Contract Price may only be changed by a Change Order or Supplemental Agreement.

10.2 Claim for Price Change:

Any claim for an increase or decrease in the Contract Price shall be submitted in accordance with the terms of Article 15, and shall not be allowed unless notice requirements of this Contract have been met.

10.3 Change Order Price Determination:

The value of any Work covered by a Change Order for an increase or decrease in the Contract Price shall be determined in one of the following ways:

- 10.3.1 Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of subparagraphs 10.9.1 through 10.9.3, inclusive).
- 10.3.2 By mutual acceptance of a lump sum price which includes overhead and profit.
- 10.3.3 When 10.3.1 and 10.3.2 are inapplicable, on the basis of the "cost of the work" (determined as provided in paragraphs 10.4 and 10.5) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 10.6).
- 10.3.4 Before a Change Order or Supplemental Agreement is Approved, the CONTRACTOR shall submit cost or pricing data regarding the changed or extra Work. The CONTRACTOR shall certify that the data submitted is, to his best knowledge and belief, accurate, complete and current as of a mutually determined specified date and that such data will continue to be accurate and complete during the performance of the changed or extra Work.

10.4 Cost of the Work:

The term "cost of the work" means the sum of all costs necessarily incurred and paid by the CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by the DEPARTMENT, such costs shall be in amount no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in subparagraph 10.5:

- 10.4.1 Payroll costs for employees in the direct employ of the CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by the DEPARTMENT and the CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by the DEPARTMENT.
- 10.4.2 Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to the CONTRACTOR unless the DEPARTMENT deposits funds with the CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to the DEPARTMENT. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to the DEPARTMENT, and the CONTRACTOR shall make provisions so that they may be obtained.
- 10.4.3 Payments made by the CONTRACTOR to Subcontractors for Work performed by Subcontractors. If required by the DEPARTMENT, CONTRACTOR shall obtain competitive quotes from Subcontractors or Suppliers acceptable to the CONTRACTOR and shall deliver such quotes to the DEPARTMENT who will then determine which quotes will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of "cost of the work" plus a fee, the Subcontractor's "cost of the work" shall be determined in the same manner as the CONTRACTOR's "cost of work" as described in paragraphs 10.4 through 10.5; and the Subcontractor's fee shall be established as provided for under subparagraph 10.6.2 clause b. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.
- 10.4.4 Costs of special consultants (including but not limited to engineers, architects, testing laboratories, and surveyors) employed for services necessary for the completion of the Work.
- 10.4.5 Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel and subsistence expenses of the CONTRACTOR's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of the CONTRACTOR.
 - c. Rentals of all construction equipment and machinery and the parts thereof whether rented from the CONTRACTOR or others in accordance with rental agreements Approved by the DEPARTMENT and the costs of transportation, loading, unloading, installation, dismantling and removal thereof - all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use or similar taxes related to the Work, and for which the CONTRACTOR is liable, imposed by Regulatory Requirements.

- e. Deposits lost for causes other than negligence of the CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by the CONTRACTOR in connection with the performance and furnishing of the Work provided they have resulted from causes other than the negligence of the CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and Approval of the DEPARTMENT. No such losses, damages and expenses shall be included in the "cost of the work" for the purpose of determining the CONTRACTOR's fee. If, however, any such loss or damage requires reconstruction and the CONTRACTOR is placed in charge thereof, the CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraphs 10.6.2.a and 10.6.2.b.
- g. The cost of utilities, fuel and sanitary facilities at the site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.
- I. Cost of premiums for additional bonds and insurance required because of changes in the Work and premiums for property insurance coverage within the limits of the deductible amounts established by the DEPARTMENT in accordance with Article 5.

10.5 Excluded Costs:

The term "cost of the work" shall not include any of the following:

- 10.5.1 Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agency, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 10.4.1 or specifically covered by paragraph 10.4.4 all of which are to be considered administrative costs covered by the CONTRACTOR's fee.
- 10.5.2 Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.
- 10.5.3 Any part of CONTRACTOR's capital expenses including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.
- 10.5.4 Cost of premiums for all bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 10.4.5.i above).
- 10.5.5 Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of Defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.
- 10.5.6 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 10.4.

10.6 CONTRACTOR's Fee:

The CONTRACTOR's fee allowed to CONTRACTOR for overhead and profit shall be determined as follows.

- 10.6.1 A mutually acceptable fixed fee; or if none can be agreed upon.

- 10.6.2 A fee based on the following percentages of the various portions of the "cost of the work":
- a. For costs incurred under paragraphs 10.4.1 and 10.4.2, the CONTRACTOR's fee shall be twenty percent;
 - b. For costs incurred under paragraph 10.4.3, the CONTRACTOR's fee shall be ten percent; and if a subcontract is on the basis of "cost of the work" plus a fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all Subcontractors and multiple tiers thereof shall be fifteen percent;
 - c. No fee shall be payable on the basis of costs itemized under paragraphs 10.4.4, 10.4.5 and 10.5;
 - d. The amount of credit to be allowed by the CONTRACTOR to the DEPARTMENT for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in CONTRACTOR's fee by an amount equal to ten percent of the net decrease; and
 - e. When both additions and credits are involved in any one change, the adjustment in CONTRACTOR's fee shall be computed on the basis of the net change in accordance with paragraphs 10.6.2.a through 10.6.2.d, inclusive.

10.7 Cost Breakdown:

Whenever the cost of any Work is to be determined pursuant to paragraphs 10.4 and 10.5, the CONTRACTOR will submit in a form acceptable to the DEPARTMENT an itemized cost breakdown together with supporting data.

10.8 Cash Allowances:

It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to the Contracting Officer. CONTRACTOR agrees that:

- 10.8.1 The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and
- 10.8.2 CONTRACTOR's cost for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances. No demand for additional payment on account of any thereof will be valid.

Prior to final payment, an appropriate Change Order will be issued to reflect actual amounts due the CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

10.9 Unit Price Work:

- 10.9.1 Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Contract. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by the CONTRACTOR will be made by the DEPARTMENT in accordance with paragraph 10.10.
- 10.9.2 Each unit price will be deemed to include an amount considered by the CONTRACTOR to be adequate to cover the CONTRACTOR's overhead and profit for each separately identified item. If the "Basis of Payment" clause in the Contract Documents relating to any unit price in the bid schedule requires that the said unit price cover and be considered compensation for certain work or material essential to the item, this same work or material will not also be measured or paid for under any other pay item which may appear elsewhere in the Contract Documents.

- 10.9.3 Payment to the CONTRACTOR shall be made only for the actual quantities of Work performed and accepted or materials furnished, in conformance with the Contract Documents. When the accepted quantities of Work or materials vary from the quantities stated in the bid schedule, or change documents, the CONTRACTOR shall accept as payment in full, payment at the stated unit prices for the accepted quantities of Work and materials furnished, completed and accepted; except as provided below:
- a. When the quantity of Work to be done or material to be furnished under any item, for which the total cost of the item exceeds 10% of the total Contract Price, is increased by more than 25 percent of the quantity stated in the bid schedule, or change documents, either party to the Contract, upon demand, shall be entitled to an equitable unit price adjustment on that portion of the Work above 125 percent of the quantity stated in the bid schedule.
 - b. When the quantity of Work to be done or material to be furnished under any major item, for which the total cost of the item exceeds 10% of the total Contract Price, is decreased by more than 25 percent of the quantity stated in the bid schedule, or change documents either party to the Contract, upon demand, shall be entitled to an equitable price adjustment for the quantity of Work performed or material furnished, limited to a total payment of not more than 75 percent of the amount originally bid for the item.

10.10 Determinations for Unit Prices:

The Contracting Officer will determine the actual quantities and classifications of Unit Price Work performed by the CONTRACTOR. The Contracting Officer will review with the CONTRACTOR preliminary determinations on such matters before finalizing the costs and quantities on the Schedule of Values. The Contracting Officer's acknowledgment thereof will be final and binding on the CONTRACTOR, unless, within 10 days after the date of any such decisions, the CONTRACTOR delivers to the Contracting Officer written notice of intention to appeal from such a decision.

10.11 Disadvantaged and Women Business Enterprises (DBE & WBE) Program:

The Contract Price shall be adjusted by such means as provided in the section entitled "Phase III - Determination of Liquidated Damages and Bonuses", DISADVANTAGED AND WOMEN BUSINESS ENTERPRISE (DBE & WBE) PROGRAM, Form 25A300.

ARTICLE 11 - CONTRACT TIME; COMPUTATION AND CHANGE

11.1 Commencement of Contract Time; Notice to Proceed:

The Contract Time will commence to run on the day indicated in the Notice to Proceed.

11.2 Starting the Work:

No Work on Contract items shall be performed before the effective date of the Notice to Proceed. The CONTRACTOR shall notify the Contracting Officer at least 24 hours in advance of the time actual construction operations will begin. The CONTRACTOR may request a limited Notice to Proceed after Award has been made, to permit him to order long lead materials which could cause delays in Project completion. However, granting is within the sole discretion of the Contracting Officer, and refusal or failure to grant a limited Notice to Proceed shall not be a basis for claiming for delay, extension of time, or alteration of price.

11.3 Computation of Contract Time:

- 11.3.1 When the Contract Time is specified on a Calendar Day basis, all Work under the Contract shall be completed within the number of Calendar Days specified. The count of Contract Time begins on the day following receipt of the Notice to Proceed by the CONTRACTOR, if no starting day is stipulated therein.

Calendar Days shall continue to be counted against Contract Time until and including the date of Final Completion of the Work.

11.3.2 When the Contract completion time is specified as a fixed calendar date, it shall be the date of Final Completion.

11.4 Time Change:

The Contract Time may only be changed by a Change Order or Supplemental Agreement.

11.5 Extension Due to Delays:

The right of the CONTRACTOR to proceed shall not be terminated nor the CONTRACTOR charged with liquidated or actual damages because of delays to the completion of the Work due to unforeseeable causes beyond the control and without the fault or negligence of the CONTRACTOR, including, but not restricted to the following: acts of God or of the public enemy, acts of the DEPARTMENT in its contractual capacity, acts of another contractor in the performance of a contract with the DEPARTMENT, floods, fires, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather and delays of Subcontractors or Suppliers due to such causes. Any delay in receipt of materials on the site, caused by other than one of the specifically mentioned occurrences above, does not of itself justify a time extension, provided that the CONTRACTOR shall within twenty four (24) hours from the beginning of any such delay (unless the Contracting Officer shall grant a further period of the time prior to the date of final settlement of the Contract), notify the Contracting Officer in writing of the cause of delay. The Contracting Officer shall ascertain the facts and the extent of the delay and extend the time for completing the Work when the findings of fact justify such an extension.

11.6 Essence of Contract:

All time limits stated in the Contract Documents are of the essence of the Contract.

11.7 Reasonable Completion Time:

It is expressly understood and agreed by and between the CONTRACTOR and the DEPARTMENT that the date of beginning and the time for Final Completion of the Work described herein are reasonable times for the completion of the Work.

11.8 Delay Damages:

Whether or not the CONTRACTOR's right to proceed with the Work is terminated, he and his Sureties shall be liable for damages resulting from his refusal or failure to complete the Work within the specified time.

Liquidated and actual damages for delay shall be paid by the CONTRACTOR or his Surety to the DEPARTMENT in the amount as specified in the Supplementary Conditions for each Calendar Day the completion of the Work or any part thereof is delayed beyond the time required by the Contract, or any extension thereof. If a listing of incidents resulting from a delay and expected to give rise to actual or liquidated damages is not established by the Contract Documents, then the CONTRACTOR and his Surety shall be liable to the DEPARTMENT for any actual damages occasioned by such delay. The CONTRACTOR acknowledges that the liquidated damages established herein are not a penalty but rather constitute an estimate of damages that the DEPARTMENT will sustain by reason of delayed completion. These liquidated and actual damages are intended as compensation for losses anticipated to arise, and include those items enumerated in the Supplementary Conditions.

These damages will continue to run both before and after termination in the event of default termination. These liquidated damages do not cover excess costs of completion or DEPARTMENT costs, fees, and charges related to reprocurement. If a default termination occurs, the CONTRACTOR or his Surety shall pay in addition to these damages, all excess costs and expenses related to completion as provided by Article 14.2.5.

ARTICLE 12 - QUALITY ASSURANCE

12.1 Warranty and Guaranty:

The CONTRACTOR warrants and guarantees to the DEPARTMENT that all Work will be in accordance with the Contract Documents and will not be Defective. Prompt notice of all defects shall be given to the CONTRACTOR. All Defective Work, whether or not in place, may be rejected, corrected or accepted as provided for in this article.

12.2 Access to Work:

The DEPARTMENT and the DEPARTMENT's representatives, testing agencies and governmental agencies with jurisdiction interests will have access to the Work at reasonable times for their observation, inspecting and testing. The CONTRACTOR shall provide proper and safe conditions for such access.

12.3 Tests and Inspections:

12.3.1 The CONTRACTOR shall give the Contracting Officer timely notice of readiness of the Work for all required inspections, tests or Approvals.

12.3.2 If Regulatory Requirements of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved, the CONTRACTOR shall assume full responsibility therefor, pay all costs in connection therewith and furnish the Contracting Officer the required certificates of inspection, testing or approval. The CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with DEPARTMENT's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for Approval prior to the CONTRACTOR's purchase thereof for incorporation in the Work. The cost of all inspections, tests and approvals in addition to the above which are required by the Contract Documents shall be paid by the CONTRACTOR. The DEPARTMENT may perform additional tests and inspections which it deems necessary to insure quality control. All such failed tests or inspections shall be at the CONTRACTOR's expense.

12.3.4 If any Work (including the work of others) that is to be inspected, tested or Approved is covered without written concurrence of the Contracting Officer, it must, if requested by the Contracting Officer, be uncovered for observation. Such uncovering shall be at the CONTRACTOR's expense unless the CONTRACTOR has given the Contracting Officer timely notice of CONTRACTOR's intention to cover the same and the Contracting Officer has not acted with reasonable promptness in response to such notice.

12.3.5 Neither observations nor inspections, tests or Approvals by the DEPARTMENT or others shall relieve the CONTRACTOR from the CONTRACTOR's obligations to perform the Work in accordance with the Contract Documents.

12.4 Uncovering Work:

12.4.1 If any Work is covered contrary to the written request of the Contracting Officer, it must, if requested by the Contracting Officer, be uncovered for the Contracting Officer's observation and replaced at the CONTRACTOR's expense.

12.4.2 If the Contracting Officer considers it necessary or advisable that covered Work be observed inspected or tested, the CONTRACTOR, at the Contracting Officer's request, shall uncover, expose or otherwise make available for observation, inspection or testing as the Contracting Officer may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is Defective, the CONTRACTOR shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) and the DEPARTMENT shall be entitled to an appropriate decrease in the Contract Price. If, however, such Work is not found to be Defective, the CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the

Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction.

12.5 DEPARTMENT May Stop the Work:

If the Work is Defective, or the CONTRACTOR fails to supply suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, the Contracting Officer may order the CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the Contracting Officer to stop the Work shall not give rise to any duty on the part of the Contracting Officer to exercise this right for the benefit of the CONTRACTOR or any other party.

12.6 Correction or Removal of Defective Work:

If required by the Contracting Officer, the CONTRACTOR shall promptly, as directed, either correct all Defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by the Contracting Officer, remove it from the site and replace it with Work which conforms to the requirements of the Contract Documents. The CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

12.7 One Year Correction Period:

If within one year after the date of Final Completion or such longer period of time as may be prescribed by Regulatory Requirements or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be Defective, the CONTRACTOR shall promptly, without cost to the DEPARTMENT and in accordance with the Contracting Officer's written instructions, either correct such Defective Work, or, if it has been rejected by the Contracting Officer, remove it from the site and replace it with conforming Work. If the CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, the DEPARTMENT may have the Defective Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by the CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service for the benefit of the DEPARTMENT before Substantial Completion of all the Work, the correction period for that item may begin on an earlier date if so provided in the Specifications or by Change Order. Provisions of this paragraph are not intended to shorten the statute of limitations for bringing an action.

12.8 Acceptance of Defective Work:

Instead of requiring correction or removal and replacement of Defective Work, the Contracting Officer may accept Defective Work, the CONTRACTOR shall bear all direct, indirect and consequential costs attributable to the Contracting Officer's evaluation of and determination to accept such Defective Work (costs to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and the DEPARTMENT shall be entitled to an appropriate decrease in the Contract Price. If the DEPARTMENT has already made final payment to the CONTRACTOR, an appropriate amount shall be paid by the CONTRACTOR or his Surety to the DEPARTMENT.

12.9 DEPARTMENT May Correct Defective Work:

If the CONTRACTOR fails within a reasonable time after written notice from the Contracting Officer to proceed to correct Defective Work or to remove and replace rejected Work as required by the Contracting Officer in accordance with paragraph 12.6, or if the CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if the CONTRACTOR fails to comply with any other provision of the Contract Documents, the DEPARTMENT may, after 7 days' written notice to the CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph the DEPARTMENT shall

proceed expeditiously. To the extent necessary to complete corrective and remedial action, the Contracting Officer may exclude the CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend the CONTRACTOR's services related thereto, take possession of the CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or approved remote storage sites or for which the DEPARTMENT has paid the CONTRACTOR but which are stored elsewhere. The CONTRACTOR shall allow the Contracting Officer and his authorized representatives such access to the site as may be necessary to enable the Contracting Officer to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of the DEPARTMENT in exercising such rights and remedies will be charged against the CONTRACTOR, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and the DEPARTMENT shall be entitled to an appropriate decrease in the Contract Price. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court and arbitration costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of the CONTRACTOR's Defective Work. The CONTRACTOR shall not be allowed an extension of time because of any delay in performance of the work attributable to the exercise, by the Contracting Officer, of the DEPARTMENT's rights and remedies hereunder.

ARTICLE 13 - PAYMENTS TO CONTRACTOR AND COMPLETION

13.1 Schedule of Values:

The Schedule of Values established as provided in paragraph 6.6 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to the Contracting Officer. Progress payments on account of Unit Price Work will be based on the number of units completed.

13.2 Preliminary Payments:

Upon approval of the Schedule of Values the CONTRACTOR may be paid for direct costs substantiated by paid invoices and other prerequisite documents required by the General Requirements. Direct costs shall include the cost of bonds, insurance, approved materials stored on the site or at approved remote storage sites, deposits required by a Supplier prior to fabricating materials, and other approved direct mobilization costs substantiated as indicated above. These payments shall be included as a part of the total Contract Price as stated in the Contract.

13.3 Application for Progress Payment:

The CONTRACTOR shall submit to the Contracting Officer for review an Application for Payment filled out and signed by the CONTRACTOR covering the Work completed as of the date of the Application for Payment and accompanied by such supporting documentation as is required by the Contract Documents. Progress payments will be made as the Work progresses on a monthly basis or twice a month when requested by the CONTRACTOR, but only when the approved invoice exceeds \$10,000.00.

13.4 Review of Applications for Progress Payment:

Contracting Officer will either indicate in writing a recommendation of payment or return the Application for Payment to the CONTRACTOR indicating in writing the Contracting Officer's reasons for refusing to recommend payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the Application for Payment.

13.5 Stored Materials and Equipment:

If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, paid invoice or other documentation warranting that the DEPARTMENT has received the materials and equipment free and clear of all charges, security interests and encumbrances and evidence that the materials and equipment are covered by appropriate property insurance and other

arrangements to protect the DEPARTMENT's interest therein, all of which will be satisfactory to the Contracting Officer. No payment will be made for perishable materials that could be rendered useless because of long storage periods. No progress payment will be made for living plant materials until planted.

13.6 CONTRACTOR's Warranty of Title:

The CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to the DEPARTMENT no later than the time of payment free and clear of any claims, liens, security interests and further obligations.

13.7 Withholding of Payments:

The DEPARTMENT may withhold or refuse payment for any of the reasons listed below provided it gives written notice of its intent to withhold and of the basis for withholding:

- 13.7.1 The Work is Defective, or completed Work has been damaged requiring correction or replacement, or has been installed without Approval of Shop Drawings, or by an unapproved Subcontractor, or for unsuitable storage of materials and equipment.
- 13.7.2 The Contract Price has been reduced by Change Order,
- 13.7.3 The DEPARTMENT has been required to correct Defective Work or complete Work in accordance with paragraph 12.9.
- 13.7.4 The DEPARTMENT's actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.2.1.a through 14.2.1.k inclusive.
- 13.7.5 Claims have been made against the DEPARTMENT or against the funds held by the DEPARTMENT on account of the CONTRACTOR's actions or inactions in performing this Contract, or there are other items entitling the DEPARTMENT to a set off.
- 13.7.6 Subsequently discovered evidence or the results of subsequent inspections or test, nullify any previous payments for reasons stated in subparagraphs 13.7.1 through 13.7.5.
- 13.7.7 The CONTRACTOR has failed to fulfill or is in violation of any of his obligations under any provision of this Contract.

13.8 Retainage:

At any time the DEPARTMENT finds that satisfactory progress is not being made it may in addition to the amounts withheld under 13.7 retain a maximum amount equal to 10% of the total amount earned on all subsequent progress payments. This retainage may be released at such time as the Contracting Officer finds that satisfactory progress is being made.

13.9 Request for Release of Funds:

If the CONTRACTOR believes the basis for withholding is invalid or no longer exists, immediate written notice of the facts and Contract provisions on which the CONTRACTOR relies, shall be given to the DEPARTMENT, together with a request for release of funds and adequate documentary evidence proving that the problem has been cured. In the case of withholding which has occurred at the request of the Department of Labor, the CONTRACTOR shall provide a letter from the Department of Labor stating that withholding is no longer requested. Following such a submittal by the CONTRACTOR, the DEPARTMENT shall have a reasonable time to investigate and verify the facts and seek additional assurances before determining whether release of withheld payments is justified.

13.10 Substantial Completion:

When the CONTRACTOR considers the Work ready for its intended use the CONTRACTOR shall notify the Contracting Officer in writing that the Work or a portion of Work which has been specifically identified in the Contract Documents is substantially complete (except for items specifically listed by the CONTRACTOR as incomplete) and request that the DEPARTMENT issue a certificate of Substantial Completion. Within a reasonable time thereafter, the Contracting Officer, the CONTRACTOR and appropriate Consultant(s) shall make an inspection of the Work to determine the status of completion. If the Contracting Officer does not consider the Work substantially complete, the Contracting Officer will notify the CONTRACTOR in writing giving the reasons therefor. If the Contracting Officer considers the Work substantially complete, the Contracting Officer will within fourteen days execute and deliver to the CONTRACTOR a certificate of Substantial Completion with tentative list of items to be completed or corrected. At the time of delivery of the certificate of Substantial Completion the Contracting Officer will deliver to the CONTRACTOR a written division of responsibilities pending Final Completion with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties which shall be consistent with the terms of the Contract Documents.

The DEPARTMENT shall be responsible for all DEPARTMENT costs resulting from the initial inspection and the first re-inspection, the CONTRACTOR shall pay all costs incurred by the DEPARTMENT resulting from re-inspections, thereafter.

13.11 Access Following Substantial Completion:

The DEPARTMENT shall have the right to exclude the CONTRACTOR from the Work after the date of Substantial Completion, but the DEPARTMENT shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

13.12 Final Inspection:

Upon written notice from the CONTRACTOR that the entire Work or an agreed portion thereof is complete, the Contracting Officer will make a final inspection with the CONTRACTOR and appropriate Consultant(s) and will notify the CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or Defective. The CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies. The CONTRACTOR shall pay for all costs incurred by the DEPARTMENT resulting from re-inspections.

13.13 Final Completion and Application for Payment:

After the CONTRACTOR has completed all such corrections to the satisfaction of the Contracting Officer and delivered all maintenance and operating instructions, schedules, guarantees, bonds, certificates of payment to all laborers, Subcontractors and Suppliers, certificates of inspection, marked-up record documents and other documents - all as required by the Contract Documents; and after the Contracting Officer has indicated in writing that the Work has met the requirements for Final Completion, and subject to the provisions of paragraph 13.18, the CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all remaining certificates, warranties, guarantees, releases, affidavits, and other documentation required by the Contract Documents.

13.14 Final Payment:

- 13.14.1 If on the basis of the Contracting Officer's observation of the Work during construction and final inspection, and the Contracting Officer's review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents; and the Contracting Officer is satisfied that the Work has been completed and the CONTRACTOR's other obligations under the Contract Documents have been fulfilled, the DEPARTMENT will process final Application for Payment. Otherwise, the Contracting Officer will return the Application for Payment to the CONTRACTOR, indicating in writing the reasons for refusing to process final payment, in which case the CONTRACTOR shall make the necessary corrections and resubmit the final Application for Payment.

- 13.14.2 If, through no fault of the CONTRACTOR, Final Completion of the Work is significantly delayed, the Contracting Officer shall, upon receipt of the CONTRACTOR's final Application for Payment, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by the DEPARTMENT for Work not fully completed or corrected is less than the retainage provided for in paragraph 13.9, and if bonds have been furnished as required in paragraph 5.1, the written consent of the Surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the CONTRACTOR to the DEPARTMENT with the application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

13.15 Final Acceptance:

Following certification of payment of payroll and revenue taxes, and final payment to the CONTRACTOR, the DEPARTMENT will issue a letter of Final Acceptance, releasing the CONTRACTOR from further obligations under the Contract, except as provided in paragraph 13.17.

13.16 CONTRACTOR's Continuing Obligation:

The CONTRACTOR's obligation to perform and complete the Work and pay all laborers, Subcontractors, and materialmen in accordance with the Contract Documents shall be absolute. Neither any progress or final payment by the DEPARTMENT, nor the issuance of a certificate of Substantial Completion, nor any use or occupancy of the Work or any part thereof by the DEPARTMENT or Using Agency, nor any act of acceptance by the DEPARTMENT nor any failure to do so, nor any review and Approval of a Shop Drawing or sample submission, nor any correction of Defective Work by the DEPARTMENT will constitute an acceptance of Work not in accordance with the Contract Documents or a release of the CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents.

13.17 Waiver of Claims by CONTRACTOR:

The making and acceptance of final payment will constitute a waiver of all claims by the CONTRACTOR against the DEPARTMENT other than those previously made in writing and still unsettled.

13.18 No Waiver of Legal Rights:

The DEPARTMENT shall not be precluded or be estopped by any payment, measurement, estimate, or certificate made either before or after the completion and acceptance of the Work and payment therefor, from showing the true amount and character of the Work performed and materials furnished by the CONTRACTOR, nor from showing that any payment, measurement, estimate or certificate is untrue or is incorrectly made, or that the Work or materials are Defective. The DEPARTMENT shall not be precluded or estopped, notwithstanding any such measurement, estimate, or certificate and payment in accordance therewith, from recovering from the CONTRACTOR or his Sureties, or both, such damages as it may sustain by reason of his failure to comply with requirements of the Contract Documents. Neither the acceptance by the DEPARTMENT, or any representative of the DEPARTMENT, nor any payment for or acceptance of the whole or any part of the Work, nor any extension of the Contract Time, nor any possession taken by the DEPARTMENT, shall operate as a waiver of any portion of the Contract or of any power herein reserved, or of any right to damages. A waiver by the DEPARTMENT of any breach of the Contract shall not be held to be a waiver of any other subsequent breach.

ARTICLE 14 - SUSPENSION OF WORK, DEFAULT AND TERMINATION

14.1 DEPARTMENT May Suspend Work:

- 14.1.1 The DEPARTMENT may, at any time, suspend the Work or any portion thereof by notice in writing to the CONTRACTOR. If the Work is suspended without cause the CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if the CONTRACTOR makes an Approved claim therefor as provided in Article 15. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that suspension is due to the fault or negligence of the CONTRACTOR, or that suspension is necessary for

Contract compliance, or that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the CONTRACTOR.

- 14.1.2 In case of suspension of Work, the CONTRACTOR shall be responsible for preventing damage to or loss of any of the Work already performed and of all materials whether stored on or off the site or Approved remote storage sites.

14.2 Default of Contract:

14.2.1 If the CONTRACTOR:

- a. Fails to begin the Work under the Contract within the time specified in the Proposal, or
- b. Fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficiently skilled workmen, suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 6.6 as revised from time to time), or
- c. Performs the Work unsuitably or neglects or refuses to remove materials or to correct Defective Work, or
- d. Discontinues the prosecution of the Work, or
- e. Fails to resume Work which has been discontinued within a reasonable time after notice to do so, or
- f. Becomes insolvent, except that if the CONTRACTOR declares bankruptcy termination in accordance with all U.S.C. 362 and/or 11 U.S.C. 365. In the event the CONTRACTOR declares bankruptcy the CONTRACTOR agrees that the Contract will be assumed or rejected in a timely manner so that the Contract will be completed by the date specified in the Contract Documents, or
- g. Allows any final judgment to stand against him unsatisfied for period of 60 days, or
- h. Makes an assignment for the benefit of creditors without the consent of the Contracting Officer, or
- i. Disregards Regulatory Requirements of any public body having jurisdiction, or
- j. Otherwise violates in any substantial way any provisions of the Contract Documents, or
- k. For any cause whatsoever, fails to carry on the Work in an acceptable manner, the Contracting Officer may give notice in writing to the CONTRACTOR and his Surety of such delay, neglect, or default.

- 14.2.2 If the CONTRACTOR or Surety, within the time specified in the above notice of default, shall not proceed in accordance therewith, then the DEPARTMENT may, upon written notification from the Contracting Officer of the fact of such delay, neglect or default and the CONTRACTOR's failure to comply with such notice, have full power and authority without violating the Contract, to take the prosecution of the Work out of the hands of the CONTRACTOR. The DEPARTMENT may terminate the services of the CONTRACTOR, exclude the CONTRACTOR from the site and take possession of the Work and of all the CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by the CONTRACTOR (without liability to the CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which the DEPARTMENT has paid the CONTRACTOR but which are stored elsewhere, and finish the Work as the DEPARTMENT may deem expedient. The DEPARTMENT may enter into an agreement for the completion of said Contract according to the terms and provisions thereof, or use such other methods that in the opinion of the Contracting Officer are required for the completion of said Contract in an acceptable manner.

- 14.2.3 The Contracting Officer may, by written notice to the CONTRACTOR and his Surety or his representative, transfer the employment of the Work from the CONTRACTOR to the Surety, or if the CONTRACTOR abandons the Work undertaken under the Contract, the Contracting Officer may, at his option with written

notice to the Surety and without any written notice to the CONTRACTOR, transfer the employment for said Work directly to the Surety. The Surety shall submit its plan for completion of the Work, including any contracts or agreements with third parties for such completion, to the DEPARTMENT for Approval prior to beginning completion of the Work. Approval of such contracts shall be in accordance with all applicable requirements and procedures for Approval of subcontracts as stated in the Contract Documents.

- 14.2.4 Upon receipt of the notice terminating the services of the CONTRACTOR, the Surety shall enter upon the premises and take possession of all materials, tools, and appliances thereon for the purpose of completing the Work included under the Contract and employ by contract or otherwise any person or persons to finish the Work and provide the materials therefor, without termination of the continuing full force and effect of this Contract. In case of such transfer of employment to the Surety, the Surety shall be paid in its own name on estimates covering Work subsequently performed under the terms of the Contract and according to the terms thereof without any right of the CONTRACTOR to make any claim for the same or any part thereof.
- 14.2.5 If the Contract is terminated for default, the CONTRACTOR and the Surety shall be jointly and severally liable for damages for delay as provided by paragraph 11.8, and for the excess cost of completion, and all costs and expenses incurred by the DEPARTMENT in completing the Work or arranging for completion of the Work, including but not limited to costs of assessing the Work to be done, costs associated with advertising, soliciting or negotiating for bids or proposals for completion, and other procurement costs. Following termination the CONTRACTOR shall not be entitled to receive any further balance of the amount to be paid under the Contract until the Work is fully finished and accepted, at which time if the unpaid balance exceeds the amount due the DEPARTMENT and any amounts due to persons for whose benefit the DEPARTMENT has withheld funds, such excess shall be paid by the DEPARTMENT to the CONTRACTOR. If the damages, costs, and expenses due the DEPARTMENT exceed the unpaid balance, the CONTRACTOR and his Surety shall pay the difference.
- 14.2.6 If, after notice of termination of the CONTRACTOR's right to proceed under the provisions of this clause, it is determined for any reason that the CONTRACTOR was not in default under the provisions of this clause, or that the delay was excusable under the provisions of this clause, or that termination was wrongful, the rights and obligations of the parties shall be determined in accordance with the clause providing for convenience termination.

14.3 Rights or Remedies:

Where the CONTRACTOR's services have been so terminated by the DEPARTMENT, the termination will not affect any rights or remedies of the DEPARTMENT against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due the CONTRACTOR by the DEPARTMENT will not release the CONTRACTOR from liability.

14.4 Convenience Termination:

- 14.4.1 The performance of the Work may be terminated by the DEPARTMENT in accordance with this section in whole or in part, whenever, for any reason the Contracting Officer shall determine that such termination is in the best interest of the DEPARTMENT. Any such termination shall be effected by delivery to the CONTRACTOR of a *Notice of Termination*, specifying termination is for the convenience of the DEPARTMENT the extent to which performance of Work is terminated, and the date upon which such termination becomes effective.

Immediately upon receipt of a *Notice of Termination* and except as otherwise directed by the Contracting Officer, the CONTRACTOR shall:

- a. Stop Work on the date and to the extent specified in the *Notice of Termination*;
- b. Place no further orders or subcontracts for materials, services, or facilities except as may be necessary for completion of such portion of the Work as is not terminated;

- c. Terminate all orders and subcontracts to the extent that they relate to the performance of Work terminated by the *Notice of Termination*;
- d. With the written Approval of the Contracting Officer, to the extent he may require, settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, the cost of which would be reimbursable, in whole, or in part, in accordance with the provisions of the Contract;
- e. Submit to the Contracting Officer a list, certified as to quantity and quality, of any or all items of termination inventory exclusive of items the disposition of which had been directed or authorized by the Contracting Officer;
- f. Transfer to the Contracting Officer the completed or partially completed record drawings, Shop Drawings, information, and other property which, if the Contract had been completed, would be required to be furnished to the DEPARTMENT;
- g. Take such action as may be necessary, or as the Contracting Officer may direct, for the protection and preservation of the property related to the Contract which is in the possession of the CONTRACTOR and in which the DEPARTMENT has or may acquire any interest.

The CONTRACTOR shall proceed immediately with the performance of the above obligations.

- 14.4.2 When the DEPARTMENT orders termination of the Work effective on a certain date, all Work in place as of that date will be paid for in accordance with Article 13 of the Contract. Materials required for completion and on hand but not incorporated in the Work will be paid for at invoice cost plus 15 % with materials becoming the property of the DEPARTMENT - or the CONTRACTOR may retain title to the materials and be paid an agreed upon lump sum. Materials on order shall be cancelled, and the DEPARTMENT shall pay reasonable factory cancellation charges with the option of taking delivery of the materials in lieu of payment of cancellation charges. The CONTRACTOR shall be paid 10% of the cost, freight not included, of materials cancelled, and direct expenses only for CONTRACTOR chartered freight transport which cannot be cancelled without charges, to the extent that the CONTRACTOR can establish them. The extra costs due to cancellation of bonds and insurance and that part of job start-up and phase-out costs not amortized by the amount of Work accomplished shall be paid by the DEPARTMENT. Charges for loss of profit or consequential damages shall not be recoverable except as provided above.
- 14.4.3 The termination claim shall be submitted promptly, but in no event later than 90 days from the effective date of termination, unless extensions in writing are granted by the Contracting Officer upon written request of the CONTRACTOR made within the 90 day period. Upon failure of the CONTRACTOR to submit his termination claim within the time allowed, the Contracting Officer may determine, on the basis of information available to him, the amount, if any, due to the CONTRACTOR by reason of the termination and shall thereupon pay to the CONTRACTOR the amount so determined.
- 14.4.4 The CONTRACTOR and the Contracting Officer may agree upon whole or any part of the amount or amounts to be paid to the CONTRACTOR by reason of the total or partial termination of Work pursuant to this section. The Contract shall be amended accordingly, and the CONTRACTOR shall be paid the agreed amount.

In the event of the failure of the CONTRACTOR and the Contracting Officer to agree in whole or in part, as provided heretofore, as to the amounts with respect to costs to be paid to the CONTRACTOR in connection with the termination of the Work the Contracting Officer shall determine, on the basis of information available to him, the amount, if any, due to the CONTRACTOR by reason of the termination and shall pay to the CONTRACTOR the amount determined as follows:

- a. All costs and expenses reimbursable in accordance with the Contract not previously paid to the CONTRACTOR for the performance of the Work prior to the effective date of the *Notice of Termination*;

- b. So far as not included under "a" above, the cost of settling and paying claims arising out of the termination of the Work under subcontracts or orders which are properly chargeable to the terminated portions of the Contract;
 - c. The reasonable costs of settlement with respect to the terminated portion of the Contract heretofore, to the extent that these costs have not been covered under the payment provisions of the Contract.
- 14.4.5 The CONTRACTOR shall have the right of appeal under the DEPARTMENT's claim procedures, as defined in Article 15, for any determination made by the Contracting Officer, except if the CONTRACTOR has failed to submit his claim within the time provided and has failed to request extension of such time, CONTRACTOR shall have no such right of appeal.

In arriving at the amount due the CONTRACTOR under this section, there shall be deducted:

- a. All previous payments made to the CONTRACTOR for the performance of Work under the Contract prior to termination;
 - b. Any claim for which the DEPARTMENT may have against the CONTRACTOR;
 - c. The agreed price for, or the proceeds of sale of, any materials, supplies, or other things acquired by the CONTRACTOR or sold pursuant to the provisions of this section and not otherwise recovered by or credited to the DEPARTMENT; and,
 - d. All progress payments made to the CONTRACTOR under the provisions of this section.
- 14.4.6 Where the Work has been terminated by the DEPARTMENT said termination shall not affect or terminate any of the rights of the DEPARTMENT against the CONTRACTOR or his Surety then existing or which may thereafter accrue because of such default. Any retention or payment of monies by the DEPARTMENT due to the CONTRACTOR under the terms of the Contract shall not release the CONTRACTOR or his Surety from liability.

Unless otherwise provided for in the Contract Documents, or by applicable statute, the CONTRACTOR, from the effective date of termination and for a period of three years after final settlement under this Contract, shall preserve and make available to the DEPARTMENT at all reasonable times at the office of the CONTRACTOR, all its books, records, documents, and other evidence bearing on the cost and expenses of the CONTRACTOR under his Contract and relating to the Work terminated hereunder.

ARTICLE 15 - CLAIMS AND DISPUTES

15.1 Notification:

In addition to the notice requirements set out elsewhere in this Contract, if the CONTRACTOR becomes aware of any act or occurrence which may form the basis of a claim by the CONTRACTOR for additional compensation or an extension of time for performance, or if any dispute arises regarding a question of fact or interpretation of the Contract, the CONTRACTOR shall immediately inform the Project Manager. If the matter cannot be resolved by agreement within 7 days, the CONTRACTOR shall, within the next 14 days, submit an "Intent to Claim" in writing to the Project Manager.

The claim, if not resolved, shall be presented to the Project Manager, in writing, within 60 days following receipt of the "Intent to Claim". Receipt of the claim will be acknowledged in writing by the Project Manager.

The CONTRACTOR agrees that unless these written notices are provided, the CONTRACTOR will have no entitlement to additional time or compensation for such act, event or condition. The CONTRACTOR shall in any case continue diligent performance of the Contract.

15.2 Presenting Claim:

The claim shall specifically include the following:

- 15.2.1 The act, event or condition giving rise to the claim.
- 15.2.2 The Contract provisions which apply to the claim and under which relief is provided.
- 15.2.3 The item or items of Contract Work affected and how they are affected.
- 15.2.4 The specific relief requested, including Contract Time if applicable, and the basis upon which it was calculated.

15.3 Claim Validity, Additional Information, and Project Manager's Actions:

The claim, in order to be valid, must not only show that the CONTRACTOR suffered damages or delay but that those conditions were actually a result of the act, event or condition complained of and that the Contract provides entitlement to relief to the CONTRACTOR for such act, event, or condition. The Project Manager reserves the right to make written request to the CONTRACTOR at any time for additional information which the CONTRACTOR may possess relative to the claim. The CONTRACTOR agrees to provide the Project Manager such additional information within 30 days of receipt of such a request. Failure to furnish such additional information may be regarded as a waiver of the claim. The Claim, if not resolved by agreement within 60 days of its receipt, will automatically be forwarded to the Contracting Officer for formal written decision.

15.4 Contracting Officer's Decision:

The CONTRACTOR will be furnished the Contracting Officers decision within the next 90 days, unless additional information is requested by the Contracting Officer. The Contracting Officer's decision is final and conclusive unless fraudulent as to the claim or unless, within 14 days of receipt of the decision, the CONTRACTOR delivers a written Notice of Appeal to the Appeals Officer. Procedures for appeals and hearings are covered under AS 36.30.625 and AS 36.30.630.

INDEX TO GENERAL CONDITIONS

A

Article or Paragraph Number

Acceptance of Insurance.....	5.3
Access to the Work.....	8.2; 13.11; 12.2
Actual Damages	11.8
Addenda-definition of.....	Article 1
Advertisement - definition of.....	Article 1
Alaska Agricultural/Wood Products	7.12.3
Alaska Bidder - definition of	7.12.1
Alaska Preferences.....	7.12
Alaska Products	7.12.2
Application for Payment-definition of	Article 1
Application for Payment, Final.....	13.2
Application for Progress Payment	13.3
Application for Progress Payment-review of	13.4
Approved or Approval -definition of.....	Article 1
Authorized Minor Variations in Work.....	9.3.2
Availability of Lands	4.1
Award-defined	Article 1

B

Before Starting Construction	11.2
Bid Bonds-definition of	Article 1
Bidder-definition of	Article 1
Bonds and insurances-in general.....	Article 5
Bonds, Delivery of.....	5.1
Bonds, Performance and Other.....	5.2
Builder's Risk Insurance ("ALL RISK").....	5.4.3.d

C

Cash Allowances.....	10.8
Change Order-definition of.....	Article 1
Change Orders-to be executed.....	9.4
Changes in the Work.....	9.1
Claims, Waiver of-on Final Payment.....	13.17
Clarifications and Interpretations.....	2.2.1.d; 3.6

Cleaning.....	6.5
Completion, Final	13.14
Completion, Substantial.....	13.10
Conferences, Preconstruction	6.6.1
Conflict, Error, Discrepancy-CONTRACTOR to Report.....	3.5
Construction Machinery, Equipment, etc	6.4
Consultant-definition of.....	Article 1
Continuing the Work	6.23
Contract-definition of	Article 1
Contract Documents-amending and Supplementing.....	9.1; 9.4; 9.6
Contract Documents- definition of	Article 1
Contract Documents-Intent.....	3.4
Contract Documents-Reuse of	3.7
Contract Price, Change of.....	9.4; 9.6; 10.1
Contract Price-definition of	Article 1
Contracting Officer's Authorities and Limitations	2.1
Contracting Officer- definition of.....	Article 1
Contracting Officer's Evaluations	2.2
Contract Time, Change of.....	9.4; 9.6; 11.4
Contract Time, Commencement of.....	11.1
Contract Time-definition of.....	Article 1
CONTRACTOR-definition of	Article 1
CONTRACTOR May Stop Work or Terminate.....	3.5.1; 4.6; 14.4.1
CONTRACTOR'S Continuing Obligation.....	13.5
CONTRACTOR'S Duty to Report Discrepancy in Documents.....	3.5
CONTRACTOR'S Fee-Cost Plus.....	10.3.3
CONTRACTOR'S Liability Insurance	5.4.3
CONTRACTOR'S Records	6.26
CONTRACTOR'S Responsibilities-in general.....	Article 6
CONTRACTOR'S Warranty to Title.....	13.6
Contractors-other	8.1; 8.2
Contractual Liability Insurance.....	5.4.3.b
Coordination	6.13.5; 8.4
Copies of Contract Documents	3.2
Correction or Removal of Defective Work.....	12.6
Correction Period, One Year	12.7

Correction, Removal or Acceptance of Defective Work-in general	12.6; 12.8
Cost and Pricing Data	10.3.4
Cost-net decrease	10.6.2.d; 10.6.2.e
Cost of Work	10.4
Costs, Supplemental.....	10.4.5

D

Day, Calendar-definition of	Article 1
Defective-definition of.....	Article 1
Defective Work, Acceptance of.....	12.8
Defective Work, Correction or Removal of.....	12.6; 12.9
Defective Work-in general.....	12.6; 12.8
Defective Work, Rejecting	12.4.2; 12.5
Definitions	Article 1
Delivery of Bonds.....	5.1
DEPARTMENT-definition of	Article 1
DEPARTMENT May Correct Defective Work.....	12.9
DEPARTMENT May Stop Work.....	12.5
DEPARTMENT May Suspend Work.....	14.1
DEPARTMENT'S Liability Insurance.....	5.4.3.d
DEPARTMENT'S Responsibilities-in general	2.1
DEPARTMENT'S Separate Representative at site	2.1.1; 2.1.3
Determination for Unit Prices.....	10.10
Differing Site Conditions.....	9.9
Directive-definition of	Article 1
Directive-to be executed	9.3
Directive-required performance	9.3.5
Disadvantaged and Women Business Enterprise	10.11
Disputes, Decisions by Contracting Officer.....	2.2.1; 15.4
Documents, Copies of Contract	3.2
Documents, Record.....	6.16; 13.13
Documents, Reuse	3.7
Drawings-definition of.....	Article 1

E

Easements	4.1
Effective date of Contract-definition of	Article 1

Emergencies	6.19
Equipment, Labor, Materials and	6.3; 6.4; 6.5
Equivalent Materials and Equipment.....	6.9
Explorations of physical conditions.....	4.3
Explosives	6.25

F

Fee, CONTRACTOR'S-Costs Plus.....	10.3.3
Final Acceptance	13.15
Final Acceptance- definition of	Article 1
Final Completion and Application for Payment	13.13
Final Completion- definition of	Article 1
Final Inspection	13.12
Final Payment	13.14
Final Payment, Processing of.....	13.14

G

General Requirements-definition of.....	Article 1
Giving Notice	3.5.1; 4.4.4; 4.6; 5.4.2; 6.17.3; 6.19; 6.20.4; 7.4; 7.11; 8.1.4; 8.3; 9.3.6; 9.8; 9.9; 10.10; 11.1; 11.2; 11.5; 12.1; 12.3.1; 12.3.4; 12.9; 13.10; 13.12; 14.1.1; 14.2.1 thru 14.2.4; 14.4.1; 14.4.3; 15.1; 15.5
Guarantee of Work-by CONTRACTOR	12.1

I

Indemnification.....	7.1; 7.3; 5.5
Inspection, Final	13.12
Inspection, Tests and	12.3
Install-definition of	Article 1
Insurance, Bonds and- in general.....	Article 5
Insurance, Certification of	5.4.2
Insurance, Completed Operations.....	5.4.3.b
Insurance, CONTRACTOR'S Liability	5.4.3.b
Insurance, Contractual Liability.....	5.4.3.b

Insurance, Owner's Liability	5.4.1
Insurance, Property Damage	5.4.3.b
Insurance, Waiver of Subrogation Rights	5.4.1
Intent of Contract Documents	3.4
Interpretations and Clarifications.....	2.2.1.3; 3.6
Investigations of physical conditions	4.3
Invitation for Bids- definition of.....	Article 1

L

Labor, Materials and Equipment.....	6.3; 6.4; 6.5
Laws and Regulations- general	Article 7
Liability Insurance- CONTRACTOR'S	5.4.1
Liability Insurance-Owner's.....	5.4.1
Liens, Resulting Judgements.....	14.2.1.g
Liquidated Damages	11.8

M

Materials and equipment- furnished by CONTRACTOR.....	6.4
Materials and equipment- incorporated in Work	6.5
Materials or equipment- equivalent	6.9
Multi-prime contracts	8.1

N

Notice, Giving of (See Giving Notice)	
Notice of Final Acceptance.....	13.15
Notice of Intent to Award-definition of	Article 1
Notice to Proceed-definition of.....	Article 1
Notice to Proceed-giving of.....	11.1; 11.2; 11.3

O

"Or-Equal" Item.....	6.9
Other contractors	Article 8
Other work.....	8.1.1
Overtime Work-authorization of.....	7.15; 10.4.1
Owner-definition of (See DEPARTMENT)	Article 1

P

Partial Utilization.....	13.10
Partial Utilization (See Substantial Completion)- definition of	Article 1

Partial Utilization- Property Insurance	13.10
Patent Fees and Royalties	7.3
Payment, Recommendation of	13.4
Payments to CONTRACTOR-in general.....	Article 13
Payments of CONTRACTOR- withholding	13.7
Performance and other Bonds.....	5.2
Permits.....	7.2
Physical Conditions-in general	Article 4
Physical Conditions- Contracting officer's review.....	9.9
Physical Conditions- existing structures	4.3
Physical Conditions- explorations and reports.....	4.3
Physical Conditions-possible document change	9.9
Physical Conditions-price and time adjustments	9.9
Physical Conditions-report of differing	4.6; 9.9
Physical Conditions- Underground Utilities	4.4
Preconstruction Conference.....	6.6.1
Premises, Use of	6.14
Price, Change of Contract.....	10.1
Price, Contract-definition of	Article 1
Progress Payment, Application for	13.1
Progress Payment-retainage.....	13.8
Progress schedule	6.6; 6.7; 6.8
Project-definition of.....	Article 1
Project Manager-definition of.....	Article 1
Project Representation- provision for	2.1.1
Project, Starting the	11.2
Property Insurance.....	5.4.3
Property Insurance- Partial Utilization	13.10
Protection, Safety and.....	6.17
Punch list	13.10

R

Recommendation of Progress Payment	13.4
Record Documents	6.16
Reference Points	4.7
Regulations, Laws and.....	Article 7
Rejecting Defective Work	12.4.2; 12.5

Related Work at Site	3.4.1
Removal or Correction of Defective Work.....	12.6; 12.9
Responsibilities, CONTRACTOR'S-in general	Article 6
Retainage	13.8
Reuse of Documents	3.7
Review of Shop Drawings and Samples	6.21
Right of Ways	4.1
Royalties, Patent Fees and	7.3

S

Safety and Protection	6.17
Samples.....	6.20; 6.21
Schedule of Progress.....	6.6; 6.7; 6.8
Schedule of Shop Drawing submissions	6.6; 6.7; 6.8; 6.20.1
Schedule of Values- definition.....	Article 1
Schedule of Values	6.6; 6.7; 6.8
Schedules, Finalizing.....	6.7
Shop Drawings and Samples.....	6.20; 6.21
Shop Drawings-definition of.....	Article 1
Shop Drawings, use to approve substitutions.....	6.9.4; 6.20.4
Site, Visits to-by Contracting Officer	2.4
Specifications-definition of.....	Article 1
Starting Construction, Before	6.6.1
Starting the Project	11.2
Stopping Work-by CONTRACTOR.....	3.5.1; 4.6; 14.4.1
Stopping Work-by Owner.....	12.5; 14.1
Subcontractor-definition of.....	Article 1
Subcontractors-in general	6.13
Subcontracts-required provisions.....	6.13.1; 6.13.3
Substantial Completion- certification of	13.10
Substantial Completion- definition of	Article 1
Substitute or "Or-Equal" Items	6.9
Subsurface Conditions	Article 4' 9.9
Supplemental Agreement- definition of.....	Article 1
Supplemental Agreement- general use.....	9.6
Supplemental costs	10.4.5
Supplementary Conditions- definition of.....	Article 1

Supplementary Conditions- principal references to	3.5; 4.3; 5.4; 11.8
Supplier-definition of	Article 1
Supplier-principal references.....	2.1.3; 3.7; 6.9; 6.12; 6.13.2; 6.20; 6.21
Surety-consent to payment.....	13.14.2
Surety-Consultant has no duty to	2.13
Surety-notice to.....	9.8; 14.2
Surety-qualification of	5.2; 5.3
Surety Replacement	5.3
Suspending Work, by Owner	14.1
Suspension of Work and Termination-in general	Article 14
Superintendent-CONTRACTOR's.....	6.2
Supervision and Superintendence	6.1; 6.2

T

Taxes-Payment by CONTRACTOR.....	7.2
Termination-by Owner	14.4.1
Termination, Suspension of Work and-in general	Article 14
Tests and Inspections.....	12.3
Time, Change of Contract.....	9.4; 11.4
Time, Computations of	11.3
Time, Contract-definition of.....	Article 1

U

Uncovering Work	12.4
Underground Utilities- general	4.4
Underground Utilities-not shown or indicated.....	4.6
Underground Utilities- protection of	4.4.2.d
Underground Utilities- shown or indicated.....	4.4.1
Unit Price Work-definition of.....	Article 1
Unit Price Work-general.....	10.9
Unit Prices	10.9.1
Unit Prices, Determination for.....	10.10
Use of Promises.....	6.14
Utility Owner's Notification.....	4.4.2.c; 4.4.3; 4.4.4; 4.5; 4.6
Utility, Damaged	4.5

V

Values, Schedule of	6.6; 6.7; 6.8
Variations in Work- Authorized	9.2
Visits to Site-by Contracting Officer	2.4

W

Waiver of Claims-on Final Payment	13.17
Waiver of Rights by insured parties.....	13.18
Warranty and Guarantee-by CONTRACTOR	12.1
Warranty of Title, CONTRACTOR'S.....	13.6
Work, Access to.....	8.2; 13.11; 12.2
Work-by others-general	Article 8
Work Continuing During Disputes	6.23
Work, Cost of	10.4
Work-definition of.....	Article 1
Work, Neglected by CONTRACTOR	14.2.1.c
Work, Stopping by CONTRACTOR.....	3.5.1; 4.6
Work, Stopping by Owner	12.5; 14.1

SECTION 00800
SUPPLEMENTARY CONDITIONS
MODIFICATIONS TO THE GENERAL CONDITIONS
(STATE FUNDED CONTRACTS)

The following supplements modify, change, delete from, add to the "General Conditions of the Construction Contract for Buildings", revised December, 1987 (c) 4/96. Where any article of the General Conditions is modified, or and Paragraph, Subparagraph, or Clause thereof is modified or deleted by these Supplementary Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph, of Clause shall remain in effect.

SC-1-DEFINITIONS

At General Conditions Article 1, add the following definitions:

“APPROVED. ‘Approved’ or ‘Approval’ as used in this contract document shall mean that the Department has received a document, form or submittal from the contractor and that the Department has taken “No exceptions” to the item submitted. Unless the context clearly indicates otherwise, approved or approval shall not mean that the Department approves of the methods or means, or that the item or form submitted meets the requirements of the contract or constitutes acceptance of the Contractor’s work. Where approved or approval means acceptance, then such approval must be set forth in writing and signed by the contracting officer or his designee.

ARCHITECT. Where used in the contract documents, “ARCHITECT” shall mean the DEPARTMENT’S ENGINEER.

ARCHITECT/ENGINEER. Where used in the contract documents, “ARCHITECT/ENGINEER” shall mean the DEPARTMENT’S ENGINEER.

ENGINEER. The DEPARTMENT’S authorized representative of the Contracting Officer, as defined in the DEPARTMENT’S *delegation of authority letter* to be issued after notice-to-proceed, who is responsible for administration of the contract.

EQUIPMENT. All machinery together with the necessary supplies for upkeep and maintenance, and also tools and apparatus necessary for the proper construction and acceptable completion of the work.

FURNISH. To procure, transport, and deliver to the project site materials, labor, or equipment, for installation or use on the project.

INSPECTOR. The Engineer's authorized representative assigned to make detailed observations relating to contract performance.

INTERIM WORK AUTHORIZATION. A written order by the Engineer initiating changes to the Contract, within its general scope, until a subsequent Change Order is executed.

LABORATORY. The official testing laboratories of the DEPARTMENT or such other laboratories as may be designated by the Engineer or identified in the contract documents.

MATERIALS. Any substances specified for use in the construction of the project.

PRECONSTRUCTION CONFERENCE. A meeting between the CONTRACTOR and the Engineer, and other parties affected by the construction, to discuss the project before the CONTRACTOR begins work.

QUALITY ASSURANCE (QA). Where referred to in the technical specifications (Divisions 2 through 16), Quality Assurance refers to measures to be provided by the CONTRACTOR as specified.

QUALITY CONTROL (QC). Tests and inspections by the CONTRACTOR to insure the acceptability of materials incorporated into the work. QC test reports are used as a basis upon which to determine whether the Work conforms to the requirements of the Contract Documents and to determine its acceptability for payment.

TRAFFIC CONTROL PLAN (TCP). A drawing of one or more specific plans that detail the routing of pedestrian, and/or vehicular traffic through or around a construction area.

UTILITY. The privately, publicly or cooperatively owned lines, facilities and systems for producing, transmitting or distributing communications, power, electricity, light, heat, gas, oil, crude products, water, steam, waste, storm water not connected with highway or street drainage, and other similar commodities, including publicly owned fire and police signal systems, street lighting systems, and railroads which directly or indirectly serve the public or any part thereof. The term "utility" shall also mean the utility company, inclusive of any wholly owned or controlled subsidiary."

At General Conditions Article 1, definition of **Contract Time**, last sentence, Replace "...Final Completion..." with:

"...Substantial Completion...".

At General Conditions Article 1, definition of **Conditions of the Contract**: Delete the text of this definition in its entirety.

At General Conditions Article 1, definition of **Contract Time**: Delete the text of this definition and replace with the following:

"The number of Calendar Days following issuance of Notice-to-Proceed in which the project shall be rendered Substantially Complete, or if specified as a calendar date, the Substantial Completion date specified in the Contract Documents."

At General Conditions Article 1, definition of **Controlling Item**: Delete the text of this definition and replace with the following:

"Any feature of the Work on the critical path of a network schedule."

At General Conditions Article 1, definition of **Defective**: Delete the text of this definition and replace with the following:

"Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents."

At General Conditions Article 1, definition of **Effective Date of the Contract**: Delete the text of this definition in its entirety.

At General Conditions Article 1, definition **Shop Drawings**: Add the following text:

"Where used in the Contract Documents, "Shop Drawings" shall also mean "Submittals"."

At General Conditions Article 1, second paragraph: Delete this paragraph in its entirety and replace with the following:

"The titles and headings of the articles, sections, and subsections herein are intended for convenience of reference."

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C

At General Conditions Article 1, third paragraph starting with “Whenever used in the Specifications....”, Delete this paragraph in its entirety.

At General Conditions Article 1, fourth paragraph, last sentence: Revise it to read as follows:

“Words defined in Article 1 are to be interpreted as defined.”

SC-2.1-AUTHORITIES AND LIMITATIONS

At General Conditions Article 2.1.1, delete this paragraph in its entirety and replace with the following:

“The Contracting Officer alone, shall have the power to bind the DEPARTMENT and to exercise the rights, responsibilities, authorities and functions vested in the Contracting Officer by the Contract Documents. The Contracting Officer shall have the right to designate in writing authorized representatives to act for him. Wherever any provision of the Contract Documents specifies an individual or organization, whether governmental or private, to perform any act on behalf of or in the interest of the DEPARTMENT that individual or organization shall be deemed to be the Contracting Officer’s authorized representative under this Contract but only to the extent so specified. “

At General Conditions Article 2.1.4 starting with “The term of “Contracting Officer” when used...”, delete this article in its entirety.

SC-2.4-VISITS TO SITE/PLACE OF BUSINESS

At General Conditions Article 2.4, delete this article in its entirety.

SC-4.1-AVAILABILITY OF LANDS

At General Conditions Article 4.1, add the following:

“The CONTRACTOR shall provide all waste and disposal areas, including disposal areas for hazardous or contaminated materials, at no additional cost to the DEPARTMENT.”

SC-4.3-EXPLORATIONS AND REPORTS

At General Conditions Article 4.3, add the following text:

“A copy of the geotechnical reports and addendum that were used in the preparation of these contract documents (See Section 00300 , Information Available to Bidders) is provided to all planholders listed with the DEPARTMENT as General Contractors, and is available to other planholders upon request. While referenced by or provided with the Contract Documents; the recommendations, engineering details, and other information contained in these reports of explorations shall not be construed to supercede or constitute conditions of the Contract Documents.”

SC-4.7-SURVEY CONTROL

At General Conditions Article 4.7, delete the third sentence and substitute the following text:

"Copies of all survey notes shall be provided to the DEPARTMENT at an interval determined by the Project Manager. The Project Manager may request submission on a weekly or longer period at his discretion. Any variations between the Contract Documents and actual field conditions shall be identified in the survey notes."

SC-5.2-BONDS

At General Condition Article 5.2, delete the second, third, fourth, fifth, and sixth paragraphs in their entirety.

SC-5.4.2-INSURANCE REQUIREMENTS, GENERAL

At General Condition Article 5.4.2, not required.

SC-5.4.2a-WORKMANS COMPENSATION INSURANCE

At General Condition Article 5.4.2a, replace paragraph "a" in its entirety and replace it with the following:

- "a. Workers' Compensation Insurance: The Contractor shall provide and maintain, for all employees of the Contractor engaged in work under this contract, Workers' Compensation Insurance as required by AS 23.30.045. The Contractor shall be responsible for Workers' Compensation Insurance for any subcontractor who provides services under this contract, to include:
1. Waiver of subrogation against the State and Employer's Liability Protection in the amount of \$500,000 each accident/\$500,000 each disease.
 2. If the Contractor directly utilizes labor outside of the State of Alaska in the prosecution of the work, "Other States" endorsement shall be required as a condition of the contract.
 3. Whenever the work involves activity on or about navigable waters, the Workers' Compensation policy shall contain a United States Longshoreman's and Harbor Worker's Act endorsement, and when appropriate, a Maritime Employer's Liability (Jones Act) endorsement with a minimum limit of \$1,000,000."

SC-5.4b-COMPREHENSIVE GENERAL LIABILITY INSURANCE

At General Conditions Article 5.4b, delete minimum limits of liability items 1 and 2 in their entirety and substitute the following text:

- "1. If the CONTRACTOR carries a *Comprehensive General Liability* policy, the limits of liability shall not be less than a Combined Single Limit for bodily injury, property damage and Personal Injury Liability of:
- \$1,000,000 each occurrence
\$2,000,00 aggregate
2. If the CONTRATOR carries a *Commercial General Liability* policy, the limits of liability shall not be less than:
- \$1,000,000 each occurrence (Combined Single Limit for bodily injury and property damage)
\$1,000,000 for Personal Injury Liability

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C

\$2,000,000 aggregate for Products-Completed Operations

\$2,000,000 general aggregate

The State of Alaska, DEPARTMENT of Health & Social Services shall be named as an "Additional Insured" under all liability coverages listed above."

SC-5.4.2d-BUILDERS RISK INSURANCE (SUBCONTRACTORS)

At General Condition Article 5.4.2d, revise the last sentence to read as follows:

"Builders Risk Insurance will only be required of subcontractors if so stated in the Supplementary Conditions."

SC-5.4.3-INSURANCE REQUIREMENTS, EVIDENCE OF INSURANCE

At General Conditions Article 5.4.3, delete this subsection and replace with the following:

"In addition to providing the above coverages the Contractor shall, in any contract or agreement with subcontractors performing work, require that all indemnities and waivers of subrogation it obtains, and that any stipulation to be named as an additional insured it obtains, also be extended to waive rights of subrogation against the State of Alaska and to add the State of Alaska as additional named indemnitee and as additional insured.

Evidence of insurance shall be furnished to the Department prior to the award of the contract. Such evidence, executed by the carrier's representative and issued to the Department, shall consist of a certificate of insurance or the policy declaration page with required endorsements attached thereto which denote the type, amount, class of operations covered, effective (and retroactive) dates, and dates of expiration. Acceptance by the Department of deficient evidence does not constitute a waiver of contract requirements.

When a certificate of insurance is furnished, it shall contain the following statement:

"This is to certify that the policies described herein comply with all aspects of the insurance requirements of (Project Name and Number)."

SC-6.6.1-PROGRESS SCHEDULE

At General Condition Article 6.6.1, change the phrase "Within reasonable time prior to the Pre-Construction Conference..." to read:

"Within seven days after the Pre-Construction Conference."

SC-6.6.2-SCHEDULE OF SHOP DRAWINGS AND SCHEDULE OF VALUES

At General Condition Article 6.6.2, change the phrase "Within fifteen days after the date of the Notice To Proceed,..." to read:

"Prior to submitting the CONTRACTOR's first Application for Payment..."

SC-6.9-SUBSTITUTES "OR EQUAL" ITEMS

Add the following article:

"6.9.5 - Substitutions shall be permitted during or after the bid period as allowed and in accordance with Document 00020 - Invitation for Bids, Document 00700 – General Conditions, and Document 01630 - Product Options and Substitutions."

SC-6.13.1-SUBCONTRACT PROVISIONS

At General Condition Article 6.13.1, delete the third sentence and add the following text:

"All subcontracts shall contain provisions for prompt payment, release of retainage, and interest on late payment amounts and retainage as specified in A.S. 36.90.210. Contracts between subcontractors, regardless of tier, must also contain these provisions."

SC-6.27-LOAD RESTRICTIONS

Add new General Conditions Article 6.27 as follows:

"6.27 Load Restrictions

The CONTRACTOR shall comply with all load restrictions as set forth in the "Administrative Permit Manual", and Title 17, Chapter 25, of the Alaska Administrative Code in the hauling of materials on public roads, beyond the limits of the project, and on all public roads within the project limits that are scheduled to remain in use upon completion of the project.

Overload permits may, at the discretion of the State, be issued for travel beyond the project limits for purposes of mobilization and/or demobilization. Issuance of such a permit will not relieve the CONTRACTOR of liability for damage which may result from the moving of equipment.

The operation of equipment of such weight or so loaded as to cause damage to any type of construction will not be permitted. No overloads will be permitted on the base course or surface course under construction. No loads will be permitted on a concrete pavement, base or structure before the expiration of the curing period. The CONTRACTOR shall be responsible for all damage done by his equipment."

SC-7.12-APPLICABLE ALASKA PREFERENCES

At General Condition Article 7.12.2, delete the last portion of the first sentence commencing at the words, "...when the bid documents designate..." and replace with the words:

"...when the bidder designates the use of Alaska products. The Bidder shall complete the Alaska Products Preference Worksheet per its instructions and submit it with the Bid Proposal." Continue with existing second sentence.

SC-7.13-PREFERENTIAL EMPLOYMENT

At General Condition Article 7.13, delete the text of this article in its entirety.

SC-7.14.1-CERTIFIED PAYROLLS

At General Condition Article 7.14.1, add the following text:

"Regardless of project funding source, copies of all certified payrolls supplied to the State DEPARTMENT of Labor by the CONTRACTOR shall be supplied also to the Project Manager upon request, including submittals made by, or on behalf of, subcontractors."

Add General Condition Article 7.14.3, as follows:

"Within three calendar days of award of a construction contract, the CONTRACTOR shall file a "Notice of Work" with the Department of Labor and shall pay all related fees. The Contracting Officer will not issue Notice to Proceed to the CONTRACTOR until such notice and fees have been paid to the Department of Labor. Failure of the CONTRACTOR to file the Notice of Work and pay fees within

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C

this timeframe shall not constitute grounds for an extension of contract time or adjustment of contract price.”

SC-7.16-COVENANT AGAINST CONTINGENT FEES

At General Conditions Article 7.16, delete the text of this article in its entirety.

SC-7.17-OFFICIALS NOT TO BENEFIT

At General Conditions Article 7.17, delete the text of this article in its entirety.

SC-7.18-PERSONAL LIABILITY OF PUBLIC OFFICIALS

At General Conditions Article 7.18, delete the text of this article in its entirety.

SC-9.4-CHANGE ORDER

At General Conditions Article 9.4, change the first sentence to read:

“A change in Contract Time, Contract Price, or responsibility may be made for changes within the scope of the Work by Change Order.”

At General Conditions Article 9.4, add the following sentence:

”A Change Order shall be considered executed when it is signed by the DEPARTMENT.”

SC-9.10-INTERIM WORK AUTHORIZATION

At General Conditions Article 9.10, add the following new paragraph:

“9.10 Interim Work Authorization

An Interim Work Authorization may be used to establish a change within the scope of the Work; however, only a Change Order shall establish associated changes in Contract Time and Price. Work authorized by Interim Work Authorization shall be converted to a Change Order. The basis of payment shall be as stated in the Interim Work Authorization, unless it states that the basis of payment has not been established and is to be negotiated, in which case the Cost of the Work shall be documented pursuant to Article 10.4, to establish a basis for negotiating a lump sum price for the Change Order.”

SC-10.3.2-CHANGE ORDER PRICE DETERMINATION FOR LUMP SUM CHANGE ORDERS

At General Conditions Article 10.3.2, Delete this paragraph in its entirety and replace it with the following.

“10.3.2 By mutual acceptance of a lump sum price which includes overhead and profit. The following maximum rates of cost markup (to cover both overhead and profit of the CONTRACTOR) shall be used in the negotiation of a Lump Sum Change Order:

- a. 17% - where a cost is borne directly by prime contractor (first tier contractor).
- b. 10% - where a cost is borne by a subcontractor (lower tier contractor).

Where the cost is borne by a subcontractor acting as a first tier contractor, the allowable overhead and profit markup for lump sum change orders shall not exceed 17%. Any lower tier subcontractors, including the CONTRACTOR in this case, for whom the first tier subcontractor performs the work, shall be allowed an overhead and profit markup that does

not exceed 10%.

SC-10.4-COST OF THE WORK

At General Conditions Article 10.4.1, replace the second sentence from the end of the paragraph with the following:

“Such employees shall include manual workers up through the level of foreman but shall not include general foremen, superintendents, and non-manual employees.”

At General Conditions Article 10.4.2, replace the first sentence with the following:

“Cost of all materials and equipment furnished and incorporated or consumed in the Work, including costs of transportation and storage thereof, and Suppliers’ field services required in connection therewith.”

SC-10.4.5.c-COST OF THE WORK (SUPPLEMENTAL COSTS)

At General Condition Article 10.4.5.c, add the following:

"For any machinery or special equipment (other than small tools) which has been authorized by the Project Manager, the CONTRACTOR shall receive the rental rates in the current edition and appropriate volume of the "Rental Rate Blue Book for Construction Equipment", published by Dataquest, Inc., 1290 Ridder Park Drive, San Jose, CA 95131. Hourly rental rates shall be determined as follows:

The established hourly rental rate shall be equal to the adjusted monthly rate for the basic equipment plus the adjusted monthly rate for applicable attachments, both divided by 176, and multiplied by the area adjustment factor, plus the estimated hourly operating cost.

The adjusted monthly rate is that resulting from application of the rate adjustment formula in order to eliminate replacement cost allowances in machine depreciation and contingency cost allowances.

Attachments shall not be included unless required for the time and materials work.

For equipment not listed in The Blue Book, the CONTRACTOR shall receive a rental rate as agreed upon before such work is begun. If agreement cannot be reached, the DEPARTMENT reserves the right to establish a rate based on similar equipment in the Blue Book or prevailing commercial rates in the area.

These rates shall apply for equipment used during the CONTRACTOR's regular shift of 10 hours per day. Where the equipment is used more than 10 hours per day, either on the CONTRACTOR's normal work or on time and materials, and either on single or multiple shifts, an overtime rate, computed as follows, shall apply:

The hourly overtime rate shall be equal to the adjusted monthly rate for the basic equipment plus the adjusted monthly rate for applicable attachments, both divided by 352, and multiplied by the area adjustment factor, plus the estimated hourly operating cost.

Equipment which must be rented or leased specifically for work required under this section shall be authorized in writing by the Project Manager. The CONTRACTOR shall be paid invoice price plus 15%.

When it is necessary to obtain equipment from sources beyond the project limits exclusively for time and materials, work, the actual cost of transferring the equipment to the site of the work and return will be allowed as an additional item of expense. Where the move is made by common carrier, the move-in allowance will be limited to the amount of the freight bill or invoice. If the CONTRACTOR hauls the

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C

equipment with his own forces, the allowance will be limited to the rental rate for the hauling unit plus operator wages. In the event that the equipment is transferred under its own power, the moving allowance will be limited to one-half of the normal hourly rental rate plus operator's wages. In the event that the move-out is to a different location, payment will in no instance exceed the amount of the move-in. Move-in allowance shall not be made for equipment brought to the project for time and materials work which is subsequently retained on the project and utilized for completion of contract items, camp maintenance, or related work.

Equipment ordered to be on a stand-by basis shall be paid for at the stand-by rental rate for the number of hours in the CONTRACTOR'S normal work shift, but not to exceed 8 hours per day. The stand-by rental rate shall be computed as follows:

The hourly stand-by rate shall be equal to the adjusted monthly rate for the basic equipment plus the adjusted monthly rate for applicable attachments, both divided by 352, all multiplied by the area adjustment factor.

Time will be recorded to the nearest one-quarter hour for purposes of computing compensation to the CONTRACTOR for equipment utilized under these rates.

The equipment rates as determined above shall be full compensation, including overhead and profit, for providing the required equipment and no additional compensation will be made for other costs such as, but not limited to, fuels, lubricants, replacement parts or maintenance costs. Cost of repairs, both major and minor, as well as charges for mechanic's time utilized in servicing equipment to ready it for use prior to moving to the project and similar charges will not be allowed."

SC-10.11-DISADVANTAGED BUSINESSS ENTERPRISE PROGRAM

At General Conditions Article 10.11, Delete this paragraph in its entirety for this State Funded Contract.

SC-11.3-COMPUTATION OF CONTRACT TIME

At General Condition Article 11.3.1, third sentence, change "...the date of Final Completion..." to:

"...the date of Substantial Completion..."

At General Condition Article 11.3.2, first sentence, change "...the date of Final Completion..." to:

"...the date of Substantial Completion."

Add General Condition Article 11.3.3, to state as follows:

" The Contract Time shall be as stated on form 25D-9, Proposal."

SC-11.8-DELAY DAMAGES

At General Condition Article 11.8, add the following:

"For each calendar day that the work remains incomplete after the expiration of the Contract Time, liquidated damages in the amount of \$500 per calendar day shall be assessed to the CONTRACTOR. If no money is due the CONTRACTOR, the DEPARTMENT shall have the right to recover said sum from the CONTRACTOR, the surety or both. The amount of these deductions is to reimburse the DEPARTMENT for estimated liquidated damages incurred as a result of the CONTRACTOR's failure to complete the work within the time specified. As liquidated damages, such deductions are not to be considered as penalties.

Permitting the CONTRACTOR to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no

SC 12-ONE YEAR CORRECTION PERIOD

At General Condition Article 12.7, in the first sentence, change the phrase “ Final Completion” to:

“Substantial Completion of the relevant portion of the Work...”

SC 13.3–APPLICATION FOR PROGRESS PAYMENT

At General Conditions Article 13.3, revise the last sentence to read as follows:

“Progress payments will be made as the Work progresses on a monthly basis.”

SC 13.13–FINAL COMPLETION AND APPLICATION FOR PAYMENT

At General Conditions Article 13.13, first sentence, delete the following items:

“maintenance and operating instructions
certificates of inspection
marked up record documents”

The preceding items are some of the requirements for Substantial Completion, as addressed in Section 01701.

SC 13.16–CONTRACTOR’S CONTINUING OBLIGATION

At General Condition Article 13.16, add the following paragraph:

“When it is anticipated that restarting, testing, adjusting, or balancing of systems will be required following Final Acceptance and said requirements are noted in Section(s) 01650, such Work shall constitute a continuing obligation under the Contract.”

SC 14.2–DEFAULT OF CONTRACT

At General Conditions Article 4.2, delete this section in its entirety and replace with the following:

“14.2.1 The Contracting Officer may give the contractor and his surety a written Notice to Cure Default if the contractor:

- a. fails to begin work in the time specified,
- b. fails to use sufficient resources to assure prompt completion of the work,
- c. performs the work unsuitably or neglect or refuse to remove and replace rejected materials or work,
- d. stops work,
- e. fails to resume stopped work after receiving notice to do so,
- f. becomes insolvent (except that if you declare bankruptcy, termination will be under Title 11 US Code 362 and/or 365. Your bankruptcy does not relieve the surety of any obligations to assume the Contract and complete the work in a timely manner.
- g. Allows any final judgment to stand against him unsatisfied for period of 60 days, or
- h. Makes an assignment for the benefit of creditors without the consent of the Contracting Officer, or
- i. Disregards Regulatory Requirements of any public body having jurisdiction, or

Anchorage Pioneer Home South Building Boiler Replacement – ANC 13-50C

- j. Otherwise violates in any substantial way any provisions of the Contract Documents, or
 - k. fails to comply with Contract minimum wage payments or civil rights requirements, or
 - l. are party to fraud, deception, misrepresentation , or
 - m. for any cause whatsoever, fails to carry on the Work in an acceptable manner.
- 14.2.2 The Notice to Cure Default will detail the conditions determined to be in default, the time within which to cure the default and may, in the Contracting Officer's discretion, specify the actions necessary to cure the default. Failure to cure the delay, neglect or default within the time specified in the Contracting Officer's written notice to cure authorizes the Department to terminate the contract. The Contracting Officer may allow more time to cure than originally stated in the Notice to Cure Default if he deems it to be in the best interests of the Department. The Department will provide you and your surety with a written Notice of Default Termination that details the default and the failure to cure it.
- 14.2.3 If the CONTRACTOR or Surety, within the time specified in the above notice of default, shall not proceed in accordance therewith, then the DEPARTMENT may, upon written notification from the Contracting Officer of the fact of such delay, neglect or default and the CONTRACTOR's failure to comply with such notice, have full power and authority without violating the Contract, to take the prosecution of the Work out of the hands of the CONTRACTOR. The DEPARTMENT may terminate the services of the CONTRACTOR, exclude the CONTRACTOR from the site and take possession of the Work and of all the CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by the CONTRACTOR (without liability to the CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which the DEPARTMENT has paid the CONTRACTOR but which are stored elsewhere, and finish the Work as the DEPARTMENT may deem expedient. The DEPARTMENT may enter into an agreement for the completion of said Contract according to the terms and provisions thereof, or use such other methods that in the opinion of the Contracting Officer are required for the completion of said Contract in an acceptable manner.
- 14.2.4 The Contracting Officer may, by written notice to the CONTRACTOR and his Surety or his representative, transfer the employment of the Work from the CONTRACTOR to the Surety, or if the CONTRACTOR abandons the Work undertaken under the Contract, the Contracting Officer may, at his option with written notice to the Surety and without any written notice to the CONTRACTOR, transfer the employment for said Work directly to the Surety. The Surety shall submit its plan for completion of the Work, including any contracts or agreements with third parties for such completion, to the DEPARTMENT for Approval prior to beginning completion of the Work. Approval of such contracts shall be in accordance with all applicable requirements and procedures for Approval of subcontracts as stated in the Contract Documents.
- 14.2.5 After the notice of termination is issued, the Department may take over the work and complete it by contract or otherwise and may take possession of and use materials, appliances, equipment or plant on the work site necessary for completing the work.
- 14.2.6 Rather than taking over the work itself, the Department may transfer the obligation to perform the work from the contractor to your surety. The surety must submit its plan for completion of the work, including any contracts or agreements with third parties for completion, to the Department for approval prior to beginning work. The surety must follow the Contract requirements for approval of subcontracts, except that the limitation on percent of work subcontracted will not apply.
- 14.2.7 On receipt of the transfer notice, the surety must take possession of all materials, tools, and appliances at the work site, employ an appropriate work force, and complete the Contract work, as specified. The Contract specifications and requirements shall remain in effect. However the Department will make subsequent Contract payments directly to the Surety for work performed under the terms of the Contract. You forfeit any right to claim for the same work or any part thereof. You are not entitled to receive any further balance of the amount to
-

be paid under the Contract.

- 14.2.8 Upon receipt of the notice terminating the services of the CONTRACTOR, the Surety shall enter upon the premises and take possession of all materials, tools, and appliances thereon for the purpose of completing the Work included under the Contract and employ by contract or otherwise any person or persons to finish the Work and provide the materials therefor, without termination of the continuing full force and effect of this Contract. In case of such transfer of employment to the Surety, the Surety shall be paid in its own name on estimates covering Work subsequently performed under the terms of the Contract and according to the terms thereof without any right of the CONTRACTOR to make any claim for the same or any part thereof.
- 14.2.9 If the Contract is terminated for default, the CONTRACTOR and the Surety shall be jointly and severally liable for damages for delay as provided by paragraph 11.8, and for the excess cost of completion, and all costs and expenses incurred by the DEPARTMENT in completing the Work or arranging for completion of the Work, including but not limited to costs of assessing the Work to be done, costs associated with advertising, soliciting or negotiating for bids or proposals for completion, and other reprocurement costs. Following termination the CONTRACTOR shall not be entitled to receive any further balance of the amount to be paid under the Contract until the Work is fully finished and accepted, at which time if the unpaid balance exceeds the amount due the DEPARTMENT and any amounts due to persons for whose benefit the DEPARTMENT has withheld funds, such excess shall be paid by the DEPARTMENT to the CONTRACTOR. If the damages, costs, and expenses due the DEPARTMENT exceed the unpaid balance, the CONTRACTOR and his Surety shall pay the difference.
- 14.2.10 If, after notice of termination of the CONTRACTOR's right to proceed under the provisions of this clause, it is determined for any reason that the CONTRACTOR was not in default under the provisions of this clause, or that the delay was excusable under the provisions of this clause, or that termination was wrongful, the rights and obligations of the parties shall be determined in accordance with the clause providing for convenience termination.

14.3 Rights or Remedies:

Where the CONTRACTOR's services have been so terminated by the DEPARTMENT, the termination will not affect any rights or remedies of the DEPARTMENT against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due the CONTRACTOR by the DEPARTMENT will not release the CONTRACTOR from liability.

14.4 Convenience Termination:

- 14.4.1 The performance of the Work may be terminated by the DEPARTMENT in accordance with this section in whole or in part, whenever, for any reason the Contracting Officer shall determine that such termination is in the best interest of the DEPARTMENT. Any such termination shall be effected by delivery to the CONTRACTOR of a Notice of Termination, specifying termination is for the convenience of the DEPARTMENT the extent to which performance of Work is terminated, and the date upon which such termination becomes effective.
- 14.4.2 Immediately upon receipt of a Notice of Termination and except as otherwise directed by the Contracting Officer, the CONTRACTOR shall:
- a. Stop Work on the date and to the extent specified in the Notice of Termination;
 - b. Place no further orders or subcontracts for materials, services, or facilities except as may be necessary for completion of such portion of the Work as is not terminated;
 - c. Terminate all orders and subcontracts to the extent that they relate to the performance of Work terminated by the Notice of Termination;
 - d. With the written Approval of the Contracting Officer, to the extent he may require, settle

all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, the cost of which would be reimbursable, in whole, or in part, in accordance with the provisions of the Contract;

- e. Submit to the Contracting Officer a list, certified as to quantity and quality, of any or all items of termination inventory exclusive of items the disposition of which had been directed or authorized by the Contracting Officer;
- f. Transfer to the Contracting Officer the completed or partially completed record drawings, Shop Drawings, information, and other property which, if the Contract had been completed, would be required to be furnished to the DEPARTMENT;
- g. Take such action as may be necessary, or as the Contracting Officer may direct, for the protection and preservation of the property related to the Contract which is in the possession of the CONTRACTOR and in which the DEPARTMENT has or may acquire any interest.

The CONTRACTOR shall proceed immediately with the performance of the above obligations.

- 14.4.3 When the DEPARTMENT orders termination of the Work effective on a certain date, all Work in place as of that date will be paid for in accordance with Article 13 of the Contract. Materials required for completion and on hand but not incorporated in the Work will be paid for at invoice cost plus 15 % with materials becoming the property of the DEPARTMENT - or the CONTRACTOR may retain title to the materials and be paid an agreed upon lump sum. Materials on order shall be cancelled, and the DEPARTMENT shall pay reasonable factory cancellation charges with the option of taking delivery of the materials in lieu of payment of cancellation charges. The CONTRACTOR shall be paid 10% of the cost, freight not included, of materials cancelled, and direct expenses only for CONTRACTOR chartered freight transport which cannot be cancelled without charges, to the extent that the CONTRACTOR can establish them. The extra costs due to cancellation of bonds and insurance and that part of job start-up and phase-out costs not amortized by the amount of Work accomplished shall be paid by the DEPARTMENT. Charges for loss of profit or consequential damages shall not be recoverable except as provided above.

- a. The following costs are not payable under a termination settlement agreement or Contracting Officer's determination of the termination claim:
 - 1. Loss of anticipated profits or consequential or compensatory damages
 - 2. Unabsorbed home office overhead (also termed "General & Administrative Expense") related to ongoing business operations
 - 3. Bidding and project investigative costs
 - 4. Direct costs of repairing equipment to render it operable for use on the terminated work

- 14.4.4 The termination claim shall be submitted promptly, but in no event later than 90 days from the effective date of termination, unless extensions in writing are granted by the Contracting Officer upon written request of the CONTRACTOR made within the 90 day period. Upon failure of the CONTRACTOR to submit his termination claim within the time allowed, the Contracting Officer may determine, on the basis of information available to him, the amount, if any, due to the CONTRACTOR by reason of the termination and shall thereupon pay to the CONTRACTOR the amount so determined.

- 14.4.5 The CONTRACTOR and the Contracting Officer may agree upon whole or any part of the amount or amounts to be paid to the CONTRACTOR by reason of the total or partial termination of Work pursuant to this section. The Contract shall be amended accordingly, and the CONTRACTOR shall be paid the agreed amount.

- 14.4.6 In the event of the failure of the CONTRACTOR and the Contracting Officer to agree in whole or in part, as provided heretofore, as to the amounts with respect to costs to be paid to the

CONTRACTOR in connection with the termination of the Work the Contracting Officer shall determine, on the basis of information available to him, the amount, if any, due to the CONTRACTOR by reason of the termination and shall pay to the CONTRACTOR the amount determined as follows:

- a. All costs and expenses reimbursable in accordance with the Contract not previously paid to the CONTRACTOR for the performance of the Work prior to the effective date of the Notice of Termination;
- b. So far as not included under "a" above, the cost of settling and paying claims arising out of the termination of the Work under subcontracts or orders which are properly chargeable to the terminated portions of the Contract;
- c. So far as practicable, claims by the contractor for idled or stand-by equipment shall be made as follows: Equipment claims will be reimbursed as follows:
 1. Contractor-owned equipment usage, based on the contractor's ownership and operating costs for each piece of equipment as determined from the contractor's accounting records. Under no circumstance, may the contractor base equipment claims on published rental rates.
 2. Idle or stand-by time for Contractor-owned equipment, based on your internal ownership and depreciation costs. Idle or stand-by equipment time is limited to the actual period of time equipment is idle or on stand-by as a direct result of the termination, not to exceed 30 days. Operating expenses will not be included for payment of idle or stand-by equipment time.
 3. Rented equipment, based on reasonable, actual rental costs. Equipment leased under "capital leases" as defined in Financial Accounting Standard No. 13 will be considered Contractor-owned equipment. Equipment leased from an affiliate, division, subsidiary or other organization under common control with you will be considered Contractor-owned equipment, unless the lessor has an established record of leasing to unaffiliated lessees at competitive rates consistent with the rates you have agreed to pay and no more than forty percent of the lessor's leasing business, measured in dollars, is with organizations affiliated with the lessor.

14.4.7 The CONTRACTOR shall have the right of appeal under the DEPARTMENT's claim procedures, as defined in Article 15, for any determination made by the Contracting Officer, except if the CONTRACTOR has failed to submit his claim within the time provided and has failed to request extension of such time, CONTRACTOR shall have no such right of appeal. In arriving at the amount due the CONTRACTOR under this section, there shall be deducted:

- a. All previous payments made to the CONTRACTOR for the performance of Work under the Contract prior to termination;
- b. Any claim for which the DEPARTMENT may have against the CONTRACTOR;
- c. The agreed price for, or the proceeds of sale of, any materials, supplies, or other things acquired by the CONTRACTOR or sold pursuant to the provisions of this section and not otherwise recovered by or credited to the DEPARTMENT; and,
- d. All progress payments made to the CONTRACTOR under the provisions of this section.

14.4.8 Where the Work has been terminated by the DEPARTMENT said termination shall not affect or terminate any of the rights of the DEPARTMENT against the CONTRACTOR or his Surety then existing or which may thereafter accrue because of such default. Any retention or payment of monies by the DEPARTMENT due to the CONTRACTOR under the terms of the Contract shall not release the CONTRACTOR or his Surety from liability.

14.4.9 The contractor's termination claim may not include claims that pre dated the notice for termination for convenience. Those claims shall be prosecuted by the contractor under Article 15.

- 14.4.10 The contractor's termination claim may not exceed the total dollar value of the contract as awarded plus agreed upon change orders less the amounts that have been paid for work completed.
- a. Unless otherwise provided for in the Contract Documents, or by applicable statute, the CONTRACTOR, from the effective date of termination and for a period of three years after final settlement under this Contract, shall preserve and make available to the DEPARTMENT at all reasonable times at the office of the CONTRACTOR, all its books, records, documents, and other evidence bearing on the cost and expenses of the CONTRACTOR under his Contract and relating to the Work terminated hereunder.
 - b. Definitions. In this Subsection 108-1.09, the term "cost" and the term "expense" mean a monetary amount in U.S. Dollars actually incurred by you, actually reflected in your contemporaneously maintained accounting or other financial records and supported by original source documentation.
 - c. Cost Principles. The Department may use the federal cost principles at 48 CFR §§ 31.201-1 to 31.205-52 (or succeeding cost principles for fixed price contracts) as guidelines in determining allowable costs under this Subsection to the extent they are applicable to construction contracts and consistent with the specifications of this Contract. The provisions of this contract control where they are more restrictive than, or inconsistent with, these federal cost principles."

SC-15-CLAIMS AND DISPUTES

At General Conditions Article 15 – Claims and Disputes, delete this section in its entirety and substitute the following text:

"ARTICLE 15 - CLAIMS FOR ADJUSTMENT AND DISPUTES

15.1 Notification

- 15.1.1 The CONTRACTOR shall notify the DEPARTMENT in writing as soon as the CONTRACTOR becomes aware of any act or occurrence which may form the basis of a claim for additional compensation or an extension of Contract Time or of any dispute regarding a question of fact or interpretation of the Contract. The DEPARTMENT has no obligation to investigate any fact or occurrence that might form the basis of a claim or to provide any additional compensation or extension of Contract Time unless the CONTRACTOR has notified the DEPARTMENT in writing in a timely manner of all facts the CONTRACTOR believes form the basis for the claim.
- 15.1.2 If the CONTRACTOR believes that he is entitled to an extension of Contract Time, then the CONTRACTOR must state the contract section on which he basis his extension request, provide the DEPARTMENT with sufficient information to demonstrate that the CONTRACTOR has suffered excusable delay, and show the specific amount of time to which the CONTRACTOR is entitled. The DEPARTMENT will not grant an extension of Contract Time if the CONTRACTOR does not timely submit revised schedules under **Section 01310**.
- 15.1.3 If the matter is not resolved by agreement within 7 days, the CONTRACTOR shall submit an Intent to Claim, in writing, to the DEPARTMENT within the next 14 days.
- 15.1.4 If the CONTRACTOR believes additional compensation or time is warranted, then he must immediately begin keeping complete, accurate, and specific daily records concerning every detail of the potential claim including actual costs incurred. The CONTRACTOR shall provide the DEPARTMENT access to any such records and furnish the DEPARTMENT copies, if requested. Equipment costs must be based on the CONTRACTOR's internal rates for ownership, depreciation, and operating expenses and not on published rental rates. In computing damages, or costs claimed for a change order, or for any other claim against the Department for additional time, compensation or both, the contractor must prove actual damages based on internal costs for equipment, labor or efficiencies. Total cost, modified

total cost or jury verdict forms of presentation of damage claims are not permissible to show damages. Labor inefficiencies must be shown to actually have occurred and can be proven solely based on job records. Theoretical studies are not a permissible means of showing labor inefficiencies. Home office overhead will not be allowed as a component of any claim against the Department.

- 15.1.5 If the claim or dispute is not resolved by the DEPARTMENT, then the CONTRACTOR shall submit a written Claim to the Contracting Officer within 90 days after the CONTRACTOR becomes aware of the basis of the claim or should have known the basis of the claim, whichever is earlier. The Contracting Officer will issue written acknowledge of the receipt of the Claim.
- 15.1.6 The CONTRACTOR waives any right to claim if the DEPARTMENT was not notified properly or afforded the opportunity to inspect conditions or monitor actual costs or if the Claim is not filed on the date required.

15.2 Presenting the Claim

- 15.2.1 The Claim must include all of the following:
- a. The act, event, or condition the claim is based on
 - b. The Contract provisions which apply to the claim and provide relief
 - c. The item or items of Contract work affected and how they are affected
 - d. The specific relief requested, including Contract Time if applicable, and the basis upon which it was calculated
 - e. A statement certifying that the claim is made in good faith, that the supporting cost and pricing data are accurate and complete to the best of your knowledge and belief, and that the amount requested accurately reflects the Contract adjustment which the CONTRACTOR believes is due.

15.3 Claim Validity, Additional Information, and DEPARTMENT's Action

- 15.3.1 The Claim, in order to be valid, must not only show that the CONTRACTOR suffered damages or delay but that it was caused by the act, event, or condition complained of and that the Contract provides entitlement to relief for such act, event, or condition.
- 15.3.2 The DEPARTMENT can make written request to the CONTRACTOR at any time for additional information relative to the Claim. The CONTRACTOR shall provide the DEPARTMENT the additional information within 30 days of receipt of such a request. Failure to furnish the additional information may be regarded as a waiver of the Claim.

15.4 Contracting Officer's Decision

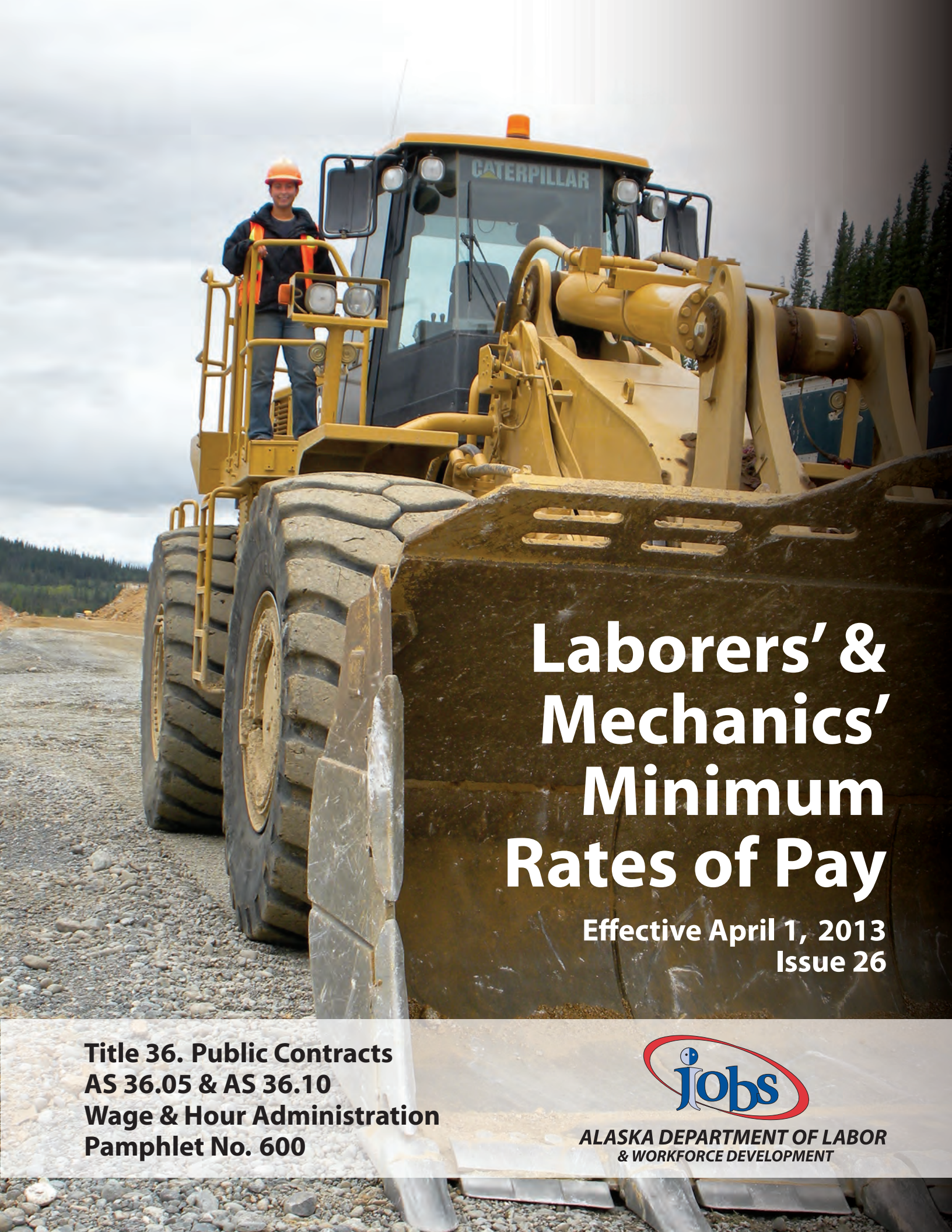
The CONTRACTOR will be furnished the Contracting Officer's Decision within 90 days, unless the Contracting Officer requests additional information or gives the CONTRACTOR notice that the time for issuing a decision is being extended for a specified period under AS 36.30.620. The Contracting Officer's decision is final and conclusive unless, within 14 days of receipt of the decision, the CONTRACTOR delivers a Notice of Appeal to the Appeals Officer. Procedures for appeals are covered under AS 36.30.625 and AS 36.30.630.

15.5 Fraud and Misrepresentation in Making Claims

Criminal and Civil penalties authorized under AS 36.30.687 (including, but not limited to, forfeiture of all claimed amounts) may be imposed on the CONTRACTOR if the CONTRACTOR makes or uses a misrepresentation in support of a claim or defraud or attempt to defraud the DEPARTMENT at any stage of prosecuting a claim under this Contract."

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK



Laborers' & Mechanics' Minimum Rates of Pay

Effective April 1, 2013
Issue 26

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



**ALASKA DEPARTMENT OF LABOR
& WORKFORCE DEVELOPMENT**



THE STATE
of **ALASKA**
GOVERNOR SEAN PARNELL

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

April 1, 2013

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 by the State of Alaska or its political subdivisions, such as local governments and certain non-profit organizations).

Because these rates may change, this publication is printed in the spring and fall of every year, so please be sure you are using the appropriate rates. The rates published in this edition become effective April 1, 2013.

All projects with a final bid date of April 11, 2013, or later, must pay the prevailing wage rates contained in this pamphlet. 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 date the prime contract is awarded is the date from which the 24 months will be counted.** 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", as used herein, 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, contact the nearest office of the Division of Labor Standards and Safety, Wage and Hour office or visit the Internet site at:

<http://labor.state.ak.us/lss/pamp600.htm>

For questions regarding prevailing wage or resident hire requirements, please contact the nearest Wage and Hour office. These offices are listed on Page x.

Sincerely,

A handwritten signature in cursive script that reads "Dianne Blumer".

Dianne Blumer
Commissioner

**STATE OF ALASKA
DEPARTMENT OF LABOR & WORKFORCE DEVELOPMENT
ALASKA RESIDENT HIRE INFORMATION**

EMPLOYMENT PREFERENCE INFORMATION

By authority of A.S. 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 hiring preference applies on a project-by-project, craft-by-craft or occupational basis and must be met each workweek by each contractor/subcontractor.**

The following classifications qualify for a minimum of 90 percent Alaska resident hire preference:

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

This determination became effective July 1, 2011, and remains in effect until June 30, 2013.

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 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 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.

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-Alaskan 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 intensive search for qualified Alaskan workers. 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 ($.90 \times 4 = 3.6 - .6 = 3$). 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.

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.

SPECIAL NOTICE TO BIDDERS

NEW "LITTLE DAVIS BACON ACT" CHANGES FILING PROCESS AND ASSESSES SPECIAL FEES ON PUBLIC WORKS CONSTRUCTION PROJECTS

The news release concerning these changes is at: <http://labor.state.ak.us/news/2003/news03-23.htm>

Governor Sean Parnell signed changes to CSHB 155 into law on July 22, 2011 (effective October 20, 2011), in addition to Governor Murkowski CSHB 155 changes on June 16, 2003 (effective July 2, 2003). The new laws allow contractors working on certain public construction projects to file bi-weekly versus weekly-certified payrolls to the Alaska Department of Labor and Workforce Development (DOLWD), filing requirements **and** it levies filing fees.

- **What does this change accomplish?**

State Funded Projects - Instead of submitting certified payrolls weekly, prime Contractors working on State funded public construction projects are now allowed to file certified payrolls every other week - bi-weekly payroll reports on State funded project shall not contain Social Security Numbers. In conjunction with this statutory change, the DOLWD is revising the certified payroll form. The revised certified payroll form is available at: <http://www.labor.state.ak.us/lss/lssforms.htm>

Federally Funded Projects - Federal weekly payroll filing requirements under 29 CFR 5.5 (a) (3) are not changed by this new law. But, the assessment of a one percent fee based on the estimated value of work performed and of the value of each subcontractor's price now applies (see below).

And, Federal Statute and form 25D-55 still require Social Security Numbers for the certified weekly payroll reports submitted on Federally funded projects.

- **Are there special forms to file and fees to pay?**

Effective October 20, 2011, the prime Contractor working on any public construction project exceeding \$25,000 must file a "Notice of Work" and a "Notice of Completion" form with the DOLWD.

A one percent filing fee will be assessed on contracts with an amount of \$25,000 or more. The fee will be based on the estimated value of work to be performed by the prime contractor, and one percent of the value of each subcontractor's price. The maximum fee is \$5,000.00.

Amounts paid to owner/operators who do not use employees are exempt from the filing fee.

The Contractor must provide to the Contracting Agency a copy of the "Notice of Work" form that has been date stamped as received by the DOL along with confirmation of fee payment before work on the project may commence.

And, the Contractor must file a "Notice of Completion" with the DOLWD when work is completed. The Contracting Agency will not perform the "close-out for final project completion" until notice from the DOLWD that they have processed the Contractors "Notice of Completion" form. The "Notice of Work" and "Notice of Completion" forms are available at: <http://www.labor.state.ak.us/lss/lssforms.htm>

- **What about emergency work and projects bid opened before July 1, 2003?**

There are special provisions for filing the "Notice of Work" and the payment of fees for an emergency response project. Contractors have 14 days after starting work in which to file the "Notice of Work" and pay the fees on an emergency response project.

A prime Contractor under a contract that had a final bid date before July 1, 2003 will not be required to pay a filing fee, regardless of when the work starts.

- **How can I find out more about this new law?**

Contact the Dept. of Labor Workforce and Development, Wage and Hour Administration at:

Juneau	907.465.4842
Anchorage	907.269.4900
Fairbanks	907.451.2886

STATE OF ALASKA

Sean Parnell, Governor

Department of Labor and Workforce Development
Wage and Hour Administration
Labor Standards and Safety Division

3301 Eagle Street, Suite 301
Anchorage, AK 99503
PHONE: (907) 269-4900
FAX: (907) 269-4915
<http://labor.alaska.gov/LSS>

As of May 2010, the Wage and Hour Administration implemented an online certified payroll filing system that allows agencies and contractors to submit project information electronically.

Effective **March 1, 2012**, the department will change our policy to reflect the following:

- **Filing Fee Payments:** All filing fee transactions will be processed through the online system using
 - Credit/ Debit Cards
 - Checks will be processed by you authorizing the withdrawal directly out of your account.
- **Notice of Work and Notice of Completion:** Both documents can be entered and printed directly from the system provided there are no enforcement or investigative actions pending. Please access the system for copies of these documents.

To begin using this system, please go to the "myAlaska" link, located at:
<https://my.alaska.gov/Welcome.aspx>

From here, either register a new account for your company, or sign into your company's myAlaska account. Once you have logged in, return to the home page, under "Services for Businesses," click on "LSS - Online Filing Services." You are now ready to take full advantage of the system.

If you have any questions concerning the online certified payroll filing system, we encourage you to call your local Wage and Hour Administration office:

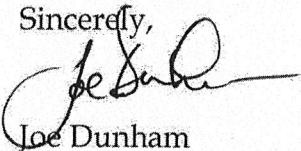
Anchorage
269-4909

Wasilla
352-2558

Juneau
465-4842

Fairbanks
451-2886

Sincerely,



Joe Dunham
Statewide Supervising Investigator
Wage and Hour Administration
3301 Eagle Street, Suite 301
Anchorage, AK 99503
907-269-4900



Online Certified Payroll Frequently Asked Questions

1. Do I have to use the Online CP system?

If you are awarded an Alaska Department of Transportation and Public Facilities (DOTPF) project they will be requiring you to submit online certified payrolls in the very near future. Otherwise filing online is optional. The transfer will be gradual. The Department of Labor and Workforce Development (DOLWD) will still accept hardcopy certified payrolls. DOLWD will eventually require it. Check with your local DOLWD regional office or the Labor home page for further updates.

2. How do I electronically file my certified payrolls?

It's easy! <https://myalaska.state.ak.us/home/app>. Click on "LSS-Online Filing Services". If you don't already have a My Alaska account, you'll have to create one. If more than one person in your company enters the certified payroll information, you can create the level of security within your company necessary to verify who submitted the information

3. Who do I contact if I have a problem entering my CPs into the new online system?

Call your Wage and Hour office that is within the project region, or send an email to:

- Anchorage.LSS-WH@alaska.gov
- Juneau.LSS-WH@alaska.gov
- Fairbanks.LSS_WH@alaska.gov

4. How do I get My Alaska Employer Identification Number (AK ID)?

Apply online at: <https://myalaska.state.ak.us/home/app?service=external/launch&pubid=tos>

5. How do I get my Employer Identification Number (EIN)?

This is a Federal Employer ID number that you should obtain when you start a business. Most all businesses in the State of Alaska, EIN number start with "2-." If you do not have one, please email the Employment Security Tax Division at esd.tax@alaska.gov or contact:

Phone: (907) 465-2757
Toll Free: (888) 448-3527
(888) 448-2937
Relay Alaska TDD/TTY/TT
Services: 1-800-770-8973
Fax: (907) 465-2374

Mailing Address:
Alaska Department of Labor and
Workforce Development
Employment Security Tax
PO Box 115509
Juneau, AK 99811-5509

6. Am I the prime contractor?

You are the prime contractor only if you have received a contract from the State of Alaska or a subsidiary of the State.

7. Am I a sub-contractor?

You are a Subcontractor if you are contracted by another contractor to do a portion of the work. Both the Prime and the Subcontractors are required by law to submit certified payrolls.

8. What is a Notice of Work (NOW)?

A Notice of Work is the document that is filed with the DOLWD upon notice of award of a public works project from the contracting agency. Go to <http://labor.alaska.gov/lss/forms/notice-of-work.pdf> to download a copy of the form. Once the NOW is filed and the filing fee is paid as required by AS 36.05.045, DOLWD will issue a temporary NOW to the contractor who can then notify the contracting agency that they are in compliance, and thus allows the contractors to begin work on their project. The DOLWD has up to 10 business days (not including weekends/holidays) to process your Notice of Work and assign DOL # to the project from the date of receipt.

9. What is a Notice of Completion (NOC)?

The Notice of Completion is the document that is filed with DOLWD upon completion of the project. Go to <http://labor.alaska.gov/lss/forms/not-comp-pub-wrks.pdf> to download a copy of the form. This is where the prime contractor would note any change orders that occurred over the life of the public works project. Once the NOC is filed, and DOLWD approves it, the contractor can submit the finalized approved NOC to the contracting agency for final payment of their contract. The Department has 30 days to process your Notice of Completion.

10. What is the Contracting Agency (CA) Number?

This is the number given to the prime contractor from the agency that issues the contract for public construction.

11. What is a Temporary Identification Number (TDN)?

This is a number assigned to a project, by the online certified payroll program, after the prime contractor notified DOLWD.

12. What is a DOLWD public works project number?

This is a number assigned by Wage and Hour Administration for each public project



STATE OF ALASKA
DEPARTMENT OF HEALTH & SOCIAL SERVICES

**Anchorage Pioneer Home South Building Boiler Replacement
ANC 13-50C**

**SECTION 00850
DRAWING INDEX**

GENERAL

T101 Title Sheet

ARCHITECTURAL - N/A

MECHANICAL

M-101 Legends, Schedules & Abbreviations

M-201 Mechanical Plan – First Floor Plumbing

M-301 Mechanical Plan – Second Floor Plumbing

M-401 Boiler Schematic – First & Second Floors

ELECTRICAL

E-101 Legends & Schedules

E-201 Demo Plan

E-301 Power Plan & Partial Power Riser Diagram

SECTION 01005
ADMINISTRATIVE PROVISIONS

PART I GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Local Conditions
- B. Permits, Fees, and Inspections
- C. Alternates
- D. Preconstruction Meeting
- E. Applications for Payment
- F. Contractor Use of Premises
- G. Owner Occupancy
- H. Owner - Furnished Products
- I. Coordination
- J. Reference Standards

1.02 RELATED REQUIREMENTS

- A. General and Special Conditions

1.03 LOCAL CONDITIONS

- A. Bidders shall familiarize themselves with the Contract Documents and existing conditions, which affect Work, required by the Contract Documents. It will be assumed that bidders have made a personal examination of the jobsite, existing conditions, and documents for prior construction projects associated with this facility made available by the Owner for review by Bidders during the bid period.
- B. Failure to visit the jobsite, to review existing conditions, or to review documents for prior construction projects associated with this facility made available by the Owner for review by Bidders during the bid period will in no way relieve the successful Bidder from the necessity of furnishing any materials or performing any Work that may be required to complete the Work in accordance with the Contract Documents with no additional cost to the Owner.
- C. For building access and for access to the documents for prior construction projects associated with this facility contact:

Mark Moon, Project Manager
(907) 269-7812 / Email: mark.moon@alaska.gov

OR

Doug Ault, FMS Facilities Manager
(907) 269-7814 / Email: doug.ault@alaska.gov

1.04 PERMITS, FEES, AND INSPECTIONS

- A. Obtain, pay for, and comply with the requirements of all permits, fees, and inspections required by public authorities.

- B. Transmit copies of permit applications, permits received, and public authority inspection reports to the Contracting Officer within three days of making permit application or receiving permits or reports.

1.05 ALTERNATES

- A. Alternates will be exercised at the option of Owner as specified on Bid Schedule. Accepted alternates will be indicated on the Contract and included within the conformed Contract Documents.
- B. Coordinate related work and modify surrounding work affected by accepted alternates as required to complete the Work.
- C. Provide all Work as part of the Base Bid except that Work specifically indicated to be provided as part of an alternate.

1.06 PRECONSTRUCTION MEETING

- A. Attend Owner initiated preconstruction meeting.

1.07 APPLICATIONS FOR PAYMENT

- A. Submit two copies of each application under procedures of Section 01027.
- B. Content and Format: That specified for schedule of values in Section 01027.

1.08 CONTRACTOR USE OF PREMISES

- A. Limit use of premises for Work and for construction operations, to allow for Owner occupancy, Work of other Contractors, and public access.
- B. Limit areas of construction operations to those areas requiring renovation only.
- C. Limit on site storage of materials to boiler room. This space is not accessible to the general public but is used by building maintenance and administrative staff. Maintain storage area in a neat and clean condition, allowing access to other portions of the room. Contractor is responsible for security of stored materials.
- D. Give written notice two weeks in advance of beginning of Work in any Work area.
- E. Do not smoke except in specifically designated smoking areas.
- F. Take reasonable and adequate precautions to protect the Owner's property from damage during execution of Work. Restore any damage to Owner property resulting from execution of Work or replace in a manner satisfactory to the Contracting Officer.
- G. Take reasonable and adequate precautions to protect the Owner's property from damage during execution of Work. Restore any damage to Owner property resulting from execution of Work or replace in a manner satisfactory to the Contracting Officer.
- H. Limit construction activities which generate noise levels in excess of NC=40 in classrooms, NC=50 in office areas, and NC=60 in other areas to between 7 p.m. and 7 a.m. Monday through Friday and all day Saturday and Sunday.

Anchorage Pioneer Home
South Building Boiler Replacement
ANC 13-50C

- I. Limit construction access to building to the location indicated. Keep construction access points locked at all times. Contractor will be provided with two sets of keys for construction access points.
 - J. Move Owner tools, equipment, shelving, stored materials, etc. as required to accomplish Work. Return to original location as soon as possible.
 - K. Protect Owner tools, equipment, shelving, stored materials, and equipment, etc. from Work.
 - L. In Owner occupied areas:
 - 1. Limit use of premises for Work and for construction operations to between 7 a.m. and 4:30 p.m. Monday through Friday and all day Saturday and Sunday. If requested by the Contractor and approved by the Project Manager the Contractor may work on the project outside these hours if the Contractor's activities do not interfere with owner operations.
 - 2. Cover and protect from dust and debris, at the start of each work day, electronic office equipment such as personal computers, computer terminals, facsimile machines, copiers, printers, postage meters, VCRs, monitors, typewriters, etc. Remove protection at the end of each work day.
 - 3. Do not use furniture, such as countertops, desks, filing cabinets, book shelves, and tables as work surfaces or as steps to access Work.
 - 4. At the end of each workday, move back to original location equipment and furniture moved to accommodate Work. Do not move electronic equipment unless absolutely necessary to accomplish Work.
 - 5. At the end of each workday replace ceiling tiles removed to access Work.
 - 6. At the end of each work day, clean work areas, including floors with a vacuum, and remove tools, equipment, and construction material from work areas.
 - M. Coordinate temporary shutdowns of any of the existing facilities' mechanical or electrical systems affecting systems in Owner occupied areas with the Contracting Officer. Schedule shutdowns for nights and weekends. Provide a minimum five-day notice.
 - N. Existing systems shall be fully operational for intended purpose at the beginning of each Owner workday.
- 1.09 OWNER OCCUPANCY
- A. The Owner will occupy premises during entire period of construction for the conduct of its normal operations.
 - B. Maintain IBC complying access to and through corridors, stairways, and building exits at all times.
 - C. Cooperate with Owner to minimize conflict and to facilitate its operations. In case of conflict accept Contracting Officer's direction as final and adjust use of premises accordingly.

- D. Coordinate Work in and use of premises with the Owner

1.10 COORDINATION

- A. Coordinate Work of the various Sections of Specifications prior to ordering materials and fabrication to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items installed later. Notify Contracting Officer of conflicts between elements prior to installation of any element.
- B. Verify characteristics of elements of interrelated operating equipment are compatible; coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements and installation of mechanical and electrical Work, which is indicated diagrammatically on Drawings. Follow routing shown for ducts and conduits as closely as practical. Make piping, duct, and conduit runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas, unless otherwise indicated, conceal pipes, ducts, and wiring in the construction.
- E. After Owner acceptance of Work, coordinate access to site by various trades for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner activities.

1.11 REFERENCE STANDARDS

- A. For products or workmanship specified by association, trades, or regulatory agency standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Obtain a copy of standards referenced. Maintain a copy at the jobsite during execution of Work to which the standard applies.
- C. The date of the standard is that in effect as of the bid date except when a specific date is specified.

1.12 ONE YEAR CORRECTION PERIOD

- A. If within one year after the date of Final Completion or such longer period of time as may be prescribed by Regulatory Requirements or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work, materials, or products are found to be defective, the Contractor shall promptly, without cost to the Owner and in accordance with the Contracting Officer's written instructions, either correct such defective Work, or, if it has been rejected by the Contracting Officer, remove it from the site and replace it with conforming Work.
- B. If the Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, the Owner may have the defective Work corrected or the rejected Work removed and replaced, and all direct, indirect, and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys, and

Anchorage Pioneer Home
South Building Boiler Replacement
ANC 13-50C

other professionals) will be paid by the Contractor.

- C. In special circumstances where a particular item of equipment is placed in continuous service for the benefit of the Owner before Substantial Completion of all the Work, the correction period for that item may begin on an earlier date if so provided in the Specifications of by Change Order.
- D. Provisions of this paragraph are not intended to shorten the statute of limitations for bringing an action.

PART 2	PRODUCTS	Not Used

PART 3	PARTS	Not Used

END OF SECTION

SECTION 01010
SUMMARY OF WORK

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Basic Bid.
- B. Work by Others.
- C. Hazardous Materials
- D. Work Inside Facility
- E. Work Plans and Access to Facility, Individual Work Areas
- F. Shut Offs/Disruptions to Service
- G. Use of Premises.
- H. Using Agency Occupancy.
- I. Coordination
- J. Parking/Staging

1.02 RELATED REQUIREMENTS

- A. Document 00200 – Information available to bidders.
- B. Document 00700 - General Conditions: Provisions for use of site, and Using Agency occupancy. Relations of CONTRACTOR- Subcontractors.
- C. Document 00800 - Supplementary Conditions: Modifications to General Conditions.
- D. Section 01400 – Quality Control
- E. Section 01540 – Security

1.03 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work covered by the contract documents is located
- B. The DEPARTMENT is acting for the State of Alaska.

1.04 CONTRACT METHOD

- A. Construct the Work under a single lump sum Contract.

1.05 BASIC BID

- A. That portion of the Work described within these documents (taken as a whole) as the Basic Bid scope. Basic Bid work includes all work shown on the plans and specifications.
- B. Project will be constructed under a general construction contract.

1.06 WORKS BY OTHERS

- A. Cooperate with other Contractors and the DEPARTMENT to minimize conflict with construction operation.

1.07 HAZARDOUS MATERIALS

- A. All light fixtures to be removed shall be treated as positive for containing PCBs unless proven otherwise.
- B. CONTRACTOR to be aware that other hazardous materials may be within the facility. See

Section 00700 Article 4.3.

1.08 WORK INSIDE FACILITY

- A. Work within the facility shall be conducted only between the hours of 7:00 am and 4:30 pm, unless specifically approved by the Maintenance Supervisor. Requests for work outside of these hours must be submitted in writing 24 hours in advance.
- B. CONTRACTOR shall not under any circumstances leave tools or equipment unattended within the limits of the project site unless secured in a locked tool storage shed/box or vehicle. CONTRACTOR will be liable for any damages to persons and/or property resulting from unattended tools or equipment.
- C. No firearms or ammunition allowed on the grounds, to include locked vehicles.
- D. The use of powder-activated tools must be approved by the project manager. Request for such tools must be submitted to the Maintenance Supervisor in writing three (3) working days in advance.

1.09 SHUTOFFS / DISRUPTIONS TO SERVICE

- A. Work with the Maintenance Supervisor to schedule disruption for a time, which minimizes impact on facility operations. Provide the Engineer written notification of any disruption to service at least 24 hours in advance of scheduled disruption or shutoff.
- B. Plan work to minimize down time. Work with DEPARTMENT to schedule disruption for a time that minimizes impact on USING AGENCY's operations.
- C. Provide written work plan and schedule for disruptions to service that exceed one hour.
- D. Contractor must provide protection as stated in Municipal Fire Codes and Safety Codes while working on the fire protection system.

1.10 CONTRACTOR'S USE OF PREMISES

- A. Coordinate use of the premises under direction of DEPARTMENT.
- B. Assume full responsibility for protection and safekeeping of products under this Contract.
- C. Assume full responsibility for the protection of the existing facility and contents, from damage due to construction operations.

1.11 USING AGENCY OCCUPANCY

- A. The User Agency will continue operations adjacent to the site during entire construction period. Cooperate with DEPARTMENT in scheduling operations to minimize conflict and to facilitate the User Agency's operations.
- B. CONTRACTOR shall provide Material Safety Data Sheets for all products that may produce unpleasant odors.

1.12 COORDINATION

- A. Coordinate Work of the various elements of the plans to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items installed later.
- B. Verify if characteristics of elements of interrelated operating equipment are compatible; coordinate Work of various trades having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements and installation of mechanical and electrical work, which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduits,

as closely as practicable; make runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs. Coordinate work with existing elements in the building. Do not locate piping, conduit or other products where they will block access to equipment or junction boxes.

- D. In finished areas except as otherwise shown, conceal pipes, ducts, and wiring in the construction. .
- E. Execute cutting and patching to integrate elements of Work, provide openings for penetrations of existing surfaces. Seal penetrations through floors, walls, partitions, and ceilings.

1.13 PARKING / STAGING

- A. CONTRACTOR to coordinate staging area with Facility Maintenance Supervisor.
- B. CONTRACTOR may use established facility parking.
- C. CONTRACTOR will be responsible for all additional required storage/staging and parking off site at no charge to the Department.

PART 2 PRODUCTS	Not Used
PART 3 EXECUTION	Not used

END OF SECTION

SECTION 01020
INTENT OF DOCUMENTS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Explanation of intent and terminology of the Construction Documents.

1.02 RELATED REQUIREMENTS

- A. Document 00700 - General Conditions: Article 1 Definitions relating to 'Drawings' and 'Specifications'.
- B. Document 00700 - General Conditions: Article 3 Contract Documents relating to Intent, Amending, and Reuse.

1.03 SPECIFICATION FORMAT AND COMPOSITION

- A. Specifications are divided into Divisions and Sections for the convenience of writing and using. Titles are not intended to imply a particular trade jurisdiction. DEPARTMENT is not bound to define the limits of any subcontract, and will not enter into disputes between the CONTRACTOR and his employees, including Subcontractors.
- B. Pages are numbered independently for each Section, and recorded in the Table of Contents. Section number is shown with the page number at the bottom of each page. The end of each Section of the specifications is ended by "End of Section". It is CONTRACTOR'S responsibility to verify that Contract Documents received for bidding and/or construction are complete in accordance with Table of Contents.
- C. The language employed in the Contract Documents is addressed directly to the CONTRACTOR. Imperative or indicative language is generally employed throughout and requirements expressed are the mandatory responsibility of the CONTRACTOR, even though the work specified may be accomplished by specialty subcontractors engaged by the CONTRACTOR. References to third parties in this regard shall not be interpreted in any way as to relieve the CONTRACTOR of his or her responsibility under this Contract.
- D. These Specifications are of the abbreviated, or "streamlined" type, and may include incomplete sentences.
- E. Omissions of words or phrases such as "the CONTRACTOR shall," "in conformity therewith," "shall be," "as noted on the Drawings," "according to the Drawings," "a," "an," "the" and "all" are intentional.
- F. Omitted words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the Drawings.

1.04 DRAWINGS: CONTENT EXPLANATION

- A. Drawings, Dimensions and Measurements.
 - 1. Contract Documents do not purport to describe in detail, absolute and complete construction information. In some instances drawings are diagrammatic.

2. CONTRACTOR shall provide verification of actual site conditions and shall provide complete and operational systems as specified when drawings do not provide full detail.
3. Where on any of the Drawings a portion of the work is drawn out and the remainder is indicated in outline, the parts drawn out shall apply also to all other portions of the Work.
4. Wherever a detail is referenced and developed for a specific condition, same or similar detail shall apply to identical or similar conditions elsewhere on Project even though not specifically referenced.
5. Where the word "similar" occurs on the Drawings, it shall be interpreted in its general sense and not as meaning identical, all details shall be worked out in relation to their location and their connection with other parts of the work.
6. The figured dimensions on the Drawings or notes indicating dimensions shall be used instead of measurements of the Drawings by scale.
7. No scale measurements shall be used as a dimension to work with except on "full size" Drawings not dimensioned.

1.05 COMMON TERMINOLOGY

A. Certain items used generally throughout the Specifications and Drawings are used as follows:

1. Indicated: The term "indicated" is a cross reference to details, notes or schedules on the Drawings, other paragraphs or schedules in the Specifications, and similar means of recording requirements in the Contract Documents. Where terms such as "shown", "noted", "schedules", and "specified" are used in lieu of "indicate", it is for the purpose of helping the reader accomplish the cross reference, and no limitation of location is intended except as specifically noted.
2. Installer: The person or entity engaged by CONTRACTOR, his Subcontractor or sub-subcontractor for the performance of a particular unit of Work at the Project site, including installation, erection, application and similar required operations. It is a general requirement that installers be recognized experts in the work they are engaged to perform.
3. Furnish: Except as otherwise defined in greater detail, the term "furnish" is used to mean "...supply and deliver to the Project site, ready for unpacking, assembly and installation..."
4. Provide: Except to the extent further defined, the term "provide" means to furnish and install, complete and ready for the intended use.
5. Guarantee and Warranty: "Warranty" is generally used in conjunction with products manufactured or fabricated away from the Project site, and "guarantee" is generally used in conjunction with units of work which require both products and substantial amounts of labor at the Project site. The resulting difference is that warranties are frequently issued by manufacturers, and guarantees are generally issued by CONTRACTOR and frequently supported (partially) by product warranties from manufacturers.

1.06 CONFLICTS

- A. Report any conflicts to Contracting Officer for clarification.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

SECTION - 01027
APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedures for preparation and submittal of Applications for Payment.

1.02 RELATED REQUIREMENTS

- A. Document 00510 - Construction Contract - Contract Form 06D-10a and Bid Schedule: Method of Payment and Contract Price and Amounts of Liquidated Damages.
- B. Document 00700 - General Conditions: Progress Payments, and Final Payment.
- C. Section 00800 – Supplementary Conditions to General Conditions of the Construction Contract for Buildings: SC-11.2 and SC-11.8.
- D. Section 01300 - Submittals: Procedures, Schedule of Values.
- E. Section 01700 - Contract Closeout: Closeout Procedures.

1.03 FORMAT

- A. Application for Payment form in format approved by the DEPARTMENT.

1.04 PREPARATION OF APPLICATIONS

- A. Type required information on Application for Payment form approved by DEPARTMENT.
- B. Execute certification by original signature of authorized officer upon each copy of the Application for Payment.
- C. Submit names of individuals authorized to be responsible for information submitted on application for payment.
- D. Indicate breakdown of costs for each item of the Work on accepted schedule of values. Provide dollar value in each column for each line item for portion of Work performed and for stored products.
- E. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.
- F. Prepare Application for Final Payment as specified in Section 01700.

1.05 SUBMITTAL PROCEDURES

- A. Submit two copies of each Application for Payment at times stipulated in Contract.
- B. Submit under transmittal letter specified in Section 01300.

1.06 SUBSTANTIATING DATA

- A. When DEPARTMENT requires substantiating information, submit data justifying line item amounts in question.
- B. Substantiating data required under 7.12.3 and 7.12.4 shall be submitted (or updated) when the Application for Payment includes a current request for payment on an item of Work required to include Alaska "agricultural/wood" products.
- C. Provide one copy of data with cover letter for each copy of Application. Show Application number and date, and line item by number and description.

1.07 SUBMITTALS WITH APPLICATION FOR PAYMENT

- A. Submit the following with each Application for Payment.
 - 1. Updated construction schedule as required by Section 01300 - Submittals.
 - 2. Updated Schedule of Values as required by Section 01300 – Submittals: Schedule of Values.
 - 3. The contractor's as-builts will be reviewed prior to approving each application for payment.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

SECTION 01028
CHANGE ORDER PROCEDURES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedures for processing Change Orders.

1.02 RELATED REQUIREMENTS

- A. Document 00312 - Bid Schedule: Total amount bid for lump sum items
- B. Document 00510 - Contract Form: Total amount of Contract Price, as awarded
- C. Document 00700 - General Conditions: Governing requirements for changes in the Work, in Contract Price, and Contract Time.
- D. Document 00800 - Supplementary Conditions: Modifications to Document 00700 - General Conditions.
- E. Section 01027 - Applications for Payment.
- F. Section 01300 - Submittals: Construction Progress Schedules, Schedule of Values.
- G. Section 01600 – Material and Equipment: Product Options, Substitutions.
- H. Section 01700 – Contract Closeout: Project Record Documents.

1.03 SUBMITTALS

- A. Submit name of the individual authorized to accept changes, and to be responsible for informing others in CONTRACTOR's employ of changes in the Work.
- B. Change Order Forms will be prepared by the DEPARTMENT.

1.04 DOCUMENTATION OF CHANGE IN CONTRACT PRICE AND CONTRACT TIME

- A. Maintain detailed records of work done on a Cost of the Work plus a Fee basis. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work. Incomplete or unsubstantiated costs will be disallowed.
- B. CONTRACTOR shall submit a complete, detailed, itemized cost breakdown addressing impact on Contract Time and Contract Price with each proposal.
- C. On request, provide additional data to support computations:
 - 1. Quantities of products, labor, and equipment.
 - 2. Taxes, insurance and bonds.
 - 3. Overhead and profit.

4. Justification for any change in Contract Time.
 5. Credit for deletions from Contract, similarly documented.
- D. Support each claim for additional costs, and for work done on a cost of the Work plus a Fee basis, with additional information:
1. Origin and date of claim.
 2. Dates and times work was performed, and by whom.
 3. Time records and wage rates paid.
 4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

1.05 PRELIMINARY PROCEDURES

- A. DEPARTMENT may submit a Proposal Request which includes: Detailed description of change with supplementary or revised Drawings and Specifications, the projected time for executing the change, with a stipulation of any overtime work required, and the period of time during which the requested price will be considered valid.
- B. CONTRACTOR may initiate a change by submittal of a request to DEPARTMENT describing the proposed change with a statement of the reason for the change, and the effect on Contract Price and Contract Time with full documentation.

1.06 CONSTRUCTION CHANGE AUTHORIZATION

- A. Shall be in accordance with Article 9 - Changes: in Document 00700 - General Conditions.

1.07 FIXED PRICE CHANGE ORDER

- A. CONTRACTOR shall submit an itemized price proposal in sufficient detail to fully explain the basis for the proposal. Attach invoices and receipts for products, equipment, subcontracts and as requested by the DEPARTMENT. CONTRACTOR and the DEPARTMENT shall then negotiate an equitable price (and time adjustment if appropriate) in good faith. The Change Order will reflect the results of those negotiations. If negotiations break down CONTRACTOR may be directed to perform the work under COST OF THE WORK CHANGE ORDER.

1.08 UNIT PRICE CHANGE ORDER

- A. For pre-determined Unit Prices and quantities, Change Order will be executed on a lump sum basis.
- B. For unit costs or quantities of units of Work which are not predetermined, execute Work under a Directive. Changes in Contract Price or Contract Time will be computed as specified for cost of the Work plus fee via Change Order.

1.09 COST OF THE WORK CHANGE ORDER

- A. CONTRACTOR shall submit documentation required in 1.04 on a daily basis for certification by the Project Manager. Project Manager will indicate by signature that the submitted documentation is acceptable.

- B. After completion of the change and within 14 Calendar Days, unless extended by the Project Manager, the CONTRACTOR shall submit in final form an itemized account with support data of all costs. Support data shall have been certified by the Project Manager, as required above in paragraph A.

1.10 EXECUTION OF CHANGE ORDERS

- A. DEPARTMENT will issue Change Orders for signatures of parties as provided in Conditions of the Contract.

1.11 CORRELATION OF CONTRACTOR SUBMITTALS

- A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Price as shown on Change Order.
- B. Promptly revise progress schedules to reflect any change in Contract Time, revise subschedules to adjust times for other items of Work affected by the change, and resubmit.
- C. Promptly enter changes in project record documents.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

SECTION 01040
COORDINATION

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Coordination of Work of Contract.

1.02 RELATED REQUIREMENTS

- A. Section 01010 - Summary of Work.
- B. Section 01045 – Cutting and Patching.
- C. Section 01200 – Project Meetings.
- D. Section 01600 – Material and Equipment: Substitutions.
- E. Section 10701 – Contract Closeout Procedures.

1.03 DESCRIPTION

- A. Coordinate scheduling, submittals, and work of the various sections of Specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items to be installed later.
- B. Coordinate sequence of Work to accommodate Using Agency occupancy as specified in Section 01005.

1.04 MEETINGS

- A. Coordinate sequence of Work to accommodate Using Agency occupancy as specified in Section 01005.

1.05 COORDINATION OF SUBMITTALS

- A. Schedule and coordinate submittals specified in Section 01300.
- B. Coordinate Work of various sections having interdependent responsibilities for installing connecting to, and placing in service, such equipment.
- C. Coordinated requests for substitutions to assure compatibility of space, of operating elements, and effect on Work of other sections.

1.06 COORDINATION OF SPACE

- A. Coordinate use of Project space and sequence of installation of mechanical and electrical Work which is indicated diagrammatically on Drawings. Follow routings shown for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- B. In finished areas, except as otherwise shown, conceal pipes, ducts, and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.

1.07 COORDINATION OF CONTRACT CLOSEOUT

- A. Coordinate completion and cleanup of Work of separate sections in preparation for Substantial Completion.
- B. After Using Agency occupancy of premises, coordinate access to site by various sections for correction of Defective Work and Work not in accordance with Contract Documents, to minimize disruption of Using Agency activities.
- C. Assemble and coordinate close submittal specified in Section 01701.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

SECTION 01045
CUTTING AND PATCHING

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Requirements and limitations for cutting and patching of Work.

1.02 RELATED REQUIREMENTS

- A. Section 01005 – Administrative Provisions
- B. Section 01010 - Summary of Work.
- C. Section 01600 - Materials and Equipment: Substitutions.
- D. Individual Specifications Sections:
 - 1. Cutting and patching incidental to Work of the section.
 - 2. Advance notification to other sections of openings required in Work of those sections.
 - 3. Limitations on cutting structural members.

1.03 SUBMITTALS

- A. Submit written request in advance of cutting or alteration which affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather-exposed or moisture-resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight-exposed elements.
 - 5. Work of DEPARTMENT or separate Contractor.
- B. Include in request:
 - 1. Identification of Project and DEPARTMENT's Project number.
 - 2. Location and description of affected Work.
 - 3. Necessity for cutting or alteration.
 - 4. Description of proposed Work, and products to be used.
 - 5. Alternatives to cutting and patching.
 - 6. Effect on Work of DEPARTMENT or separate Contractor.
 - 7. Written permission of affected separate Contractor.
 - 8. Date and time Work will be executed.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Those required for original installation.
- B. For any change in materials, submit request for substitution under provisions of Section 01600.

PART 3 EXECUTION

3.01 GENERAL

- A. Execute cutting, fitting, and patching to complete Work, and to:
 - 1. Fit the several parts together, to integrate with other Work.
 - 2. Uncover Work to install ill-timed Work.
 - 3. Remove and replace non-conforming and Defective Work.
 - 4. Remove samples of installed Work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

3.02 INSPECTION

- A. Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- B. Notify the Department immediately of any suspected hazardous materials.
- C. After uncovering, inspect conditions affecting performance of work.
- D. Beginning of cutting or patching means acceptance of existing conditions.

3.03 PREPARATION

- A. Provide supports to assure structural integrity of surroundings; devices and methods to protect other portions of Project from damage.
- B. Provide protection from elements for areas which may be exposed by uncovering Work; maintain excavations free of water.

3.04 PERFORMANCE

- A. Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- B. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval. Cutting structural reinforcement with heat is strictly forbidden without prior written approval.
- C. Restore Work with new products in accordance with requirements of Contract Documents.
- D. Fit Work tightly to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- E. At penetrations of fire-rated wall, ceiling, or floor construction, completely seal voids with fire-rated material, full thickness of the construction element or in accordance with listed U.L. assembly requirements.
- F. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.

END OF SECTION

SECTION 01073
EXPLANATIONS: DRAWINGS AND SPECIFICATIONS

PART 1 GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Explanation of terminology used within the Drawings and Specifications.

1.2 RELATED REQUIREMENTS

- A. Section 01005 - Administrative Provisions
- B. Section 01010 - Summary of Work
- C. Section 01020 - Intent of Documents

1.3 SPECIFICATION FORMAT AND COMPOSITION

- A. Specifications are divided into Divisions and Sections for the convenience of writing and using. Titles are not intended to imply a particular meaning or to fully describe the Work of each Division or Section, and are not an integral part of the text that specifies the requirements. Contracting Officer is not bound to define the limits of any subcontract, and will not enter into disputes between the Contractor and his employees, including subcontractors.
- B. Pages are numbered independently for each Section. Section number is shown with the page number at the bottom of each page. "End of Section" is noted on the last page of each Section. It is Contractor's responsibility to verify that Contract Documents received for bidding and construction are complete in accordance with Table of Contents.
- C. These Specifications are of the abbreviated, or "streamlined" type, and include incomplete sentences.
- D. Omissions of words or phrases such as "the Contractor shall," "in conformity therewith," "shall be," "as noted on the Drawings," "according to the Drawings," "a," "an," "the" and "all" are intentional.
- E. Omitted words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the Drawings.

1.4 DRAWINGS: CONTENT EXPLANATION

- A. Where on any of the Drawings a portion of the Work is drawn out and the remainder is indicated in outline, the parts drawn out shall apply also to all other portions of the Work.
- B. Wherever a detail is referenced and developed for a specific condition, same or similar detail shall apply to identical or similar conditions elsewhere on Project even though not specifically referenced.
- C. Where the word "similar" occurs on the Drawings, it shall be interpreted in its general sense and not as meaning identical, all details shall be worked out in relation to their location and their connection with other parts of the Work.

- D. The figured dimensions on the Drawings or notes indicating dimensions shall be used instead of measurements of the Drawings by scale. No scale measurements shall be used as a dimension.
- E. Provide piping, ductwork, equipment, and accessories indicated on the Drawings unless it is specifically indicated that the piping, ductwork, equipment, or accessory is existing.
- F. Unless otherwise indicated, abbreviations and symbols used in the Drawings and Specifications are intended to have the meaning commonly accepted in the construction industry. Contact the Contracting Officer for definition if any question arises concerning them.
- G. Certain items used generally throughout the Specifications and Drawings are used as follows:
 - 1. Indicated: The term "indicated" is a cross reference to details, notes or schedules on the Drawings, other paragraphs or schedules in the Specifications, and similar means of recording requirements in the Contract Documents. Where terms such as "shown", "noted", "schedules", and "specified" are used in lieu of "indicate", it is for the purpose of helping the reader accomplish the cross reference, and no limitation of location is intended except as specifically noted.
 - 2. Installer: The person or entity engaged by Contractor, his subcontractor or sub-subcontractor for the performance of a particular unit of work at the Project site, including installation, erection, application, and similar required operations. It is a general requirement that installers be recognized experts in the Work they are engaged to perform.
 - 3. Provide: Except to the extent further defined, the term "provide" means to supply and install, complete and ready for the intended use.
 - 4. Furnish: Except as otherwise defined in greater detail, the term "furnish" is used to mean the same as "provide".
 - 5. Guarantee and Warranty: "Warranty" is generally used in conjunction with products manufactured or fabricated away from the Project site, and "guarantee" is generally used in conjunction with units of work which require both products and substantial amounts of labor at the Project site. The resulting difference is that warranties are frequently issued by manufacturers, and guarantees are generally issued by Contractor and frequently supported (partially) by product warranties from manufacturers.
 - 6. Work: Work is the act of, and the result of, performing services, furnishing labor, furnishing and incorporating materials and equipment into the Project and performing other duties and obligations, all as required by the Contract Documents. Such Work, however incremental, shall culminate in the entire completed Project, or the various separately identifiable parts thereof.
 - 7. Contracting Officer: Contracting Officer means Contracting Officer or Contracting Officer's Representative.

1.5 CONFLICTS

- A. Report any conflicts to Contracting Officer for clarification.

Anchorage Pioneer Home
South Building Boiler Replacement
ANC 13-50C

Section 01073
Explanations: Drawings And Specifications

PART 2 **PRODUCTS**
[Not Used]

PART 3 **EXECUTION**
[Not Used]

END OF SECTION

SECTION 01090
REFERENCE STANDARDS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Quality Assurance.
- B. Applicability of Reference Standards.
- C. Provision of Reference Standards at site.
- D. Acronyms used in Contract Documents for Reference Standards. Source of Reference Standards.

1.02 RELATED REQUIREMENTS

- A. Document 00700 - General Conditions: Paragraph 3.4.2.

1.03 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. The date of the standard is that in effect as of the Project Advertisement date, or Effective Date of the Contract when there was no Advertisement, except when a specific date is specified.
- C. When required by an individual Specification section, obtain copy of standard. Maintain copy at site during submittals, planning, and progress of the specific Work, until Final Completion.
- D. Should specified reference standards conflict with Contract Documents, request clarification from the Architect/Engineer before proceeding. Local code requirements, where more stringent than referenced standards, shall govern.
- E. Neither the contractual relationship, duties, nor responsibilities of the parties in Contract nor those of the Architect/Engineer shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

1.04 SCHEDULE OF REFERENCES

AA	Aluminum Association 818 Connecticut Avenue, N.W. Washington, DC 20006
AABC	Associated Air Balance Council 1000 Vermont Avenue, N.W. Washington, DC 20005
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, N.W. Washington, DC 20001
ACI	American Concrete Institute Box 19150 Reford Station Detroit, MI 48219

ADC	Air Diffusion Council 230 North Michigan Avenue Chicago, IL 60601
AGC	Associated General Contractors America 1957 E Street, N.W. Washington, DC 20006
AI	Asphalt Institute Asphalt Institute Building College Park, MD 20740
AITC	American Institute of Timber Construction 333 W. Hampden Avenue Englewood, CO 80110
AISC	American Institute of Steel Construction 400 North Michigan Avenue Eighth Floor Chicago, IL 60611
AISI	American iron and Steel Institute 1000 16th Street, N.W. Washington, DC 20036
AMCA	Air Movement and Control Association 30 West University Drive Arlington Heights, IL 60004
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018
APA	American Plywood Association Box 11700 Tacoma, WA 98411
ARI	Air-Conditioning and Refrigeration Institute 1815 North Fort Myer Drive Arlington, VA 22209
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers 1791 Tullie Circle, N.E. Atlanta, GA 30329
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017
ASPA	American Sod Producers Association Association Building Ninth and Minnesota Hastings, NE 68901

ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235
AWI	Architectural Woodwork Institute 2310 South Walter Reed Drive Arlington, VA 22206
AWPA	American Wood-Preservers' Association 7735 Old Georgetown Road Bethesda, MD 20014
AWS	American Welding Society 550 LeJeune Road Miami, FL 33135
CDA	Copper Development Association 57th Floor, Chrysler Building 405 Lexington Avenue New York, NY 10174
CLFMI	Chain Link Fence Manufacturers Institute 1101 Connecticut Avenue, N.W. Washington, DC 20036
CRSI	Concrete Reinforcing Steel Institute 933 Plum Grove Road Schaumburg, IL 60195
EJMA	Expansion Joint Manufacturers Association 707 Westchester Avenue White Plains, NY 10604
FGMA	Flat Glass Marketing Association 3310 Harrison White Lakes Professional Building Topeka, KS 66611
FM	Factory Mutual System 1151 Boston-Providence Turnpike Norwood, MA 02062
FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Building 197 Washington, DC 20407

GA	Gypsum Association 1603 Orrington Avenue Evanston, IL 60201
IEEE	Institute of Electrical and Electronics Engineers 345 East 47th Street New York, NY 10017
IMIAC	International Masonry Industry All-Weather Council International Masonry Institute 815 15th Street, N.W. Washington, DC 20005
MFMA	Maple Flooring Manufacturers Association 2400 East Devon Suite 205 Des Plaines, IL 60018
MIL	Military Specification Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120
ML/SFA	Metal Lath/Steel Framing Association Metal Manufacturers 221 North LaSalle Street Chicago, IL 60601
NAAMM	National Association of Architectural Metal Manufacturers 221 North LaSalle Street Chicago, IL 60601
NEBB	National Environmental Balancing Bureau 8224 Old Courthouse Road Vienna, VA 22180
NEMA	National Electrical Manufacturers' Association 2101 L Street, N.W. Washington, DC 20037
NFPA	National Fire Protection Association Battery March Park Quincy, MA 02269
NFPA	National Forest Products Association 1619 Massachusetts Avenue, N.W. Washington, DC 20036
NSWMA	National Solid Wastes Management Association 1120 Connecticut Avenue, N.W. Washington, DC 20036
NTMA	National Terrazzo and Mosaic Association 3166 Des Plaines Avenue Des Plaines, IL 60018

PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077
PCI	Prestressed Concrete Institute 201 North Wacker Drive Chicago, IL 60606
PS	Product Standard U.S. Department of Commerce Washington, DC 20203
RIS	Redwood Inspection Service One Lombard Street San Francisco, CA 94111
RCSHSB	Red Cedar Shingle and Handsplit Shake Bureau 515 116th Avenue Bellevue, WA 98004
SDI	Steel Deck Institute Box 3812 St. Louis, MO 63122
SDI	Steel Door Institute 712 Lakewood Center North Cleveland, OH 44107
SIGMA	Sealed Insulating Glass Manufacturers Association 111 East Wacker Drive Chicago, IL 60601
SJI	Steel Joist Institute 1703 Parham Road Suite 204 Richmond, VA 23229
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association 8224 Old Court House Road Vienna, VA 22180
SSPC	Steel Structures Painting Council 4400 Fifth Avenue Pittsburgh, PA 15213
TAS	Technical Aids Series Construction Specifications Institute 601 North Madison Street Alexandria, VA 22314
TCA	Tile Council of America, Inc. Box 326 Princeton, NJ 08540

UL	Underwriters' Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062
WCLIB	West Cost Lumber Inspection Bureau Box 23145 Portland, OR 97223

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 01120
ALTERATION PROJECT PROCEDURES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedural requirements.
- B. Rehabilitation and renovation of existing spaces and materials.

1.02 RELATED REQUIREMENTS

- A. Section 01005 - Administrative Provisions
- B. Section 01010 – Summary of Work
- C. Section 01045 - Cutting and Patching

PART 2 PRODUCTS

2.01 PRODUCTS FOR PATCHING AND EXTENDING WORK

- A. New Materials: As specified in individual Specification Sections.
- B. Match existing products and work for patching and extending Work.
- C. Determine type and quality of existing products by inspection and any necessary testing, and workmanship by use of existing as a standard. Presence of a product, finish, or type of Work, requires that patching, extending, or matching shall be performed as necessary to make Work complete and consistent with existing quality and Contract Documents.

PART 3 EXECUTION

3.01 GENERAL

- A. Remove existing work, materials and items as indicated on the Drawings, as required by job site conditions, as scheduled, and as specified herein, to accomplish new Work and alteration in the existing building.
- B. Remove work carefully and only to the extent required for the final Work. Minimize damage to adjacent materials.
- C. When portions of existing conditions are shown, it is not meant to indicate that all existing conditions are shown.
- D. Patch existing surfaces which are made defective in appearance or function by the execution of Work.
- E. Cut rigid materials using masonry saw or core drill. Pneumatic tools and electric hammers are not permitted.
- F. Conduct all operations with a minimum of noise.
- G. Take reasonable and adequate precautions to protect the Owner's property from

damage during demolition Work, moving of debris, and damage by the elements. Restore any damage to Owner property due to the aforesaid work or replace in a manner satisfactory to the Contracting Officer.

- H. Provide and maintain suitable barricades, shelters, lights, and danger signals during the progress of the Work. Provide barricades meeting the requirements of the applicable building codes. Assume the responsibility of barriers to completion of Contract and remove at completion of Contract.
- I. Locate penetrations to avoid structural members.

3.02 INSPECTION

- A. Verify that demolition is complete, and areas are ready for installation of new Work.
- B. Beginning of restoration Work means acceptance of existing conditions.

3.03 PREPARATION

- A. Plan all work in advance, informing Contracting Officer of procedure and schedule.
- B. Verify existing conditions affecting Work including existing sizes and materials indicated prior to beginning Work or ordering materials that are affected by existing conditions. Notify Contracting Officer of conflicts in writing.
- C. Erect dust-proof partitions where demolition work is in progress and as directed. Such partitions shall remain in place until their removal is directed.
- D. Where openings are to be cut in existing structures, cut such openings with care. Where materials, equipment, frames, etc., are to be removed, remove such items with care to minimize damage to adjacent materials.
- E. Cut, move, or remove items as necessary for access to alterations and renovations Work; replace and restore at completion.
- F. Cut pockets, openings, chases, depressions, etc., to install or allow for installation of materials or equipment.
- G. Remove from site unsuitable material not marked for salvage, such as rotted wood, rusted metals, and deteriorated masonry and concrete; replace materials as specified for finished Work.
- H. Remove from site, including concealed spaces, debris and abandoned items resulting from demolition operations from the site promptly. No accumulation of debris will be permitted.
- I. Prepare surfaces and remove surface finishes to provide for proper installation of new Work and new finishes.
- J. Close openings in exterior surfaces to protect existing work and salvage items from weather and extremes of temperature and humidity. Insulate ductwork and piping to prevent condensation in exposed areas.

3.04 INSTALLATION

- A. Coordinate Work of alterations and renovations to expedite completion and to accommodate Owner occupancy. Remove, cut, and patch Work in a manner to

minimize damage and to provide means of restoring products and finishes to original condition.

- B. Refinish visible existing surfaces to remain in renovated rooms and spaces with a neat transition to adjacent new finishes.
- C. In addition to specified replacement of equipment restore existing mechanical and electrical systems to full operational condition.
- D. Install products as specified in individual Specification Sections.

3.05 TRANSITIONS

- A. Where new Work abuts or aligns with existing, make a smooth and even transition. Patched Work shall match existing adjacent work in texture and appearance.
- B. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Contracting Officer.

3.06 ADJUSTMENTS

- A. Where removal of partitions results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads. Where a change of plane of 1/4 inch or more occurs, submit recommendation for providing a smooth transition for Contracting Officer review.
- B. Trim existing doors as necessary to clear new floor finishes; refinish trimmed areas.
- C. Fit Work at penetrations of surfaces as specified in Sections 01005 and 01045.

3.07 REPAIR OF DAMAGED SURFACES

- A. Patch or replace portions of existing surfaces which are disturbed, damaged, or otherwise made defective in appearance or function by the execution of Work under this Contract. Restore to original condition.
- B. Repair substrate prior to patching finish.

3.08 FINISHES

- A. Finish surfaces as specified in individual Sections.
- B. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

3.09 CLEANING

- A. In addition to cleaning specified in Section 01500, clean Owner occupied areas of Work daily.
- B. After the demolition Work in any area is completed, clean the area before new construction is started.

END OF SECTION

SECTION 01126 - CONTRACTOR'S CERTIFICATION OF SUBCONTRACTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedures for preparing, submitting and accepting subcontracts.

1.2 RELATED REQUIREMENTS

- A. Bidding and Contract Requirement Document 00100 - Instructions to Bidders, Requirements of Apparent Low Bidder.
- B. Bidding and Contract Requirement Document 00101 – Supplemental Information to Bidders.
- C. Bidding and Contract Requirement Document 00430 - Subcontractor List
- D. Bidding and Contract Requirement Section 00700 - General Conditions: Article 6.13 - Subcontractors.
- E. Bidding and Contract Requirement Section 00800 – Supplementary Conditions: Paragraph SC-6.13 – Replacing Subcontractors
- F. Section 01300 - Submittals: Submittal Procedures.
- G. Section 01305 – Submittal Register Form.

1.3 SUBMITTALS

- A. Submit under transmittal letter specified in Section 01300 Submittals.
- B. CONTRACTOR shall submit the initial and final Subcontractor Certification Form(s).

1.4 PREPARATION OF CERTIFICATION

- A. CONTRACTOR to prepare and sign certification forms for all subcontractors regardless of subcontract amount (see Section 00700, Paragraph 6.13.1).
- B. Submit certification form to the DEPARTMENT for approval prior to the subcontractor's start of work. Attach additional information to the certification form where required,
- C. Certification Forms: Use only forms provided by the DEPARTMENT.
- D. The DEPARTMENT will reject substitute certification forms.

1.5 CONSIDERATION OF CERTIFICATION

- A. The DEPARTMENT will review each certification form after receipt and within a reasonable period of time, for the following:
 - 1. Completeness, including the attachments.
 - 2. Proper execution (signatures), including the attachments.
 - 3. Contractor restrictions for adding subcontractors, changing subcontractors, and value of contract.
- B. The DEPARTMENT will return any submittals that are incomplete or not properly executed under a transmittal letter denoting the deficiencies found. The CONTRACTOR shall correct and resubmit according to Section 01300 Submittals.
- C. SUBCONTRACTORS NOT APPROVED BY THE DEPARTMENT SHALL NOT BE ALLOWED ON SITE.
- D. The DEPARTMENT will not process payments for work performed by a non-certified subcontractor.

1.6 ACKNOWLEDGEMENT OF CERTIFICATION

- A. Submittals examined by the DEPARTMENT and determined to be complete and properly executed shall be acknowledged as such by the DEPARTMENT on the approval line of the certification form and returned to the CONTRACTOR.

1.7 CHANGES TO APPROVED SUBCONTRACTORS LIST

- A. Deletion or replacement of subcontractors listed on approved form 06D-5, or the addition of subcontractors not listed on approved form 06D-5 shall be in accordance with Bidding and Contract Requirement Document 00101, Supplementary Information to Bidders.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 01126

STATE OF ALASKA Department of Health & Social Services FMS Facilities	SUBCONTRACTOR CERTIFICATION	

Note: The Contractor shall provide this form for ALL subcontractors working on this project. This form is applicable to all projects, including Small Procurement Contracts, and must be completed in full.

PROJECT: APH SOUTH BUILDING BOILER REPLACEMENT PROJ. #: ANC 13-50C

PRIME CONTRACTOR: _____

Pursuant to the Contract Documents, we hereby stipulate the following concerning the award of Work to the last Subcontractor on the following list:

1.	First Tier Subcontractor: _____	DBE?	Yes ☐	No ☐
	Second Tier: _____	DBE?	Yes ☐	No ☐
	Third Tier: _____	DBE?	Yes ☐	No ☐
	Fourth Tier: _____	DBE?	Yes ☐	No ☐

2. Date of Subcontract: _____

3. Amount of Subcontract: \$ _____

4. Scope of Work: _____

5. Are the following documents kept on file by both the Contractor and the Subcontractor (check the appropriate answer)?

EEO-1 Certification (Form 25A304), federally funded projects only	Yes ☐	No ☐
Contract Minimum Wage Schedule	Yes ☐	No ☐
Civil Rights Representative (Form 25A302)	Yes ☐	No ☐

6. Does the Subcontract contain provisions for prompt payment, release of retainage, and interest on late payment and retainage conforming to AS 36.90.210?
 Yes ☐ No ☐

7. Does the Subcontract specifically bind the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of the Department and does it contain waiver provisions and termination provisions as required by the Contract Documents?
 Yes ☐ No ☐

8. a. Does the Subcontractor have adequate insurance coverages as specified in the Contract Documents?
 Yes ☐ No ☐

If not, does the Contractor stipulate that the insurance limits of the Subcontractor are acceptable to the Contractor and that he has notified his insurance carrier of the reduced insurance limits?

Yes ☐ No ☐

b. Does the evidence of insurance certify that the policies described thereon comply with all aspects of the insurance requirements for this project?

Yes ☐ No ☐

PROJECT: APH SOUTH BUILDING BOILER REPLACEMENT

PROJECT #: ANC 13-50C

Subcontractor Name: _____

c. Does the evidence of insurance list the Department as an "Additional Insured" or "Certificate Holder"?

Yes ☐ No ☐

d. Does the evidence of insurance commit to providing 30 day written notice of cancellation or reduction of any coverage?

Yes ☐ No ☐

e. Insurance Expiration dates:

Comprehensive or Commercial General Liability: _____

Automobile: _____ Workers' Compensation: _____

(Other): _____

9. Copies of the following professional certifications, licenses, and registrations are attached (circle all that apply):

Business License (mandatory)

Contractor License (mandatory)

Land Surveyor's License

Electrical Administrator's License (mandatory for electrical subs)

Mechanical Administrator's License (mandatory for mechanical subs)

Engineer/Architect

Other: _____

10. Exceptions to any of the above are explained as follows: _____

CERTIFICATION (to be completed and signed by PRIME CONTRACTOR): I certify all the above to be true and correct.

CONTRACTOR'S Signature: _____

CONTRACTOR'S Printed Name: _____

CONTRACTOR'S Company: _____

Date: _____

DEPARTMENT'S APPROVAL/DISAPPROVAL

The subject subcontract is **APPROVED**. Nothing in this approval should be construed as relieving the Prime Contractor of the responsibility for complete performance of the work or as a waiver of any right of the Department to reject defective work.

SIGNATURE: _____ **DATE:** _____
Jennifer Klein, Contracting Officer

The subject subcontract is **NOT APPROVED** for the following reasons:

SIGNATURE: _____ **DATE:** _____
Mark Moon, Project Manager

SECTION 01200
PROJECT MEETINGS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. CONTRACTOR participation in preconstruction conferences.
- B. CONTRACTOR administration of progress meetings.

1.02 RELATED REQUIREMENTS

- A. Document 00120 - Supplementary Instructions to Bidders: Pre-Bid Conference.
- B. Section 01010 – Summary of Work: Coordination.
- C. Section 01300 - Submittals: Construction Progress Schedules, Shop drawings, Product data, and Samples.
- D. Section 01400 - Quality Control.
- E. Section 01700 - Contract Closeout: Project Record Documents, Operation and Maintenance Data.

1.03 PRECONSTRUCTION CONFERENCES.

- A. DEPARTMENT will administer preconstruction conference for execution of Contract and exchange of preliminary submittals and review of administrative procedures.
- B. DEPARTMENT will administer site mobilization conference at Project site for clarification of CONTRACTOR responsibilities in use of site and coordination with Using Agency for occupancy throughout the duration of the work. CONTRACTOR shall provide the detailed written work plan in preparation for this meeting.

1.04 PROGRESS MEETINGS

- A. Contractor shall schedule and administer weekly Project meetings throughout progress of the Work (unless this requirement is waived by the Project Manager), and other meetings as required to coordinate work, and preinstallation conferences.
- B. Attendance: Job superintendent, major Subcontractors and Suppliers; DEPARTMENT and Consultants as appropriate to agenda topics for each meeting.
- C. Minimum Required Agenda: Review of Work progress, status of progress schedule and adjustments thereto, Work anticipated in the next week, delivery schedules, submittals, maintenance of quality standards, pending changes and substitutions, and other items affecting progress of Work.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

SECTION 01300
SUBMITTALS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedures.
- B. Construction Progress Schedules.
- C. Schedule of Values.
- D. Shop Drawings, Product Data, and Samples.
- E. Field Samples.

1.02 RELATED REQUIREMENTS

- A. Section 01010 - Summary of Work.
- B. Section 01027 - Applications for Payment.
- C. Section 01400 - Quality Control: Manufacturers' Field Services, Testing Laboratory Services.
- D. Section 01600 - Material and Equipment: Products List.
- E. Section 01700 - Contract Closeout: Closeout Procedures.

1.03 PROCEDURES

- A. Deliver submittals to DEPARTMENT as directed.
- B. Transmit each item under DEPARTMENT accepted form. Identify Project, CONTRACTOR, Subcontractor, Major Supplier, identify pertinent Drawing sheet and detail number, and Specification section number, as appropriate. Identify deviations from Contract Documents by submitting a DEPARTMENT supplied Substitution Request Form. Provide a minimum of 8 1/2" x 5 1/2" blank space on the front page for CONTRACTOR, and Consultant review stamps.
- C. Submit initial progress schedules and Schedule of Values in five copies in accordance with paragraph SC6.6 of Document 00800 - Supplementary Conditions prior to submitting first Application for Payment. Form and content shall be reviewed by the DEPARTMENT. After review by DEPARTMENT revise and resubmit as required. Submit subsequent updated schedules (10) days prior to each Application for Payment.
- D. Comply with progress schedule for submittals related to Work progress. Coordinate submittal of related items.
- E. After DEPARTMENT review of submittal, revise and resubmit as required, identifying changes made since previous submittal. Provide total number of submittals as required for the first submission, if 6 are required and 4 were returned for revisions, submit 6 again. The DEPARTMENT and Consultants will not return the first or revised copies of rejected submittals for re-use. DO NOT submit partial copies of submittals for incorporation into rejected submittal packages which have been kept by the DEPARTMENT and/or Consultants. Provide COMPLETE copies for each review.
- F. If drawings, product submittals, samples, mock-ups, or other required submittals are incomplete or not properly submitted, the DEPARTMENT will not review the submittal and will immediately return submittal to CONTRACTOR. DEPARTMENT will review a

submittal no more than three times (incomplete or improper submittals count as one). CONTRACTOR shall pay all review costs associated with more than three reviews, unless a resubmittal is required due to new comments addressing previously submitted information.

1.04 CONSTRUCTION PROGRESS SCHEDULES

A. Submit horizontal bar Gantt chart (see below for electronic version requirements). Schedule shall show:

1. Separate bar for each major trade or operation, identifying the duration of each activity and precedent activities.
2. Complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Show each work plan and separate work area as a separate activity or group of activities.
3. Submittal dates for required for Shop Drawings, product data, and samples, and product delivery dates, including those furnished by DEPARTMENT and those under allowances.
4. All required submittals and indicating the date for each required submittal.
5. Show projected percentages of completion for each item of Work and submittal as of time of each Application for Progress Payment. See below for electronic version requirements.
6. **ELECTRONIC VERSION: REQUIRED FOR ALL PROJECTS WHEN THE ORIGINAL CONTRACT AMOUNT IS EQUAL TO OR GREATER THAN \$500,000.00.** Submit Progress Schedule plotted on paper no larger than 24" x 36" and no smaller than 8 1/2" x 11" from the electronic program. Provide in electronic form on CD for IBM and compatible using Microsoft Project 2000 version 9.0. CD will not be returned by the DEPARTMENT.
7. Submit Progress Schedule percentages in Tracking Gantt form plotted from and in electronic form as stated above.

1.05 SCHEDULE OF VALUES

A. FORMAT

1. Form and content must be acceptable to DEPARTMENT.
2. CONTRACTOR's standard form or media-driven printout will be considered on request.
3. Follow table of contents of Project manual for listing component parts. Identify each line item by number and title of listed Specification sections.

B. CONTENT

1. List installed value of each major item of Work and each subcontracted item of Work as a separate line item to serve as a basis for computing values for progress payments. Round off values to nearest dollar.
2. For each major subcontract, list products and operations of that subcontract as separate line items.
3. Coordinate listings with progress schedule.
4. Component listings shall each include a directly proportional amount of CONTRACTOR's overhead and profit.

5. For items on which payments will be requested for stored products, list sub-values for cost of stored products with taxes paid.
6. Specific line item Values as indicated below shall be minimum acceptable amounts and must be included on all approved Schedules of Values and Applications for Payment.
 - a. **Section 01700 - Contract Closeout. Value of all required Substantial Completion Submittals and Closeout Submittals shall be not less than \$6,500.00 (six thousand five hundred dollars).**
 - b. No progress payments will be made for Substantial Completion Submittals and Closeout Submittals until **all** submittals have been submitted to and accepted by the DEPARTMENT.
7. The sum of values listed shall equal total Contract Price.

C. SUBMITTAL

1. Submit four copies of Schedule prior to submitting the CONTRACTOR's first Application for Payment. Subsequent updated Schedule of Values shall be presented for review ten days prior to each Application for Payment.
2. Transmit under DEPARTMENT accepted form transmittal letter. Identify Project by DEPARTMENT title and Project number; identify Contract by DEPARTMENT Contract number.

D. SUBSTANTIATING DATA

1. When DEPARTMENT requires substantiating information, submit data justifying line item amounts in question.
2. Provide one copy of data with cover letter for each copy of the Application for Payment. Show application number and date, and line item by number and description.

1.06 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. SHOP DRAWINGS:

1. Present in a clear and thorough manner. Label each Shop Drawing with DEPARTMENT's Project name and Project number; identify each element of the Shop Drawings by reference to sheet number and detail, schedule, or room number of Contract Documents.
2. Identify field dimensions; show relation to adjacent or critical features or Work or products.
3. Minimum Sheet Size: 8-1/2"x11". Larger sheets may be submitted in multiples of 8-1/2"x11".

B. PRODUCT DATA

1. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification section and Article number. Show reference standards, performance characteristics, and capacities; wiring and piping diagrams and controls; component parts; finishes; dimensions; and required clearances.
2. 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.

C. SAMPLES

1. Submit full range of manufacturer's standard finishes except when more restrictive requirements are specified, indicating colors, textures, and patterns, for DEPARTMENT selection.
2. Submit samples to illustrate functional characteristics of products, including parts and attachments.
3. Approved samples, which may be used in the Work, are indicated in the Specification section.
4. Label each sample with identification required for transmittal letter.
5. Provide field samples of finishes at Project, at location acceptable to DEPARTMENT, as required by individual Specification section. Install each sample complete and finished. Acceptable finishes in place may be retained in completed Work.

D. MANUFACTURER'S INSTRUCTIONS

1. When required in individual Specification Section, submit manufacturer's printed instructions for delivery, storage, assembly, installation start-up, adjusting, and finishing, in quantities specified for product data.
2. Manufacturer's instructions for storage, preparation, assembly, installation, start-up, adjusting, balancing, and finishing under provisions of Section 01400.

E. CONTRACTOR REVIEW

1. 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.
2. Coordinate submittals with requirements of Work and of Contract Documents.
3. Sign or initial each sheet of Shop Drawings and product data, and each sample label to certify compliance with requirements of Contract Documents. Notify DEPARTMENT in writing at time of submittal, of any deviations from requirements of Contract Documents.
4. Do not fabricate products or begin Work that requires submittals until return of submittal with DEPARTMENT acceptance.

F. SUBMITTAL REQUIREMENTS

1. Each submittal to be numbered by Specification Section and Paragraph. Revisions shall be identified by a hyphen after the paragraph, with a letter designator. Example: 1st submittal "01010 1.08A" 2nd submittal 01010 1.08A - A".
2. Transmit submittals in accordance with the required submittal schedule and in such sequence to avoid delay in the Work.
3. Provide 8 1/2" x 5 1/2" blank space on each submittal for CONTRACTOR and Consultant stamps.
4. Apply CONTRACTOR'S stamp, signed or initialed, certifying to review, verification of products, field dimensions and field construction criteria, and coordination of information with requirements of Work and Contract Documents.
5. Coordinate submittals into logical groupings to facilitate interrelation of the several items:

- a. Finishes which involve DEPARTMENT selection of colors, textures, or patterns.
 - b. Associated items that require correlation for efficient function or for installation.
6. Submit number of opaque reproductions of shop drawings CONTRACTOR requires, plus six that will be retained by DEPARTMENT.
7. Submit number of copies of product data and manufacturer's instructions CONTRACTOR requires, plus three copies, which will be retained by DEPARTMENT.
8. Submit number of samples specified in individual Specifications sections.
9. Submit under DEPARTMENT accepted transmittal form letter. Identify Project by title and DEPARTMENT Project number; identify Contract by DEPARTMENT contract number. Identify Work and product by Specification section and Article number.
10. Each submittal shall have as its face document a completed DEPARTMENT furnished Submittal Summary form.
11. Each submittal shall include the manufacturer's name and address, and supplier's name, address and telephone number.

G. RESUBMITTALS

1. After DEPARTMENT review of submittal, revise and resubmit as required, identifying changes made since previous submittal. Provide total number of submittals as required for the first submission, if 6 are required and 4 were returned for revisions, submit 6 again. The DEPARTMENT and Consultants will not return the first or revised copies of rejected submittals for re-use. DO NOT submit partial copies of submittals for incorporation into rejected submittal packages which have been kept by the DEPARTMENT and/or Consultants. Provide COMPLETE copies for each review.

H. DEPARTMENT REVIEW

1. DEPARTMENT or authorized agent will review Shop Drawings, product data, and samples and return submittals within (14) working days.
2. DEPARTMENT or authorized agent will examine shop drawings for general arrangement, overall dimensions and suitability, and will return to the CONTRACTOR marked as follows;
 - "No Exceptions Taken" - denotes that the submittal generally meets the requirements of the Contract Documents. "No Exceptions Taken" does not indicate a review of the CONTRACTOR's design except for general compliance with the requirements of the Contract Documents.
 - "Make Corrections Noted" - denotes review is conditional on compliance with notes made on the submittal.
 - "Revise and Resubmit" - denotes that revisions are required in the submittal in order for the submittal to be generally consistent with the requirements of the Contract Documents. Required revisions will be identified to the CONTRACTOR.

- "Rejected" - denotes that the submittal does not meet the requirements of the Contract Documents and shall not be used in the Work. Reasons for rejection will be identified to the CONTRACTOR.

3. Review by the DEPARTMENT of shop and erection drawings shall not be construed as a complete check, but will indicate only that the general method of construction and detailing is consistent with the requirements of the Contract Documents. Review of such drawings shall not relieve the CONTRACTOR of the responsibility for errors, dimensions, and detail design.
4. DEPARTMENT will require submittal of all required color and finish samples in order to approve any on color or finish.

I. DISTRIBUTION

1. Duplicate and distribute reproductions of Shop Drawings, copies of product data, and samples, which bear Consultant's stamp, to job site file, record documents file, Subcontractors, Suppliers, and other entities requiring information.

J. SCHEDULE OF SUBMITTALS

1. Submittal Register Form to be completed by CONTRACTOR and approved by DEPARTMENT prior to submittal of any items.
2. Submit shop drawings, product data and samples as required for each specification section.
3. Format.

a. Submittal schedule form as provided by DEPARTMENT.

1.07 FIELD SAMPLES

- A. Provide field samples of finishes at Project as required by individual Specifications section. Install sample complete and finished. Acceptable samples in place may be retained in completed Work.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

SECTION 01400
QUALITY CONTROL

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. General Quality Control.
- B. Workmanship.
- C. Manufacturer's Instructions.
- D. Manufacturer's Certificates.
- E. Mockups.
- F. Manufacturers' Field Services.
- G. Testing Laboratory Services.
- H. Departmental Inspection Services.

1.02 RELATED REQUIREMENTS

- A. Document 00700 - General Conditions: Inspection and testing required by governing authorities.
- B. Section 01010 – Summary of Work: Work Plans and Access to Facility, Individual Work Areas, and Tests required for inspection of the existing roof deck and structural members.
- C. Section 01090 - Reference Standards: Applicability of Reference Standards.
- D. Section 01300 - Submittals: Shop Drawings, Product Data, and Samples

1.03 QUALITY CONTROL, GENERAL

- A. Maintain quality control over Suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

1.04 WORKMANSHIP

- A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Perform Work by persons qualified to produce workmanship of specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.05 MANUFACTURERS' INSTRUCTIONS

- A. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from DEPARTMENT before proceeding.

1.06 MANUFACTURERS' CERTIFICATES

- A. When required by individual Specifications section, submit manufacturer's certificate, in duplicate, that products meet or exceed specified requirements.

1.07 MOCKUPS

- A. When required by individual Specifications section, erect complete, full-scale mockup of assembly at site, perform required tests, and remove mockup at completion, when approved by DEPARTMENT.

1.08 MANUFACTURERS' FIELD SERVICES

- A. When required by manufacturer or when specified in respective Specification sections, require manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.
- B. Require manufacturer's representative to submit written report to DEPARTMENT listing observations and recommendations.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

SECTION 01500
CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Electricity, Lighting.
- B. Heat, Ventilation.
- C. Telephone Service.
- D. Water.
- E. Sanitary Facilities.
- F. Dust Control (Exterior).
- G. Construction Enclosures.
- H. Barriers.
- I. Barricades, Warnings, and Markings (Airport Operations).
- J. Protection of Installed Work.
- K. Security.
- L. Water Control.
- M. Cleaning During Construction.
- N. Removal.
- O. Waste Storage Equipment.
- P. Cleaning of the Project Area.
- Q. Disposal.
- R. Tool Control

1.02 RELATED REQUIREMENTS

- A. Section 01010 - Summary of Work: Use of Premises.
- B. Section 01010 - Summary of Work: Shutoffs and Disruptions to Service.
- C. Section 01540 - Security.
- D. Section 01700 - Contract Closeout: Final cleaning.

1.03 ELECTRICITY, LIGHTING

- A. Connect to existing service, provide branch wiring and distribution boxes located to allow service and lighting by means of construction-type power cords. DEPARTMENT will pay costs of energy used.
- B. Provide lighting for construction operations.
- C. Take precautions to conserve energy. Wasteful use of power will be back charged to the CONTRACTOR.

1.04 HEAT, VENTILATION

- A. Provide as required to maintain specified conditions for construction operations, to protect materials and finishes from damage due to temperature or humidity.
- B. Do not use permanent facilities for temporary purposes.
- C. Fully exhaust to the outside welding fumes generated from operations related to performance of the Work.
- D. Provide ventilation of enclosed areas to cure materials, to disperse humidity, and to prevent accumulations of dust, fumes, vapors, or gases.

1.05 TELEPHONE SERVICE

- A. Provide telephone service if required for construction operations.

1.06 WATER

- A. Provide service required for construction operations. Extend branch piping with outlets located so that water is available by use of hoses.
- B. The DEPARTMENT will pay for water used.
- C. Hoses or temporary piping will not be permitted in public areas where a hazard to the public may be created.

1.07 SANITARY FACILITIES

- A. Designated existing facilities may be used during construction operation; maintain in clean sanitary condition. Do not use facilities for construction for cleaning of construction equipment.

1.08 DUST CONTROL

- A. Execute Work by methods that minimize raising of dust or airborne debris from construction or demolition operations
- B. Provide positive means to prevent air-borne dust from dispersing into the atmosphere

1.09 CONSTRUCTION ENCLOSURES

- A. Provide temporary enclosures/partitions around areas inside the facility that are affected by the construction. Enclosures/partitions shall:
 - 1. Isolate construction from Using Agency and residents. Enclosure/partitions must be secured with a padlock.
 - 2. Prevent the penetration of dust and/or moisture into occupied areas. Partitions must be sealed at ceiling and floor.
 - 3. Prevent damage to existing materials, finishes, and equipment or other existing building components and contents.
 - 4. Be designed and stamped by an engineer licensed by the State of Alaska if over 12 feet high.
 - 5. Be constructed of metal studs, painted GWB, 10 mil polyethylene, and sound attenuation insulation. Enclosures/Partitions shall extend from floor to ceiling with complete closure at adjoining walls.

- B. The CONTRACTOR shall include his plan for construction enclosures in the work plan prepared under Section 01010.

1.10 BARRIERS

- A. Provide as required to prevent public entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide barriers to provide both separation and safety to adjacent building occupants..

1.11 PROTECTION OF INSTALLED WORK

- A. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.
- B. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings. Protect finished floors and stairs from traffic, movement of heavy objects, and storage.

1.12 SECURITY.

- A. Provide security program and facilities to protect Work, existing facilities, and Using Agency's operations from unauthorized entry, vandalism, and theft. Coordinate with DEPARTMENT security program.

1.13 WATER CONTROL

- A. Protect the interior of the facility from water and/or moisture infiltration

1.14 CLEANING DURING CONSTRUCTION

- A. In accordance with Part 2 and Part 3 of this specification.

1.15 REMOVAL

- A. Remove temporary materials, equipment, services, and construction prior to Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary facilities.
- C. Restore existing facilities used during construction to specified, or to original, condition.

PART 2 PRODUCTS

2.01 WASTE STORAGE EQUIPMENT

- A. Provide covered containers for deposit of materials, waste materials, debris, and rubbish.

PART 3 EXECUTION

3.01 CLEANING OF THE PROJECT AREA

- A. Maintain all areas under CONTRACTOR's control free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to closing the space.
- C. Immediately clean interior areas after completion of the work to provide suitable conditions for building occupants and residents. All resident occupied areas and areas used by the general public require cleanup at the end of each shift.

- D. Broom clean interior areas prior to start of surface finishing, and continue cleaning on an as needed basis.
- E. Control cleaning operations so that dust and other particulates will not adhere to wet or newly-coated surfaces.

3.02 DISPOSAL

- A. Promptly remove waste materials, debris, and rubbish from site periodically and dispose of in accordance with all Federal, State and local regulations.

END OF SECTION

SECTION 01600
MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Products.
- B. Transportation and Handling.
- C. Storage and Protection.
- D. Product Options.
- E. Products List.
- F. Substitutions.

1.02 RELATED REQUIREMENTS

- A. Section 01005 - Administrative Provisions.
- B. Section 01010 - Summary of Work.
- C. Section 01090 - Reference Standards.
- D. Section 01400 - Quality Control: Manufacturers' Certificates.
- E. Section 01700 – Contract Closeout: Closeout Procedures, Operation and Maintenance Data, Warranties, Spare Parts and Maintenance Materials.

1.03 PRODUCTS

- A. Products include material, equipment, and systems.
- B. Comply with Specifications and referenced standards as minimum requirements.
- C. Components required to be supplied in quantity within a Specification section shall be the same, and shall be interchangeable.
- D. Do not use materials and equipment removed from existing structure, except as specifically required, or allowed, by Contract Documents.

1.04 TRANSPORTATION AND HANDLING

- A. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
- C. Immediately on delivery, inspect shipment to assure:
 - 1. Product complies with requirements of Contract Documents and reviewed submittals.
 - 2. Quantities are correct.
 - 3. Accessories and installation hardware are correct.
 - 4. Containers and packages are intact and labels legible.
 - 5. Products are protected and undamaged.

1.05 STORAGE AND PROTECTION

- A. **HANDLE AND STORE MATERIALS FOR CONSTRUCTION, PRODUCTS OF DEMOLITION, AND OTHER ITEMS TO AVOID DAMAGE TO BUILDING.**
- B. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.
- C. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.
- D. Provide Material Safety Data Sheets (MSDS) for all products which may produce unpleasant or noxious odors. CONTRACTOR shall provide for adequate venting if needed.

1.06 OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards.
- B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions by meeting product description: Submit a request for substitution for any manufacturer not specifically named that meets the product description specifications.
- C. Products Specified by Naming One or More Manufacturers followed by the term "No Substitutions": Use only specified manufacturers, no substitutions allowed.

1.07 PRODUCTS LIST

- A. Within 7 days after date of Notice to Proceed, transmit four copies of a list of products, which are proposed for installation, including name of manufacturer.
- B. Tabulate products by Specifications section number, title, and Article number
- C. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
- D. DEPARTMENT will reply in writing within five days stating whether there is reasonable objection to listed items. Failure to object to a listed item shall not constitute a waiver of requirements of Contract Documents.

1.08 SUBSTITUTIONS

- A. SUBSTITUTION SUBMITTAL PERIOD
 - 1. Product substitution requests will be considered only within 7 days after date established in Notice to Proceed. Subsequent requests will be considered only in case of product unavailability or other conditions beyond control of CONTRACTOR. (Submit on Substitution Request Form "B")
- B. LIMITATIONS ON SUBSTITUTIONS
 - 1. **Only one request for substitution will be considered for each product** from each Prime Bidder/CONTRACTOR. When substitution is not accepted, Prime Bidder/CONTRACTOR shall provide specified product.
 - 2. Substitutions will not be considered when indicated on Shop Drawings or product data submittals.
 - 3. Substitute products shall not be ordered or installed without written acceptance.
 - 4. DEPARTMENT will determine acceptability of substitutions.

C. REQUESTS FOR SUBSTITUTIONS

1. Submit separate request for each substitution. Document each request with complete data substantiating compliance of proposed substitution with requirements of Contract Documents.
2. Identify product by Specification section and Article numbers. Provide manufacturer's name and address, trade name of product, and model or catalog number. List fabricators and Suppliers as appropriate.
3. Attach product data as specified in Section 01340.
4. List similar projects using product, dates of installation, and names of design Consultant(s) and owner.
5. Give itemized comparison of proposed substitution with specified product, listing variations, and reference to Specification sections and Article numbers.
6. Give quality and performance comparison between proposed substitution and the specified product.
7. Give cost data comparing proposed substitution with specified product, and amount of net change to Contract Price.
8. List availability of maintenance services and replacement materials.
9. State effect of substitution on construction schedule, and changes required in other Work or products.

D. CONTRACTOR REPRESENTATION

1. Request for substitution constitutes a representation that CONTRACTOR has investigated proposed product and has determined that it is equal to or superior in all respects to specified product.
2. CONTRACTOR will provide same warranty for substitution as for specified product.
3. CONTRACTOR will coordinate installation of accepted substitute, making such changes as may be required for Work to be complete in all respects.
4. CONTRACTOR certifies that cost data presented is complete and includes all related costs under this Contract.
5. CONTRACTOR waives claims for additional costs related to substitution which may later become apparent.

E. SUBMITTAL PROCEDURES

1. Submit five copies of complete request for Substitution Request Form. Request to include complete product information and data, color swatch board, and certification that proposed product meets or exceeds all requirements for the specified product.
2. DEPARTMENT will review CONTRACTOR's requests for substitutions within 5 days of receipt.
3. After receipt of submittal, DEPARTMENT will notify CONTRACTOR, in writing, of decision to accept or reject requested substitution within 5 days.
4. For accepted products, submit Shop Drawings, product data, and samples under provisions of Section 01300.

Anchorage Pioneer Home
South Building Boiler Replacement
ANC 13-50C

Section 01600
Material and Equipment

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01700
CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Closeout Procedures.
- B. Final Cleaning.
- C. Project Record Documents.
- D. Operation and Maintenance Data.
- E. Warranties.
- F. Spare Parts and Maintenance Materials.
- G. Maintenance Service.

1.02 RELATED REQUIREMENTS

- A. Document 00700 - General Conditions: Fiscal provisions, legal submittals, and other administrative requirements.
- B. Section 01010 - Summary of Work: Using Agency Occupancy.
- C. Section 01400 – Quality Control: Departmental Inspection Services.
- D. Section 01500 - Construction Facilities and Temporary Controls: Cleaning during construction.

1.03 CLOSEOUT PROCEDURES

- A. Substantial Completion and Final Completion:
 - 1. Substantial Completion:
 - a. Submit the following prior to requesting a Substantial Completion Inspection:
 - 1. Evidence of Compliance with Requirements of Governing Authorities:
 - I. Certificate of Occupancy.
 - II. Required Certificates of Inspection.
 - 2. Project Record Documents in accordance with sub section 1700-1.05
 - 3. Operation and Maintenance Data in accordance with sub section 1700-1.06
 - 4. Spare Parts and Maintenance Materials in accordance with sub section 1700-1.08
 - b. Substantial Completion shall be considered by the DEPARTMENT when:
 - 1. Written notice is provided 7 days in advance of inspection date.
 - 2. List of items to be completed or corrected is submitted.
 - 3. Operation and Maintenance Manuals are submitted and approved by the DEPARTMENT.
 - 4. Equipment and systems have been tested, adjusted, balanced and are fully operational.
 - 5. Automated and manual controls are fully operational.

6. Operation of system has been demonstrated to DEPARTMENT Personnel.
 7. Certificate of Occupancy is submitted.
 8. Certificates of Inspection for required inspections have been submitted.
 9. Project Record Documents for the Work or the portion of the Work being accepted are submitted and approved.
 10. Spare parts and maintenance materials are turned over to DEPARTMENT.
 11. All keys are turned over to the DEPARTMENT.
- c. Should the DEPARTMENT inspection find Work is not substantially complete, the Department will promptly notify CONTRACTOR in writing, listing observed deficiencies.
 - d. The CONTRACTOR shall remedy deficiencies and send a second written notice of Substantial Completion.
 - e. When the DEPARTMENT finds Work is substantially complete the DEPARTMENT will prepare a certificate of Substantial Completion in accordance with provisions of General Conditions

B. FINAL COMPLETION:

1. When CONTRACTOR considers Work is complete, submit written certification that:
 - a. Contract Documents have been reviewed.
 - b. Work has been inspected for compliance with Contract Documents.
 - c. Work has been completed in accordance with Contract Documents, and deficiencies listed with certificate of Substantial Completion have been corrected.
 - d. Work is complete and ready for final inspection.
2. Should the DEPARTMENT inspection find Work incomplete, DEPARTMENT will promptly notify CONTRACTOR in writing listing observed deficiencies.
3. CONTRACTOR shall remedy deficiencies and send a second certification of Final Completion.
4. When DEPARTMENT finds Work is complete, DEPARTMENT will consider closeout submittals.

C. REINSPECTION FEES

1. Should status of completion of Work require more than two re-inspections by the DEPARTMENT due to failure of Work to comply with CONTRACTOR's responsibility, the DEPARTMENT will deduct the cost of re-inspection from final payment to CONTRACTOR as provided in the Contract Documents.
2. Re-inspection fees shall not exceed \$5,000 for any one re-inspection.

D. CLOSEOUT SUBMITTALS

1. Warranties and Bonds: Under provisions of Section 01700.
2. Evidence of Payment: In accordance with Conditions of the Contract.
3. Consent of Surety to Final Payment.
4. Certificates of Insurance for Products and Completed Operations: In accordance with Supplementary Conditions.

5. Certificate of Release.

E. APPLICATION FOR FINAL PAYMENT

1. Submit application for final payment in accordance with provisions of the General Conditions of the Contract.
- F. Using Agency will occupy Concourse A for the purpose of conduct of business, under provision stated in certificate of Substantial Completion.
- G. DEPARTMENT will issue a summary Change Order reflecting final adjustments to Contract Price not previously made by Change Order.

1.04 FINAL CLEANING

- A. Execute final cleaning prior to Substantial Completion inspection.
- B. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces. Clean equipment and fixtures to a sanitary condition, clean or replace filters of mechanical equipment. Clean roofs, gutters, downspouts, and drainage systems.
- C. Clean site; sweep paved areas, rake clean other surfaces.
- D. Use materials which will not create hazards to health or property, and which will not damage surfaces. Follow manufacturers recommendations.
- E. Maintain cleaning until the DEPARTMENT issues certificate of substantial Completion.
- F. Remove waste, debris, and surplus materials from the site. Clean grounds; remove stains, spills, and foreign substances from paved areas and sweep clean. Rake clean other exterior surfaces.

1.05 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following Record Documents; record actual revisions to the Work:
 1. Drawings.
 2. Specifications.
 3. Addenda.
 4. Change Orders and other modifications to the Contract.
 5. Reviewed shop drawings, product data, and samples.
 6. Manufacturers instructions for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by DEPARTMENT.
- C. Store Record Documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. SPECIFICATIONS: Legibly mark and record at each product section description of actual products installed, including the following:
 1. Manufacturer's name and product model and number.
 2. Product substitutions or alternates utilized.
 3. Changes made by Addenda and Modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction graphically to scale including:
 1. Measured depths of foundations in relation to finish first floor datum.

2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
4. Field changes of dimension and detail.
5. Details not on original Contract drawings.

1.06 OPERATION AND MAINTENANCE INSTRUCTIONS

- A. Submit data bound in 8-1/2 by 11 inch (A4) text pages, 3-D side ring binders with durable plastic covers.
- B. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are requested.
- C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with the tab titling clearly printed under reinforced laminated plastic tabs.
- D. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, typed on 24 pound white paper, in 3 parts as follows:
 1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, CONTRACTOR, subcontractors, and major equipment suppliers.
 2. Part 2: Operations and maintenance instructions arranged by system and subdivided by Specification Section. For each category, identify names, addresses, and telephone numbers of subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for [special] finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
 3. Part 3: Project Documents and Certificates, including the following:
 - a. Shop drawings and product data.
 - b. Certificates.
 - c. Originals of warranties and bonds.
- E. Submit one draft copy of completed volumes five working days prior to Substantial Completion inspection. This copy will be reviewed and returned, with DEPARTMENT comments. Revise content of all document sets as required prior to final submission.
- F. Submit three sets of revised final volumes within ten days after Substantial Completion Inspection.

1.07 WARRANTIES

- A. As a condition precedent to Final Payment, all guaranties and warranties as specified under various sections of the Contract Documents shall be obtained by the CONTRACTOR and delivered to the OWNER, in duplicate giving a summary of guarantees attached and stating the following in respect to each:
 - 1. Character of Work affected.
 - 2. Name of Subcontractors.
 - 3. Period of Guarantee.
 - 4. Conditions of Guarantee.
- B. Delivery of said guarantees and/or warranties shall not relieve the CONTRACTOR from any obligations assumed under any other provision of the Contract.
- C. If, within any guarantee period, repairs or changes are required in connection with the guaranteed Work, which in the opinion of the OWNER is rendered necessary as the result of the use of materials, equipment or workmanship, which are defective, or inferior, or not in accordance with the terms of the Contract, the CONTRACTOR shall, upon receipt of notice from the OWNER, and without expense to the OWNER, proceed within seven (7) calendar days to:
 - 1. Place in satisfactory conditions in every particular all of such guaranteed Work, correct all defects therein, and make good all damages to the structure or site.
 - 2. Make good all Work or materials, or the equipment and contents of structures or site disturbed in fulfilling any such guarantee.
- D. If the CONTRACTOR, after notice, fails to comply without the terms of the guarantee, the OWNER may have the defects corrected and the CONTRACTOR and CONTRACTOR's Surety shall be liable for all expenses incurred in connection therewith, including Engineer's fees.

1.08 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual Specification Sections.
- B. Deliver to project site and place in location as directed, obtain receipt prior to final payment.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Basic Mechanical Requirements specifically applicable to Division 15 Sections, in addition to Division 1 - General Requirements.

1.2 WORK INCLUDED

- A. The work of Division 15 consists of providing labor, products, and in performing all operations required for the complete operating installation of all mechanical systems as shown and specified, in strict accordance with this and all sections of these specifications, applicable drawings, terms, and conditions of the contract and all applicable codes and ordinances governing installation of the various mechanical systems. Correlate all work fully with the work of other crafts. Provide all systems complete and in proper operating order. This section of Division 15 is part of all other sections of Division 15.

1.3 SPECIFICATION TERMINOLOGY

- A. Streamlining: In many instances, the products, reference standards, and other itemized specifications have been listed without verbiage. In these cases, it is implied that the Contractor shall provide the products and perform in accordance with the references listed.
- B. "Furnish" means to purchase a product as shown and specified, and deliver the product to an approved location at the site or elsewhere as noted or agreed, to be installed by others.
- C. "Install" means to set in place and connect, ready for use and in complete, operating, finished condition, material that has been furnished.
- D. "Provide" means furnish all material, labor, sub-contracts, and appurtenances required, and install to a complete, operating, finished condition.
- E. "Rough-in and Connect Only" means provide appropriate system connections such as supplies with stops, continuous wastes with traps, shut-off valves as shown and required, and all piping connections, and testing for proper operation, and to connect equipment furnished. Equipment furnished is received, uncrated, assembled and set in place by others.
- F. "Accessible" means arranged so that an average sized man may complete any servicing required, without disassembly or damage to the surrounding installation.
- G. "Serviceable" means arranged so that the component or product in question may be properly serviced without disassembly, destruction or damage to the surrounding installation or piece being serviced.
- H. "Product" is a generic term which includes materials, equipment, fixtures and any physical item used on the project.

- I. "Shop Drawings" are to-scale, completely dimensioned working construction drawings prepared for or by the Contractor to demonstrate proper planning for the installation and arrangement of all work specified and indicated in the contract documents. Shop drawings for building systems shall be done on sheet sizes no smaller than that used for the contract drawings, and, after being approved, shall be marked-up and maintained on the job site in accordance with the requirements for record drawings.
- J. "Contracting Agency" is the Owner's Representative as defined in the General Conditions of the Contract.

1.4 DIAGRAMMATIC DRAWINGS

- A. The contract drawings and specifications are complementary, each to the other; what is shown on one is as binding as if called for in both. The contract drawings are partly diagrammatic and do not show all offsets in piping or exact location of piping, ducts, etc. Also, the contract drawings do not necessarily show in detail all features of the installation; however, provide a complete and satisfactorily working installation. Refer to shop drawing requirements described elsewhere in this section. Provide all work shown on the contract drawings and called for in these contract specifications, unless otherwise stated or directed.

1.5 SUBMITTALS

- A. General: Procedures and requirements for submittals are addressed in Division 1. Provide one additional copy of each submittal that the mechanical engineering firm will retain for their records. In addition, comply with specific requirements of the individual sections and as noted herein.
- B. Revise and resubmit submittal data as directed. Identify all changes made since the previous submittal on the submittal literature, and summarize those changes in a cover letter. All costs associated with the review of more than one resubmittal, where additional review is required due to incomplete, inaccurate, or inadequate submittals, are the responsibility of the Contractor.

1.6 SUBMITTALS FOR REVIEW

- A. Provide submittals for all products and systems described in Division 15 and shown on the contract drawings to demonstrate compliance with the requirements of the project. Furnish equipment submittals in the manner described elsewhere in these specifications. In addition, include data for review, and organize data as noted below. **NO WORK SHALL BEGIN OR PRODUCTS ORDERED UNTIL SUBMITTALS, SAMPLES AND SHOP DRAWINGS ARE APPROVED.**
- B. Substitutions: Refer to requirements stated in Division 1 and as described in other sections of Division 15.
 - 1. Acceptable Manufacturers: Manufacturer's names, trade names, and model numbers of products, systems, or installations specified in the contract documents are the "Basis of Specification" (also designated as "Design Basis Product" on the contract drawings). Unless noted as "No Substitution",

Contractor may submit for consideration a substitution of a manufacturer, product, system, or installation under provisions of Division 1. If such submittal is made, written certification is required from the Contractor that the substitution meets or exceeds characteristics of the "Basis of Specification" and that changes in work, including but not limited to changes in dimensions, access openings, clearances, tolerances, utility requirements, characteristics, and connections, will not adversely affect the cost, design, function, performance or operation of other components or of the building. The Contracting Agency review and/or approval of such substitution will not relieve the Contractor of his responsibilities to perform the work and pay the costs of additional Architectural/Engineering design services and construction costs attributed to the use of the substitution.

- C. Data Required for Review: Mark submittal literature and shop drawings clearly, bind 8-1/2 x 11 literature in three-hole, hard-backed, loose-leaf binders by individual sets, and include all equipment and material shown and specified in the contract documents. Submittals not organized and prepared as follows WILL BE RETURNED for organization, compliance and numbering prior to any detailed review. Indicate the following:

1. Table of Contents listed by specification section number, title, and items submitted under that section number. See example below.

MECHANICAL SUBMITTAL
TABLE OF CONTENTS

Section	Mfr/Description
15150 Sanitary Waste and Vent Piping and Equipment:	
2.1 Sanitary Sewer, Buried Joints	Tyler No-Hub C.I. MG Coupling
2.3 Sanitary Sewer, Aboveground Joints	Tyler No-Hub C.I. St. Stl. No-Hub
2.7 Floor Drains	J.R. Smith #2010-A

2. Individual tabs numbered by specification section and assembled in sequential order. Include tabs for all specification sections even if some sections will be submitted under separate cover in accordance with the provisions for partial submittals.
3. Specification reference and/or drawing reference noted on first page of literature for each item submitted.
4. Manufacturer's name and address, AND supplier's name, address and phone number noted on first page of literature for each item submitted.

5. Mark out all non-applicable items or "highlight" all applicable items.
 6. Underline or highlight construction standards, materials and performance required to be met by specifications and drawings.
 7. Catalog designation or model number.
 8. Rough-in data and dimensions.
 9. Performance curves and rated capacities.
 10. Motor characteristics and wiring diagrams.
 11. Operation characteristics.
 12. Wiring diagrams for the specific system operation.
 13. Fabrication drawings and shop drawings.
 14. The terminology "As Specified" means that the item is the same manufacturer, model and size as listed in the specifications and/or as shown on the drawings. A manufacturer selected from the list of acceptable manufacturers is not considered "As Specified". The intent of acceptable manufacturers is to set a standard. This does not exclude others submitted under "Substitutions."
- D. Shop drawings shall be submitted in accordance with the requirements of Division 1 and as specified under each section of the specifications.
- E. Systems for Which Shop Drawings are Required:
1. Mechanical Rooms (including fan rooms, boiler rooms, etc.); minimum scale: 1/2" equals one foot.
 2. Seismic Restraint Calculations and Shop Drawings: Refer to Section 15250 for requirements.
- F. Shop drawings for work in congested areas must indicate work of all trades involved in congested area and clearly indicate that any, and all, space problems between the various trades have been coordinated. Prepare sections, elevations, isometrics, etc. to clearly identify and portray work in a congested area in three dimensions.
- G. Submit fabrication drawings of all equipment bases and supports, and all pipe and duct hangers and supports.
- H. Submit fabrication drawings of any product which is not the standard catalog product of an established manufacturer and is fabricated for or by the Contractor.
- I. Partial Submittals: If other than a complete submittal is made, the Contractor may make partial submittals separated into COMPLETE specification section classifications. Submittals made with items omitted from a given specification

section (or sections) are considered piece-meal, and, as such, are not acceptable. Piece-meal submittals WILL BE RETURNED without review.

- J. Partial Resubmittals: As in partial submittals above; if other than a complete resubmittal is made, the Contractor may make partial submittals separated into COMPLETE specification section classifications. Piece-meal re-submittals WILL BE RETURNED without review. Resubmittals shall address all items associated with the original submittal that were noted as requiring further action.
- K. Comments made on the shop drawings or review comments made during the submittal review do not relieve the Contractor from compliance with requirements of the drawings and specifications. Review is only for general conformance with the contract documents. Approval does not constitute acceptance of any material or equipment which does not fulfill the functional or performance characteristics specified. The Contractor is responsible for: correlating and confirming dimensions; choice of fabricating processes and techniques of construction; coordination of his work with other trades; performing the work in a safe and satisfactory manner; and providing a complete and properly operating system.

1.7 SUBMITTALS AT PROJECT CLOSEOUT (CLOSEOUT SUBMITTALS)

- A. General: Reference requirements stated in Division 1.
- B. Record Drawings: In addition to other record drawing requirements, mark up a clean set of contract drawings and approved shop drawings daily as the work progresses, to show the dimensioned location and routing of all mechanical work. These marked-up sets shall be maintained on the job site and be readily available for inspection. Show the location of all access doors and valves and their appropriate tag identification.
- C. Operating Instructions: Provide operation instructions prior to final inspection. Instruct an authorized representative of the Owner on the proper operation and maintenance of all mechanical systems and equipment installed under this contract. Make available a qualified technician for each component of the installation for this instruction. The qualifications of the selected technicians shall be submitted to the Contracting Agency for approval prior to scheduling operating instructions. Give these operating instructions after the operation and maintenance manuals have been furnished to the Owner. Submit written certification, signed by the Contractor and an authorized representative of the Owner, that this has been completed.
- D. O&M Manuals (General): Provide Operation and Maintenance (O&M) Manuals for training of, and future reference by, Owner's personnel in operation and maintenance of systems and related equipment in the manner described elsewhere in these specifications. In addition, organize manual, and include data and narrative, as noted in "O&M Manuals (Specific)" below. Bind each manual in a hard-backed, looseleaf, three-ring binder. Use 8-1/2" x 11" white paper.
 - 1. Submit one copy of the final assembled Operation and Maintenance Manual for review 14 days prior to the substantial completion date. Submit required copies prior to the final inspection date and prior to the operating instructions.

- E. O&M Manuals (Specific): Provide Operations and Maintenance Manuals with a separate chapter for each section of the mechanical specifications with subchapters for each class of equipment or system. Provide an overall table of contents, as well as a table of contents for each chapter, and each major item in each chapter, to indicate the page number of each.
1. Contents: In each chapter, describe the procedures necessary for personnel to operate and maintain the system and equipment covered in that chapter. Also include a copy of the final system balancing report.
 2. Operating Procedures: Include procedures for start-up, operation, emergency operation and shutdown.
 - a. Start-up: Give complete step-by-step instructions for energizing equipment and making initial settings and adjustments whenever applicable.
 - b. Shutdown Procedure: Include instructions for stopping and securing the equipment after operation. If a particular sequence is required, give step-by-step instructions in that order.
 3. Maintenance Instructions: Include procedures for periodic and preventive maintenance.
 - a. Provide a schedule of preventive maintenance for each product. Recommend frequency of performance for each preventive maintenance task; i.e., cleaning, inspection, lubrication, etc.
 - b. Provide instructions and schedules for all routine cleaning, lubrication and inspection with recommended lubricants for all equipment and systems. Schedule times of the year that inspection and maintenance should be performed.
 - c. 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 require no extensive special training or skills.
 - d. Special Maintenance: Provide all information of a maintenance nature covering warranty items, etc., which have not been discussed elsewhere.
 4. Manufacturers' Brochures: Include manufacturers' descriptive literature covering all appurtenances used in each system, together with illustrations, exploded views and parts lists.
 5. Shop Drawings: Provide a copy of all corrected, approved shop and/or fabrication drawings covering equipment for the project either with the manufacturers' brochures or properly identified in a separate subsection.

6. Spare Parts Lists: Include a list of all equipment furnished for project, with a tabulation of descriptive data of all the spare parts proposed for each type of equipment or system. Properly identify each part by part number and manufacturer.
7. Other Items:
 - a. Valve Directory: Indicate valve number, size, location, function and normal position for each numbered valve. See example below:

Valve Directory

Valve Tag #	Location	Function	Size	Position
Heating System Valves				
H-1	1 st Floor W/Wing Hall	Isolate Room 101	½"	N.O.
H-2	1 st Floor E/Wing Hall	Isolate Room 102	½"	N.O.
Plumbing Valves				
P-1	Boiler Room	Isolate Boiler Room	2"	N.O.
P-2	Boiler Room	Isolate Pump 6	¾"	N.O.
P-3	Boiler Room	Isolate Pump 7	¾"	N.O.

- b. Name Plate Directory: Provide list of fans, pumps, boilers, furnaces, compressors, air supply units, heating and cooling coils, concealed automatic dampers, and all other major equipment name plates, giving manufacturer's name plate data, name plate designation, location of equipment, area served, switch location, normal position of switch, and equipment label designations specified. Use format similar to the valve directory.
 - c. Label all pages to assure correct placement in the manual.
 - d. Mark out all non-applicable items, or "Highlight" all applicable items.
- F. Certificate of Readiness for Final Inspection: At the time of request for final inspection, submit a Certificate of Readiness for Final Inspection to the Contracting Agency. A blank certificate immediately follows this specification Section. Each line-item listed on the Certificate shall be initialed and dated by the Contractor and the Owner's Representative.

1.8 PROJECT/SITE CONDITIONS

- A. Generally, install Work in locations indicated on the contract drawings, unless prevented by Project conditions.
- B. Prepare drawings (e.g., shop drawings) showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of the Contracting Agency before proceeding.
- C. Verify field measurements prior to fabrication of products and installation of equipment and systems.

1.9 QUALITY ASSURANCE

- A. Comply with the applicable local, state and national codes, ordinances and regulations in existence at bid date affecting materials and methods of installation of the mechanical systems of the Project location. Follow recommended practices as set down by ASME, SMACNA, ASHRAE, NFPA, International Building Code, International Mechanical Code, International Fire Code, International Fuel Gas Code, Uniform Plumbing Code, National Electrical Code, AGA and OSHA, as they apply to this project, except in cases where statutes govern.

1.10 REGULATORY REQUIREMENTS

- A. Reference requirements stated in Division 1.
- B. Conform to NFPA 70.
- C. Products requiring electrical connection: Listed and classified by UL, or other testing firm acceptable to the authority having jurisdiction, as suitable for the purpose specified and indicated.

1.11 MANUFACTURER'S WARRANTIES

- A. In the event of equipment or component failure, it is the Contractor's responsibility to repair or replace such defective equipment or components and bear all associated costs. The Contractor shall pursue manufacturer's written or implied warranties to the extent necessary to obtain replacement equipment or components prior to any other action being initiated. Provide proof of action taken upon request.

1.12 ELECTRICAL WORK

- A. Related Work Specified Elsewhere.
 - 1. Electrical Specifications: Division 16.

- B. Unless otherwise indicated on the electrical drawings, provide all mechanical equipment motors, control relays, time clocks, thermostats, motor valves, float controls, damper motors, electric-pneumatic and pneumatic electric switches, electrical control components, control wiring, and any other miscellaneous Division 15 controls. Provide motor starters and disconnects for packaged equipment such as rooftop units, pre-assembled compressors and chillers.
- C. Carefully coordinate all work with the electrical work shown and specified elsewhere in the contract documents.
- D. Motors: Provide electric motors in accordance with the requirements of Section 15170.
- E. When motor starters are furnished under Division 15, they must meet the requirements of Division 16.

1.13 TESTS AND INSPECTION

- A. Schedule, obtain, and pay all fees and/or services required by local authorities and by these specifications, to test the mechanical systems as specified.
- B. Request for Tests: Notify the Contracting Agency a minimum of 24 hours in advance of tests. In the event the Contracting Agency does not witness the test, certify in writing that all specified tests have been made.
- C. Deficiencies: Immediately correct all deficiencies which are evidenced during the tests and repeat tests until system is approved. Do not cover or conceal piping, equipment, or other portions of the mechanical installations until satisfactory tests are made and approved.
- D. Operating Tests: Upon request from the Contracting Agency, place the entire mechanical installation, and/or any portion thereof, in operation to demonstrate satisfactory operation.
- E. Completion: Upon completion of the mechanical installation, demonstrate to the Contracting Agency's satisfaction that the systems have been installed in a satisfactory manner in accordance with the plans, specifications, and applicable codes. Demonstrate dynamic operation of all systems. Show that all controls are operable and are properly adjusted in accordance with the requirements of the final systems balance, that all systems are properly balanced, that all equipment operates properly, that filters and strainers are clean, and that all components of all systems are installed and adjusted for proper operation.

PART 2 - PRODUCTS

- A. Not Used

PART 3 - EXECUTION

- A. Not Used

END OF SECTION

CERTIFICATE OF READINESS FOR FINAL INSPECTION

(MECHANICAL)

1. I, (Print Name), of (Firm),
certify that the mechanical work is complete in accordance with the Contract Plans and
Specifications, and authorized change orders (copies attached), and will be ready for
substantial completion as of (Date). Accordingly, I further certify that the
following specification requirements have been fulfilled:
2. As-built record drawings are up-to-date and ready to deliver to the Contracting Agency.
(Print Name, Initial, and Date)
3. Instruction of operating personnel has been performed for all mechanical systems, including
automatic control systems.
(Print Name, Initial, and Date)
4. Operation and maintenance manual(s), including valve tag directory, equipment nameplate
directory and final balance report have been completed, approved and turned over to the
Contracting Agency.
(Print Name, Initial, and Date)
5. Domestic water system piping has been pressure tested and sterilized.
(Print Name, Initial, and Date)
6. Hydronic heating system piping has been flushed and pressure tested.
(Print Name, Initial, and Date)
7. Fuel gas system piping has been pressure tested. (Certificate of Final Inspection from the
Administrative Authority enclosed.)
(Print Name, Initial, and Date)
8. Boiler start-up has been accomplished, and boilers are in proper operating order. (Start-up
report enclosed; signed and dated by the boiler manufacturer's qualified and authorized
representative.)
(Print Name, Initial, and Date)
9. Hydronic heating systems have been balanced and are in proper operating order. (Balance
Report included in operation and maintenance manual.)
(Print Name, Initial, and Date)

10. Automatic controls systems adjusted, validated, and in proper operating order to perform sequences of operation specified.

(Print Name, Initial, and Date)

11. Building accepted and control systems warranty period begins as of _____ (Date)

(Signature, Owner's Representative)

All systems are fully and properly operational.

Signed and dated: _____
(General Contractor)

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Pipe hangers and supports.
- B. Hanger rods.
- C. Inserts.
- D. Ductwork hangers and supports.
- E. Flashing.
- F. Equipment curbs.
- G. Sleeves.
- H. Firestopping.

1.2 RELATED SECTIONS

- A. Section 15010 - Basic Mechanical Requirements.
- B. Section 15250 - Earthquake Restraint.
- C. Section 15260 - Piping Insulation.
- D. Section 15410 - Plumbing Piping.
- E. Section 15510 - Hydronic Piping.
- F. Section 15890 - Ductwork.
- G. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. Uniform Plumbing Code - Latest Locally Adopted Edition: Hangers and Supports.
- B. International Mechanical Code - Latest Locally Adopted Edition: Duct Supports.
- C. International Fuel Gas Code - Latest Locally Adopted Edition.
- D. International Building Code - Latest Locally Adopted Edition.
- E. ASME B31.1 - Power Piping.
- F. ASME B31.2 - Fuel Gas Piping.

- G. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
- H. ASTM F708 - Design and Installation of Rigid Pipe Hangers.
- I. MSS SP58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.
- J. MSS SP69 - Pipe Hangers and Supports - Selection and Application.
- K. MSS SP89 - Pipe Hangers and Supports - Fabrication and Installation Practices.
- L. UL 1479 - Fire Tests of Through-Penetration Fire Stops.
- M. SMACNA - Duct hangers and supports.

1.4 SUBMITTALS FOR REVIEW

- A. Product Data: Provide manufacturer's catalog data including load capacity.
- B. Shop Drawings: Indicate hanger and support framing and attachment methods.
- C. Through-Penetrations Firestopping Systems: Submit manufacturer's UL system drawing for each application.

1.5 QUALITY ASSURANCE

- A. Support piping and ductwork to prevent sag, undue play and swing.
- B. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- C. Hangers to be removable without requiring removal of supported pipe.
- D. Provide copper plated hangers and supports for copper piping in direct contact with hanger.
- E. Provide earthquake bumpers, snubbers and anchors per Section 15250.
- F. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS - PIPE HANGERS AND SUPPORTS

- A. Grinnell, Michigan, Elcen, Super Strut.
- B. Substitutions: Under provisions of Division 1.

2.2 PIPE HANGERS AND SUPPORTS

- A. Hangers for Pipe Sizes 1/2 to 2-1/2 Inch: Carbon steel, adjustable swivel ring.
- B. Hangers for Steel Pipe Sizes 2-1/2 Inches and Over: Carbon steel, adjustable clevis.
- C. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods; cast iron roll and stand for hot pipe sizes 6 inches and over.
- D. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook for pipe not requiring restraint.
- E. Wall Support for Pipe Sizes 4 Inches and Over: Welded steel bracket and wrought steel clamp.
- F. Vertical Support: Steel riser clamp.
- G. Floor Support for Pipe Sizes to 2-1/2 Inches and All Cold Pipe Sizes: Cast iron adjustable pipe saddle, locknut nipple, floor flange, and concrete pier or steel support.
- H. Floor Support for Pipe Sizes 2-1/2 Inches and Over: Adjustable cast iron roll and stand, steel screws, and concrete pier or steel support. Standon adjustable pipe support system may be used.
- I. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- J. For piping seismic restraint, refer to Section 15250.

2.3 HANGER RODS

- A. Steel Hanger Rods: Threaded both ends, threaded one end, or continuous threaded.

2.4 INSERTS

- A. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.
- B. Expansion Anchors: The Hilti Kwik Bolt II anchor system may also be used.

2.5 DUCTWORK HANGERS AND SUPPORTS

- A. Ducts 24" and Less: Provide with one inch x 18 gauge straps fastened to ductwork and to building construction. Space not more than eight feet on center.
- B. Ducts 25" through 42": Provide mild steel rods fastened to angle iron stiffeners with nuts and to building construction with appropriate inserts, flanges, or clamps. Space not more than eight feet on center.

- C. Recommended methods of fastening bracing to ductwork, include riveting, bolting, and tack welding.
- D. For ductwork earthquake restraint, refer to Section 15250.

2.6 FLASHING

- A. Metal Flashing: 26 gauge galvanized steel.
- B. Metal Counterflashing: 22 gauge galvanized steel.
- C. Caps: Steel, 22 gauge minimum; 16 gauge at fire resistant elements.

2.7 SLEEVES

- A. Sleeves for Pipes Through Non-fire Rated Floors, Walls, Beams: Form with 18 gauge galvanized steel.
- B. Sleeves for Pipes Through Fire Rated and Fire Resistive Floors and Walls, and Fireproofing: Prefabricated fire rated sleeves including seals, UL listed. Proset, 3M/St. Paul, or approved.
- C. Sleeves for Round Ductwork: Form with galvanized steel.
- D. Sleeves for Rectangular Ductwork: Form with galvanized steel or wood.

2.8 FIRE STOP SYSTEMS

- A. Fire Stopping Insulation: Glass fiber type, non-combustible.
- B. General Purpose Fire Stopping Sealant: Water based, non-slumping, premixed sealant with intumescent properties, rated for 3 hours per ASTM E814 and UL 1479
- C. General Purpose Vibration Resistant Fire Stopping Sealant: Silicone based, non-slumping, premixed sealant with intumescent properties, vibration and moisture resistant, rated for 3 hours per ASTM E814 and UL 1479.

PART 3 - EXECUTION

3.1 INSERTS

- A. Provide Hilti "Quick Bolt", or approved equal for concrete inserts.

3.2 PIPE HANGERS AND SUPPORTS

- A. Support horizontal piping in accordance with the International Mechanical Code, International Fuel Gas Code and Uniform Plumbing Code.
- B. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.

- C. Place a hanger within 12 inches of each horizontal elbow.
- D. Use hangers with 1-1/2 inch minimum vertical adjustment.
- E. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
- F. Support riser piping independently of connected horizontal piping.

3.3 EQUIPMENT BASES, SUPPORTS, AND HOUSEKEEPING PADS

- A. Provide housekeeping pads of concrete, minimum 4 inches thick and extending 6 inches beyond supported equipment.
- B. Provide templates, anchor bolts, and accessories for mounting and anchoring equipment.
- C. Construct equipment support of steel members or steel pipe and fittings. Brace and fasten with flanges bolted to structure.
- D. Provide rigid anchors for pipes after vibration isolation components are installed.

3.4 FLASHING

- A. Provide flexible flashing and metal counterflashing where piping and ductwork penetrate weather or waterproofed walls, floors, and roofs.
- B. For pipes through outside walls, turn flanges back into wall and calk, metal counterflash and seal.

3.5 SLEEVES

- A. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with fire stopping insulation and caulk seal air tight. Provide close fitting metal collar both sides of penetration in unfinished areas.
- B. Install chrome plated steel escutcheons both sides of penetration in finished areas.

3.6 FIRESTOPPING

- A. Ensure sleeves are of the proper non-combustible type and that they are securely fastened to the assembly penetrated.
- B. Ensure that insulation and covering on penetrating item does not pass through the assembly unless tested, as specified, for materials used for firestopping of non-combustible penetrations.
- C. Install material at walls or partition openings which contain penetrating sleeves, piping, ductwork, conduit, and other items requiring firestopping.

- D. Install materials and comply with directions and instructions of manufacturers and authorities having jurisdiction.
- E. Install using methods, accessories, and not less than same depth or thickness, as systems tested and listed for each required fire resistance rating.
- F. Where firestopping is visible in exposed to view spaces, finish surface flush with adjacent wall or horizontal construction.
- G. Where sleeves are used, all space between the item contained in the sleeve and the sleeve itself and space, if any, between the sleeve and the assembly penetrated shall be filled with materials as specified for filling the annular space.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Three phase electric motors.

1.2 RELATED SECTIONS

- A. Section 15010 - Basic Mechanical Requirements.
- B. Section 15540 - HVAC Pumps.
- C. Section 16480 - Motor Control: Electrical characteristics.
- D. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. ABMA 9 - Load Ratings and Fatigue Life for Ball Bearings.
- B. ABMA 11 - Load Ratings and Fatigue Life for Roller Bearings.
- C. IEEE 112 - Test Procedure for Polyphase Induction Motors and Generators.
- D. NEMA MG 1 - Motors and Generators.
- E. NFPA 70 - National Electrical Code.

1.4 SUBMITTALS FOR REVIEW

- A. Product Data: Provide wiring diagrams with electrical characteristics and connection requirements.
- B. Test Reports: Indicate test results verifying nominal efficiency and power factor for three phase motors larger than 5 horsepower.
- C. Manufacturer's Installation Instructions: Indicate setting, mechanical connections, lubrication, and wiring instructions.

1.5 SUBMITTALS AT PROJECT CLOSEOUT

- A. Operation Data: Include instructions for safe operating procedures.
- B. Maintenance Data: Include assembly drawings, bearing data including replacement sizes, and lubrication instructions.

1.6 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacture of electric motors for HVAC use, and their accessories, with minimum three years documented product development, testing, and manufacturing experience.

- B. Products Requiring Electrical Connection: Listed and classified by Underwriters' Laboratories, Inc., or other independent testing firm acceptable to the authority having jurisdiction, as suitable for the purpose specified and indicated.

1.7 DELIVERY, STORAGE, AND PROTECTION

- A. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Century, G.E., Reliance, Baldor.
- B. Substitutions: Under provisions of Division 1.

2.2 GENERAL CONSTRUCTION AND REQUIREMENTS

- A. Electrical Service: Refer to Division 16 for required electrical characteristics.
- B. Motors: Design for continuous operation in 40 degrees C environment, and for temperature rise in accordance with NEMA MG 1 limits for insulation class, Service Factor, and motor enclosure type.
- C. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.
- D. Wiring Terminations:
 - 1. Provide terminal lugs to match branch circuit conductors quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
 - 2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.
- E. Motors shall conform to NEMA Design B.

2.3 THREE PHASE POWER - SQUIRREL CAGE MOTORS

- A. Starting Torque: Between one and one and one-half times full load torque.
- B. Starting Current: Six times full load current.
- C. Power Output, Locked Rotor Torque, Breakdown or Pullout Torque: NEMA Design B characteristics.
- D. Design, Construction, Testing, and Performance: Conform to NEMA MG 1 for Design B motors.

- E. Insulation System: NEMA Class B or better.
- F. Testing Procedure: In accordance with IEEE 112, Test Method B. Load test motors to determine freedom from electrical or mechanical defects and compliance with performance data.
- G. Motor Frames: NEMA standard T-frames of steel, aluminum, or cast iron with end brackets of cast iron or aluminum with steel inserts.
- H. Bearings: Grease lubricated anti-friction ball bearings with housings equipped with plugged provision for relubrication, rated for minimum ABMA 9, L-10 life of 20,000 hours. Calculate bearing load with NEMA minimum V-belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate.
- I. Sound Power Levels: To NEMA MG 1.
- J. Nominal Efficiency: Meet or exceed values at full load and rated voltage when tested in accordance with IEEE 112.
- K. Nominal Power Factor: Meet or exceed values at full load and rated voltage when tested in accordance with IEEE 112.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Motors shall be open drip-proof type, except where specifically noted otherwise, or otherwise required by use or environment.
- B. Motors 1 horsepower and larger shall be premium efficiency type in compliance with NEMA MG 1-12.55A.
- C. When motor starters are furnished under Division 15, they must meet the requirements of Division 16.

3.2 MOTOR SERVICE FACTORS

- A. All motors to have 1.15 minimum service factor

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Nameplates.
- B. Tags.
- C. Pipe Markers.

1.2 RELATED SECTIONS

- A. Section 15010 - Basic Mechanical Requirements.
- B. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. ASME A13.1 - Scheme for the Identification of Piping Systems.

1.4 SUBMITTALS FOR REVIEW

- A. Product Data: Submit list of wording, symbols, letter size, and color coding for mechanical identification.
- B. Submit manufacturer's installation instructions.

1.5 SUBMITTALS AT PROJECT CLOSEOUT

- A. Project Record Documents: Record actual locations of tagged valves; include valve tag numbers.
- B. Submit valve chart and schedule, including valve tag number, location, and function.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. Plastic Nameplates: Laminated three-layer plastic with engraved white letters on dark contrasting background color.
- B. Examples: "Water Heater No. 1," "Exhaust Fan F-2," "Air Handling Unit AHU-1," etc.

2.2 VALVES AND PUMPS

- A. Plastic Tags: Laminated three-layer plastic with engraved white letters on dark contrasting background color. Tag size minimum 1-1/2 inch diameter.

- B. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.
- C. Examples: Plumbing valves: "P-1," "P-2," "P-3," etc.; heating valves: "H-1," "H-2," "H-3," etc.; pumps: "PMP-1," "PMP-2," "PMP-3," etc.

2.3 PIPING

- A. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering, and indicating flow direction arrow and fluid being conveyed. Bradysnap-on, Seton or approved.
- B. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings. Bradystrap-on, Craftmark, Seton or approved.
- C. Examples: "HWS→", "HWR←", "HW→", "CW→", etc.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install identifying devices after completion of coverings and painting.
- B. Plastic Nameplates: Install with corrosive-resistant mechanical fasteners, or adhesive.
- C. Tags: Install using corrosive-resistant chain. Number tags consecutively by location.
- D. Plastic Pipe Markers: Install in accordance with manufacturer's instructions.
- E. Plastic Tape Pipe Markers: Install complete around pipe in accordance with manufacturer's instructions.
- F. Identify pumps, heat transfer equipment, tanks and water treatment devices with plastic nameplates. Small devices, such as in-line pumps, may be identified with tags.
- G. Controls: Identify control panels and major control components outside panels with plastic nameplates.
- H. Valves: Identify valves in main and branch piping with tags.
- I. Piping: Identify piping, concealed or exposed. Tags may be used on small diameter piping. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and "T", at each side of penetration of structure or enclosure, and at each obstruction.

3.2 VALVE CHART AND SCHEDULE

- A. Provide valve chart and schedule in Operation and Maintenance Manual.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Restraints for seismic loads on mechanical equipment, piping, and ductwork.

1.2 RELATED WORK

- A. Section 15010 - Basic Mechanical Requirements.
- B. Section 15140 - Supports and Anchors.
- C. Section 15510 - Hydronic Piping.
- D. Section 15540 - HVAC Pumps.
- E. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. International Building Code, Latest Locally Adopted Edition.

1.4 QUALITY ASSURANCE

- A. Maintain International Building Code criteria for seismic restraints for mechanical systems and equipment.

1.5 SUBMITTALS FOR REVIEW

- A. Indicate seismic restraints with static and dynamic loads, on shop drawings.
- B. Seismic Restraint Calculations and Shop Drawings:
 - 1. Contractor shall submit structural calculations and structurally engineered shop drawings for seismic restraint of all new mechanical components and equipment, including ductwork and piping. Calculations to be performed in accordance with the requirements of Chapter 16 of the 2009 International Building Code and are to be stamped by a registered professional engineer licensed in the State of Alaska.
 - 2. Seismic Restraint design to be based on Seismic Occupancy Category III and Seismic Design Category D.

1.6 SUBMITTALS AT PROJECT CLOSEOUT

- A. Submit manufacturer's certificate that earthquake restraints are properly installed and properly adjusted to meet or exceed specified requirements.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Mason Industries, Vibration Mountings and Control, or approved equal.
- B. Substitutions: Under provisions of Division 1.

2.2 EXPANSION ANCHORS

- A. Stud or female wedge anchors, Hilti-Kwik Bolt II, Mason Type SAB, or equal.

PART 3 - EXECUTION

3.1 FABRICATION

- A. Equipment manufacturer responsible to design equipment so that strength and anchorage of interior components exceeds force to restrain and anchor the equipment to support structure.

3.2 EXPANSION ANCHORS

- A. Install expansion anchors with bridge bearing neoprene collars in bolt hole or fill gaps between anchor and bolt hole with air-cured epoxy.

3.3 EQUIPMENT REQUIREMENTS

- A. Adequately anchor equipment weighing more than 100 pounds to resist lateral earthquake forces. Tank weights shall include contents.
- B. Use procedure references and specified in 2009 International Building Code under Chapter 16, for calculating forces acting on equipment anchors.

3.4 PIPING REQUIREMENTS

- A. Provide braces on piping to preclude damage during earthquake activity. Brace piping grouped for support on trapeze-type hangers at the same intervals as determined by the smallest diameter pipe of the group. Do not fasten braces to two dissimilar parts of a building that may respond in a different mode during an earthquake, i.e., a wall and a roof.
- B. Do not use bracing rigidly attached to pipe flanges, or similar, where it would interfere with thermal expansion of piping.
- C. Do not use branch lines for bracing.
- D. Brace vertical runs of piping at not more than 10-foot vertical intervals. Locate vertical braces above the center of gravity of the span being braced.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Piping insulation.
- B. Jackets and accessories.

1.2 RELATED SECTIONS

- A. Section 15010 - Basic Mechanical Requirements.
- B. Section 15190 - Mechanical Identification.
- C. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. International Building Code, Latest Locally Adopted Edition.
- B. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulation Cement.
- C. ASTM C335 - Test Method for Steady State Heat Transfer Properties of Horizontal Pipe Insulation.
- D. ASTM C449 - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement.
- E. ASTM C547 - Standard Specification for Mineral Fiber Preformed Pipe Insulation.
- F. ASTM C921 - Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation.
- G. ASTM D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
- H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- I. ASTM E96 - Standard Test Method for Water Vapor Transmission of Materials.
- J. NAIMA National Insulation Standards.

1.4 SUBMITTALS FOR REVIEW

- A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service and locations.

1.5 SUBMITTALS FOR INFORMATION

- A. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years experience.
- B. Applicator Qualifications: Company specializing in performing the work of this section with minimum three years experience.
- C. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.

1.7 REGULATORY REQUIREMENTS

- A. Conform to maximum flame spread/smoke developed rating of 25/50 in accordance with ASTM E84.

1.8 DELIVERY, STORAGE, AND PROTECTION

- A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Maintain ambient conditions required by manufacturers of each product.
- B. Maintain temperature before, during, and after installation for minimum of 24 hours.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Armstrong, Certainteed, Manville, Knauf, Owens Corning.
- B. Substitutions: Under provisions of Division 1.

2.2 INSULATION

- A. Type A: Glass fiber insulation; ASTM C547; rigid molded, noncombustible.
 - 1. 'k' value: ASTM C335, 0.24 at 100 degrees F.
 - 2. Maximum Service Temperature: 350 degrees F.
 - 3. Maximum Moisture Absorption: 0.2 percent by volume.

2.3 JACKETS

- A. Interior Applications:
 - 1. Vapor Barrier Jackets: ASTM E96; Kraft reinforced foil vapor barrier with self-sealing adhesive joints.
 - 2. PVC Jackets: ASTM D1784; One piece, premolded type fitting covers.
 - 3. Canvas Jackets: ASTM C921; UL listed, treated cotton fabric, 6 oz/sq yd.

2.4 ACCESSORIES

- A. Insulation Bands: 3/4 inch wide; 0.015 inch thick galvanized steel.
- B. Insulating Cement: ASTM C195; hydraulic setting mineral wool.
- C. Finishing Cement: ASTM C449.
- D. Fibrous Glass Cloth: Untreated; 9 oz/sq yd weight.
- E. Adhesives: Compatible with insulation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.2 INSTALLATION

- A. General.
 - 1. Install materials in accordance with manufacturer's instructions.
 - 2. On exposed piping, locate insulation and cover seams in least visible locations.
 - 3. Provide a shield, not less than 12" long of 18 gauge galvanized steel, 180 degree segments between piping support and hanger.
 - 4. Provide an insert, not less than 6 inches long, of same thickness and contour as adjoining insulation, between support shield and piping, but under the finish jacket, on piping 2 inches diameter or larger, to prevent insulation from sagging at support points. Inserts shall be cork or other heavy density insulating material suitable for the planned temperature range. Factory fabricated inserts may be used.
 - 5. Neatly finish insulation at supports, protrusions, and interruptions.

B. Hot Piping Requirements (fluids above ambient temperature):

1. Insulation:

- a. On piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation at such locations. Insulate flanges and unions at equipment when fluid temperature exceeds 140 degrees F.
- b. Insulate fittings, joints, and valves with insulation material and thickness as scheduled.

2. Jackets:

- a. Staples may be used to seal jackets.
- b. Cover insulation on fittings with premolded PVC fitting covers.
- c. Indoor, Concealed Applications: Finish with glass cloth and adhesive.
- d. Indoor, Exposed Applications: Finish with canvas jacket; size for finish paint application.

3.3 SCHEDULE

PIPING	TYPE	PIPE SIZE	INSULATION THICKNESS
Heating Water Supply and Return	A	THRU 2"	1"
	A	OVER 2"	1-1/2"

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Ductwork insulation.
- B. Insulation jackets.

1.2 RELATED SECTIONS

- A. Section 15010 - Basic Mechanical Requirements.
- B. Section 15190 - Mechanical Identification.
- C. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. International Building Code, Latest Locally Adopted Edition.
- B. ASTM C518 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- C. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- E. NAIMA National Insulation Standards.
- F. SMACNA - HVAC Duct Construction Standards - Metal and Flexible.
- G. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials.

1.4 SUBMITTALS FOR REVIEW

- A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service and locations.

1.5 SUBMITTALS FOR INFORMATION

- A. Manufacturer's Instructions: Indicate installation procedures which ensure acceptable workmanship and installation standards will be achieved.

1.6 QUALITY ASSURANCE

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

- B. Applicators Qualifications: Company specializing in performing the work of this section with minimum three years experience.

1.7 REGULATORY REQUIREMENTS

- A. Materials: Flame spread/smoke developed rating of 25/50 in accordance with ASTM E84.

1.8 DELIVERY, STORAGE, AND PROTECTION

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

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.
- B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS - INSULATION

- A. Armstrong, Certainteed, Manville, Knauf, Owens Corning.
- B. Substitutions: Under provisions of Division 1.

2.2 INSULATION

- A. Type B: Rigid glass fiber insulation; ASTM C612, rigid, noncombustible.
 - 1. 'k' value: ASTM C518, 0.24 at 75 degrees F.
 - 2. Maximum Service Temperature: 250 degrees F.
 - 3. Maximum Moisture Absorption: 0.20 percent by volume.
 - 4. Density: 3.0 lb/cu ft.

2.3 ACCESSORIES

- A. Adhesives: Waterproof fire-retardant type.
- B. Indoor Jacket: U.L. Listed 6 oz/sq yd canvas.
- C. Lagging Adhesive: Fire resistive to ASTM E84.

- D. Impale Anchors: Galvanized steel, 12 gauge, self-adhesive pad.
- E. Joint Tape: Glass fiber cloth, open mesh.
- F. Tie Wire: Annealed steel, 16 gauge.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that ductwork has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.2 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. Install in accordance with NAIMA National Insulation Standards.
- C. Provide insulation with vapor barrier when air conveyed may be below ambient temperature.
- D. Exterior Insulation (Type B) 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 adhesive or mechanical fasteners where necessary to prevent sagging. 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.
- E. Continue insulation with vapor barrier through penetrations.

3.3 SCHEDULE

DUCTWORK	TYPE	INSULATION THICKNESS	FINISH
Combustion Air Duct	B	1"	Glass Cloth & Lag Adhesive

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Heating water and glycol piping system.
- B. Equipment drains and overflows.
- C. Flanges, unions, and couplings.
- D. Valves.

1.2 SUBMITTALS FOR REVIEW

- A. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories. Provide manufacturer's catalog information. Indicate valve data and ratings.
- B. Shop Drawings: Indicate pipe materials used, jointing methods, supports, floor and wall penetration seals. Indicate installation, layout, weights, mounting and support details, and piping connections.

1.3 SUBMITTALS AT PROJECT CLOSEOUT

- A. Project Record Documents: Record actual locations of piping, valving, and outlets.
- B. Operation Data: Include installation instructions, lubrication instructions, and assembly views.
- C. Maintenance Data: Include maintenance and inspection data, replacement part numbers and availability, and service depot location and telephone.
- D. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
- E. Certificates: Include testing certification for heating water and glycol piping system.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing the work of this section with minimum three years experience.
- C. Valves: Manufacturer's name and pressure rating marked on valve body.
- D. Welding Materials and Procedures: Conform to ASME SEC IX and applicable state labor requirements.

- E. Welders Certification: In accordance with ASME Sec IX.

1.5 DELIVERY, STORAGE, AND PROTECTION

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

PART 2 - PRODUCTS

2.1 HEATING WATER AND GLYCOL PIPING

- A. Steel Pipe: ASTM A53, Schedule 40, black. Fittings: ASTM B16.3, malleable iron or ASTM A234, forged steel welding type fittings. Joints: Screwed, or AWS D1.1, welded.
- B. Copper Tubing: ASTM B88, Type L, hard drawn. Fittings: ANSI/ASME B16.18 cast brass or ASME B16.22 solder wrought copper. Joints: ASTM B32, solder, Engelhard "Silvabrite 100" or other approved lead-free solder.

2.2 EQUIPMENT DRAINS AND OVERFLOWS

- A. Steel Pipe: ASTM A53, Schedule 40 galvanized. Fittings: Galvanized cast iron, or ASTM B16.3 malleable iron. Joints: Screwed.
- B. Copper Tubing: ASTM B88, Type L, hard drawn. Fittings: ASME B16.18 cast brass, or ASME B16.22 solder wrought copper. Joints: ASTM B32, solder, Engelhard "Silvabrite 100" or other approved lead-free solder.

2.3 FLANGES, UNIONS, AND COUPLINGS

- A. Pipe Size 2 Inches and Under: 150 psig malleable iron unions for threaded ferrous piping; bronze unions for copper pipe, soldered joints.
- B. Pipe Size Over 2 Inches: 150 psig forged steel slip-on flanges for ferrous piping; bronze flanges for copper piping; spiral wound stainless steel and graphite gaskets.
- C. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier, Epco or approved.

2.4 VALVES

- A. Acceptable Manufacturers: Nibco, Milwaukee, Hammond, Watts, Stockham.
- B. Substitutions: Products shall be as approved under provisions of the General Conditions, Supplementary Conditions, and applicable Division 1 Sections.
- C. Select valves of the best quality and type suited for the specific service and piping system used. Minimum working pressure rating 125 psig steam or 150 psig W.O.G.
- D. Ball Valves.
 - 1. Up to and Including 3 Inches: Two piece bronze or brass body, 400 psi W.O.G., full port through 2" size, reduced port above 2" size, stainless steel or bronze ball, PVDF or teflon seats and stuffing box ring, lever handle, solder or threaded ends. Seat material to be compatible with fluid handled at system operating temperature, PVDF for glycol, Teflon for water.
 - 2. Over 3 Inches: Two piece bronze body, 400 psi W.O.G., reduced port, 316 stainless steel ball, PVDF or teflon seat and stuffing box seals, lever handle threaded or flanged. Seat material to be compatible with fluid handled at system operating temperature, PVDF for glycol, Teflon for water.
- E. Butterfly Valves.
 - 1. Over 4 Inches: Iron body, bronze disc for 200 psig shutoff, resilient replaceable seat for service to 250 degrees F wafer or lug ends, extended neck, infinite position lever handle with memory stop.
- F. Swing Check Valves.
 - 1. Up to and Including 3 Inches: Bronze body, bronze trim horizontal swing disc, solder or threaded ends.
 - 2. Over 3 Inches: Iron body, bronze trim, horizontal swing disc, renewable disc and seat, flanged ends.
- G. Spring Loaded Check Valves.
 - 1. Up to and Included 2 Inches: Bronze body, spring actuated, stainless steel spring, renewable seat and disc, solder or threaded ends.
 - 2. Over 2 Inches: Iron body, spring actuated, stainless steel spring, renewable seat and disc, and wafer or flanged ends.

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 to equipment with flanges or unions.
- D. After completion, fill, clean, and treat systems. Refer to Section 15545.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric waterway connections whenever joining dissimilar metals.
- C. Route piping in orderly manner, plumb and parallel to building structure, and maintain gradient.
- D. Install piping to conserve building space, and not interfere with use of space and other work.
- E. Group piping whenever practical at common elevations.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- G. For piping earthquake restraint, refer to Section 15250.
- H. Provide clearance for installation of insulation, and access to valves and fittings.
- I. Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain top of pipe level.
- J. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
- K. Install valves with stems upright or not to exceed horizontal. Inverted stems not allowed.

3.3 APPLICATION

- A. Install unions downstream of valves at equipment or apparatus connections. Do not use direct welded or threaded connections to valves, equipment or other apparatus.
- B. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

- C. Provide spring loaded check valves on discharge of water pumps.
- D. Use lug end butterfly valves to isolate equipment.
- E. Provide 3/4 inch ball drain valves at main shut-off valves, low points of piping, bases of vertical risers, and at equipment.

3.4 TESTING

- A. Heating Water And Glycol Piping System.
 - 1. Test all heating piping hydrostatically at 100 psig or 150% of working pressure, whichever is greater, for a period of four hours. Observe piping during this period and repair all leaks.
 - 2. Air Test.
 - a. In general, air testing is not acceptable. In the event of conditions that would subject the pipe to freezing, however, an equivalent air pressure test may be used after obtained approval from the Contracting Agency.
 - b. Make the air test by attaching an air compressor testing apparatus to any suitable opening, and after closing all other inlets and outlets to the system, force air into the system until there is uniform gauge pressure of 100 pounds per square inch, or 150% of working pressure, but not more than 150 psig. The air pressure shall be held without introduction of additional air for a period of at least eight hours. Locate all leaks by applying soap solution to all joints. Repair all leaks.
 - 3. Provide certification that testing has been accomplished. Testing certification to be included in operation and maintenance manuals.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Copper tube boilers.

1.2 REFERENCES

- A. Underwriters Laboratories:
 - 1. UL 795 Commercial-Industrial Gas Heating Equipment.
- B. American Society of Mechanical Engineers:
 - 1. ASME Section IV - Boiler and Pressure Vessel Code - Heating Boilers
 - 2. ASME CSD-1 – Controls and Safety Devices for Automatically Fired Boilers
- C. Hydronics Institute:
 - 1. HI - Testing and Rating Standard for Heating Boilers.
- D. National Fire Protection Association:
 - 1. NFPA 54 - National Fuel Gas Code.

1.3 QUALITY ASSURANCE

- A. Boiler
 - 1. Construction shall conform to ASME Section IV and UL 795. The boiler shall bear the ASME "H" stamp and be National Board Listed for 160 psi working pressure and 250°F.
 - 2. Gas Train and Safety Controls: Conform to requirements of UL 795 and CSD-1.
- B. Provide services of manufacturer's authorized and factory-trained representative to perform the following functions:
 - 1. Inspect and verify installation.
 - 2. Checkout and startup/supervision. Submit startup report.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section.
- B. Installer: Company specializing in performing work of this section.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with Contract Documents.
- B. Accept equipment and accessories on site in factory shipping packaging. Inspect for damage.
- C. Protect equipment from damage by leaving packing in place until installation.
- D. Equipment must be protected from inclement weather, flooding, electrical surges, etc.

1.6 WARRANTY

- A. Boiler shall have the following warranties;
 - 1. The heat exchanger shall carry a 3-year limited warranty, and a 10-year warranty against thermal shock.
 - 2. The burner shall carry a 10-year limited warranty.
 - 3. All other parts shall have a 1-year limited warranty.

1.7 FIELD MEASUREMENTS

- A. Verify field measurements prior to installation.

1.8 START-UP OF EQUIPMENT

- A. Operating and Maintenance Instructions are to be furnished with each unit.
- B. The boiler shall be factory assembled and fire tested requiring only connections to the water circulating system (supply & return), fuel, electrical power, exhaust vent and air inlet (as specified/shown in contract drawings).
- C. Factory-authorized representatives shall perform start-up service on each unit.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Design Basis Product
 - 1. Thermal Solutions Boiler, Evolution Model EVS 2000S. Refer to the Equipment Schedule in the Contract Drawings for the specific criteria.
- B. RBI Futura III.
- C. Laars RHEOS.

2.2 GENERAL REQUIREMENTS

A. Boiler

1. Factory-packaged unit, complete with jacket, gas manifold, burner and controls mounted and wired, as specified in this Section.
2. The complete boiler shall be factory fire tested by the manufacturer and a copy of the firetest report shall be supplied with the unit.
3. Heat exchangers shall be constructed in accordance with Section IV of the ASME code, with straight, integral copper-finned tube construction and a gasketless header at top and bottom.
4. The heat exchanger design must allow for individual access and replacement of each tube.
5. The heat exchanger shall encompass the entire burner and be enclosed in stainless steel with a fully water-backed tube sheet.
6. Each boiler shall be contained in a minimum 16-gauge negative pressure steel jacket protected with a powder-coated finish. The unit shall be able to operate with any jacket panels removed during inspection or maintenance periods.

C. Fuel Burning System

1. Radiant non-corroding ceramic burner, with no moving parts.
2. Burner operation shall be Full Modulation with minimum 3:1 turn down utilizing a VFD and air-fuel ratio valve for dependable, repeatable modulation.
3. Interrupted-type mixed fuel/air pilot system with electric spark-to-pilot ignition that utilizes a UV scanner to prove pilot before main gas valves open.
4. The entire firing control sequence shall be monitored by a UL approved, commercial-type microprocessor flame safeguard programmer with first out fault annunciation and diagnostic indicator lights. Furnish pre-purge and post-purge timing. Shut down burner in the event of ignition pilot and/or main flame failure with manual reset.
5. Full frontal access port shall be provided for the control area.
6. The boiler will be equipped with a non-sparking blower manufactured with a cast aluminum housing.
7. Combustion air pressure switch shall be provided.

8. The blower shall be equipped with a replaceable combustion air filter, 99% efficient to one micron. The unit will have the capability of sealed, direct, or conventional venting. Air inlet dampers and vacuum relief dampers are not required for proper operation.
9. The sound level for a single boiler shall be no more than 60 Db.

D. Gas Train

1. Gas train shall be UL/FM/CSD-1 compliant.
2. The gas train shall be certified for 7" W.C. Natural gas.
3. Pilot and main gas pressure regulator.
4. Automatic main and redundant gas valves.
 - a. Motorized automatic main and redundant gas valves.
 - b. Motorized automatic main and redundant gas valves.
5. Leak test valves downstream of each gas valve.
6. High and low gas pressure switches.
7. Manual shut off valve upstream of burner and downstream of last gas valve.

E. Electrical Input

1. Electrical input to each boiler shall be 208v/3ph/60hz. The manufacturer will mount the control transformer and fuses inside the unit, as needed, before it leaves the factory. Single-point electrical hook-up on every unit is required; separate power wiring and control wiring is not acceptable.
2. The boilers must utilize a commercial quality 120v/1ph control system.

F. Water Trim and Controls

1. ASME rated pressure relief valve set at 125 30 psig.
2. Combination water pressure and temperature gage. Furnish graduated pressure gauge scale from 1-1/2 to 3 times of pressure relief valve setting.
3. A water flow switch to prevent burner operation during low water flow conditions.
4. An adjustable high limit temperature controller with manual reset to prevent water temperature from exceeding a safe system temperature.
5. An adjustable operating temperature controller.

G. Venting

1. It shall be AL 29-4C, positive pressure type vent material. Single wall vent is acceptable where allowed by local code.

2.3 PERFORMANCE

- A. The boiler shall have a minimum of 88% thermal efficiency as listed in the Equipment Schedule of the Contract Documents.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install the boiler in accordance with manufacturer's printed instructions.
- B. Install skid plumb and level, to plus or minus 1/16 inch over base.
- C. Maintain manufacturer's recommended clearances around and over equipment, and as required by local Code.
- D. Arrange all electrical conduit, piping, exhaust vent, and air intake with clearances for burner removal and service of all equipment.
- E. Connect exhaust vent to boiler vent connection, full size of outlet.
- G. Connect fuel piping in accordance with NFPA 54.
- H. Connect fuel piping to unit, full size, at gas train inlet.
- I. Use full size (minimum) pipe/tubing on all gas vent connections.
- J. Connect water piping, full size, to supply and return connections.
- K. Install all piping accessories per the details on the contract drawings.
- L. Install discharge piping from relief valves and drain valves to nearest floor drain.
- M. Connect appropriate electrical power to the boiler.
- N. A dedicated disconnect shall be provided for each individual piece of equipment.

3.2 FIELD QUALITY CONTROL

- A. Provide services of manufacturer's authorized representative as specified in this Section.

- B. Perform combustion test including boiler firing rate, gas flow rate, heat input, burner manifold gas pressure, percent carbon monoxide, percent oxygen, percent excess air, flue gas temperature at outlet, ambient temperature, net stack temperature, percent stack loss, percent combustion efficiency, and heat output. Perform test at minimum, mid-range, and high fire.

3.3 CLEANING

- A. MUST isolate boiler when any cleaning or testing of system piping is being preformed.
- B. Flush and clean boilers upon completion of installation, in accordance with manufacturer's start-up instructions.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Air vents.
- B. Air separators/purgers.
- C. Strainers.
- D. Combination pump discharge valves.
- E. Combination balancing/shut-off valves.
- F. Relief valves.
- G. Glycol system.

1.2 RELATED SECTIONS

- A. Section 15010 - Basic Mechanical Requirements
- B. Section 15510 - Hydronic Piping.
- C. Section 15545 - Chemical Treatment: Pipe Cleaning.
- D. Section 15980 - Instrumentation: Thermometers and Gauges.
- E. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. ASME - Boilers and Pressure Vessels Codes, Section 8-D Rules for Construction of Pressure Vessels.

1.4 SUBMITTALS FOR REVIEW

- A. Product Data: Provide manufacturers literature and illustrations for all components indicating size, dimensions, rough-in requirements, and installation instructions.
- B. Shop Drawings: Indicate general assembly of components, mounting and installation details.
- C. Valve Schedule: Provide valve schedule for all combination balancing/shut-off valves. Schedule shall include valve size, location, related equipment, design GPM, minimum and maximum flow rate per catalog data, and pressure drop at design GPM (full open).

1.5 SUBMITTALS AT PROJECT CLOSEOUT

- A. Operation Data: Include installation instructions, assembly views, lubrication instructions, and assembly views.
- B. Maintenance Data: Include maintenance and inspection data, replacement part numbers and availability, and service depot location and telephone.
- C. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

- A. Manufacturer: For each product specified, provide components by same manufacturer throughout.

1.7 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver, store, protect and handle products to site under provisions of Division 1.
- B. Accept specialties on site in original factory packaging with labeling in place. Inspect for damage.
- C. Provide temporary protective coating on cast iron and steel valves.
- D. Provide temporary end caps and closures on specialties and fittings. Maintain in place until installation.

PART 2 - PRODUCTS

2.1 AIR VENTS

- A. Acceptable Manufacturers: Hoffman, Maid-O-Mist, Braukman.
- B. Substitutions: Under provisions of Division 1.
- C. Manual Type: Short vertical sections of 2 inch diameter pipe to form air chamber, with 1/8 inch brass needle valve at top of chamber.
- D. Float Type: Brass or semi-steel body, copper float, stainless steel valve and valve seat; suitable for system operating temperature and pressure; with isolating valve.
- E. Washer Type: Brass with hydroscopic fiber discs, vent ports, adjustable cap for manual shut-off, and integral spring loaded ball check valve.
- F. Air vents to be designed for 125 psig operating pressure.

2.2 AIR SEPARATORS/PURGERS

- A. Acceptable Manufacturers: Armstrong, Bell & Gossett, Taco.
- B. Substitutions: Under provisions of Division 1.
- C. Combination Air Separators/Strainers: Steel, tested and stamped in accordance with ASME Section 8-D, for 125 psig operating pressure, with galvanized steel integral strainer with 3/16 inch perforations, tangential inlet and outlet connections, and internal stainless steel air collector tube.

2.3 STRAINERS

- A. Acceptable Manufacturers: Nibco, Mueller, Sarco, Crane, Conbraco/RP & C.
- B. Substitutions: Under provisions of Division 1.
- C. Y-TYPE STRAINER - BRONZE 3" & SMALLER: Strainer body to be ASTM B584 or B62 bronze with threaded or solder end connections and 20 mesh type 304 stainless steel screen or .033 inch perforated type 304 stainless steel screen accessible without removing the strainer from the line.
 - 1. Acceptable valves: NIBCO T-221-A (threaded), NIBCO S-221-A (solder).
- D. Y-TYPE STRAINER - IRON 2" & SMALLER: Strainer to be Class 250 threaded, tapped screw-in bonnet with plug and stainless steel screen. Body and bonnet to be ASTM A126. Screen must be accessible without removing the strainer from the line.
 - 1. Acceptable valves: NIBCO T-751-A.

2.4 COMBINATION PUMP DISCHARGE VALVES

- A. Acceptable Manufacturers: Armstrong, Bell & Gossett.
- B. Substitutions: Under provisions of Division 1.
- C. Valves: Straight pattern, flanged cast-iron valve body with bolt-on bonnet for 175 psig operating pressure, non-slam check valve with spring-loaded bronze disc and seat, stainless steel stem, and calibrated adjustment permitting flow regulation.

2.5 COMBINATION BALANCING/SHUT-OFF VALVES

- A. Acceptable Manufacturers: Armstrong Circuit Balancing Valve, Bell & Gossett Circuit Setter Plus, T/A.
- B. Substitutions: Under provisions of Division 1.

- C. Combination Balancing, Shut-off, and Flow Indication Valves: Solder, threaded or flanged piping connections; 125 psig working pressure; leak tight shut-off at rated working pressure.
- D. Units to have two balancing meter connections. Each connection to be equipped with a shut-off valve and protective cap.
- E. Units 2 inches and smaller to have threaded and capped drain connection.
- F. Bronze construction for units 2 inches and smaller. Bronze or ductile iron for units larger than 2 inches.
- G. Units to be equipped with a memory stop feature, which allows complete shut-off and return to set position without readjustment.

2.6 RELIEF VALVES

- A. Acceptable Manufacturers: Watts.
- B. Substitutions: Under provisions of Section Division 1.
- C. Bronze body, teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, capacities ASME certified and labeled.

2.7 GLYCOL SYSTEM (SNOW MELT)

- A. Glycol Solution: Inhibited propylene glycol and water solution pre-mixed 60-40 suitable for operating temperatures of -60 degrees F. Dowfrost.

PART 3 - EXECUTION

3.1 INSTALLATION AND APPLICATION

- A. Install specialties in accordance with manufacturer's instructions to permit intended performance.
- B. Where large air quantities can accumulate, provide enlarged air collection standpipes.
- C. Provide manual air vents at system high points and as indicated.
- D. Provide air separator on suction side of system circulation pump.
- E. Provide valved drain and hose connection on strainer blow down connection.
- F. Support pump fittings with floor mounted pipe and flange supports.
- G. Select combination balancing/shut-off valve size based on design GPM at valve and not installed line size. Select valve for design flow rate within range of valves catalogs minimum and maximum flows, maximum 1 psi pressure drop.

- H. Provide relief valves on low pressure side of heat exchangers.
- I. Select system relief valve capacity so that it is greater than make-up pressure reducing valve capacity. Select equipment relief valve capacity to exceed rating of connected equipment.
- J. Pipe relief valve outlet to glycol tank.
- K. Where one line vents several relief valves, make cross sectional area equal to sum of individual vent areas.
- L. Clean and flush glycol system before adding glycol solution. Refer to Section 15545.
- M. Use pre-mixed water/glycol solutions only.
- N. Feed glycol solution to system through make-up line with pressure regulator, venting system high points. Set to fill at 12 psig.
- O. Perform tests determining strength of glycol and water solution and submit written test results.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Vertical in-line pumps.

1.2 RELATED SECTIONS

- A. Section 15170 - Motors.
- B. Section 15260 - Piping Insulation.
- C. Section 15510 - Hydronic Piping.
- D. Section 15515 - Hydronic Specialties.
- E. Division 16 - Electrical.
- F. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. UL 778 - Motor Operated Water Pumps.
- B. NFPA 70 - National Electrical Code.

1.4 SUBMITTALS

- A. Submit product data under provisions of Division 1.
- B. Submit certified pump curves showing performance characteristics with pump and system operating point plotted. Include NPSH curve when applicable. Include electrical characteristics and connection requirements.
- C. Submit manufacturer's installation instructions under provisions of Division 1.

1.5 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of Division 1.
- B. Include installation instructions, assembly views, lubrication instructions, and replacement parts list.

1.6 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacture, assembly, and field performance of pumps with minimum three years experience.

- B. Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, and operate within 25 percent of midpoint of published maximum efficiency curve.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Division 1.
- B. Provide temporary inlet and outlet caps on pumps and maintain in place until installation.

1.8 EXTRA MATERIALS

- A. Provide one extra set of mechanical seals for each pump.

PART 2 - PRODUCTS

2.1 VERTICAL IN-LINE PUMPS

- A. Acceptable Manufacturers: Taco, Armstrong.
- B. Substitutions: Under provisions of Division 1.
- C. Type: Vertical, single stage, close coupled, radially split casing, for in-line mounting, for 175 psig working pressure.
- D. Casing: Cast iron, with suction and discharge gauge port, casing wear ring, seal flush connection, drain plug, flanged suction and discharge.
- E. Impeller: Bronze, fully enclosed, keyed directly to motor shaft or extension.
- F. Shaft: Carbon steel with stainless steel impeller cap screw or nut and bronze sleeve.
- G. Seal: Silicon carbide rotating against a stationary silicon carbide seat. PDM secondary seal, 225 degrees F maximum continuous operating temperature.
- H. Performance: See schedule on drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install pumps in accordance with manufacturer's instructions.
- B. Provide access space around pumps for service. Provide no less than minimum as recommended by manufacturer.

- C. Decrease from line size with long radius reducing elbows or reducers. Support piping adjacent to pump such that no weight is carried on pump casings.
- D. Provide line sized shut-off valve on pump suction, and line sized soft seat check valve and balancing valve on pump discharge.
- E. Lubricate pumps before start-up.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Cleaning of hydronic piping systems.
- B. Treatment for closed hydronic systems.

1.2 RELATED SECTIONS

- A. Section 15515 - Hydronic Specialties: Glycol system.
- B. Other sections referring to or affecting Work of this Section.

1.3 SUBMITTALS

- A. Submit shop drawings under provisions of Division 1.
- B. Submit product data under provisions of Division 1.
- C. Submit product data indicating cleaning materials, chemicals.
- D. Submit manufacturer's installation instructions under provisions of Division 1.
- E. Submit manufacturer's field reports under provisions of Division 1.
- F. Submit reports indicating analysis of system water after cleaning and after treatment.

1.4 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of Division 1.

1.5 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum three years experience. Company shall have local representatives with water analysis laboratories and full time service personnel.
- B. Conform to applicable code for addition of non-potable chemicals to building mechanical systems, and for delivery to public sewage systems.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. System Cleaner:
 - 1. Liquid alkaline compound with emulsifying agents and detergents to remove grease and petroleum products; trisodium phosphate.

- B. Closed Hot Water Heating System Treatment:
 - 1. Sequestering agent to reduce deposits and adjust pH; polyphosphate.
 - 2. Corrosion inhibitors; liquid boron-nitrite, sodium nitrite and borax, sodium tolyltriazole, low molecular weight polymers, phosphonates, sodium molybdate, or sulfites.
 - 3. Conductivity enhancers; phosphates or phosphonates.
 - 4. All chemicals used to treat a system must be listed by the manufacturer as compatible.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Systems shall be operational, filled, started, and vented prior to cleaning. Use water meter to record capacity in each system.
- B. Place terminal control valves in open position during cleaning.

3.2 CLEANING SEQUENCE

- A. Add cleaner to closed systems at concentration as recommended by manufacturer.
- B. Hot Water and Glycol Heating Systems: Apply heat while circulating, slowly raising temperature to 160 degrees F and maintain for 12 hours minimum. Remove heat and circulate to 100 degrees F or less; drain systems as quickly as possible and refill with clean water. Circulate for 6 hours at design temperatures, then drain. Refill with clean water and repeat until system cleaner is removed.
- C. Use neutralizer agents on recommendation of system cleaner supplier.
- D. Flush open systems with clean water for one hour minimum. Drain completely and refill.
- E. Remove, clean, and replace strainer screens.
- F. Inspect, remove sludge, and flush low points with clean water after cleaning process is completed. Include disassembly of components as required.

3.3 INSTALLATION

- A. Closed System Treatment:
 - 1. Introduce closed system treatment through bypass feeder when required or indicated by test.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Manufactured chimneys for gas fired equipment.
- B. Manufactured double wall chimneys for fuel fired equipment.

1.2 RELATED SECTIONS

- A. Section 15514 – Finned Water-Tube Boilers.
- B. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. ANSI Z223.1 (NFPA 54) - The National Fuel Gas Code.
- B. ASHRAE - Handbook, Equipment Volume, Chapter "Chimney, Gas, Vent, and Fireplace Systems."
- C. SMACNA - HVAC Duct Construction Standards - Metal and Flexible.
- D. UL 1738 – Venting Systems for Gas Burning Appliances, Categories II, III, and IV.
- E. International Fuel Gas Code – Latest Locally Adopted Addition.

1.4 DEFINITIONS

- A. Breeching: Vent Connector.
- B. Chimney: Primarily vertical shaft enclosing at least one vent for conducting flue gases outdoors.
- C. Smoke Pipe: Round, single wall vent connector.
- D. Vent: That portion of a venting system designed to convey flue gases directly outdoors from a vent connector or from an appliance when a vent connector is not used.
- E. Vent Connector: That part of a venting system that conducts the flue gases from the flue collar of an appliance to a chimney or vent, and may include a draft control device.

1.5 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Division 1.

- B. Submit shop drawings indicating general construction, dimensions, weights, support and layout of venting system(s). Submit layout drawings indicating plan view and elevations and a custom detail of the roof penetration installation.
- C. Submit product data indicating factory built chimneys, including dimensional details of components and flue caps, dimensions and weights.
- D. Submit manufacturer's installation instructions.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in the manufacture of products specified in this Section with minimum three years experience.

1.7 REGULATORY REQUIREMENTS

- A. Conform to the International Fuel Gas Code and ANSI Z223.1 code for installation of natural gas burning appliances and equipment.

PART 2 - PRODUCTS

2.1 CHIMNEY LINER SYSTEM

- A. Z-Vent Smoothcore, manufactured by Z-Flex.
- B. Substitutions: Under provisions of Division 1.
- C. The liner shall be made from 2 ply's of stainless steel strip which are spirally wound and formed to produce a continuous air tight triple lock mechanical seam.
- D. The liner shall be UL tested and listed to UL 1783; Venting systems for gas burning appliances category II, III, and IV.
- E. Provide accessories each bearing factory applied UL label.
 - 1. 90° Elbow.
 - 2. Rain Cap.
 - 3. Female gasket connector.

2.2 DOUBLE WALL METAL STACKS

- A. Acceptable Manufacturers: Z-Vent, Heat Fab Saf-T Vent CI Plus or equal.
- B. Provide double wall metal stacks, tested to UL 1738 and UL listed, for use with building heating equipment.
- C. Fabricate with 1 inch minimum air space between walls. Construct inner jacket of 28 gauge AL 29-4C, Type 430 Stainless Steel. Construct outer jacket of stainless steel 24 gauge.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with recommendations of ASHRAE-Handbook, Equipment Volume, Chapter "Chimney, Gas, Vent, and Fireplace Systems", and ANSI Z223.1 (NFPA 54).
- C. Install breechings with minimum of joints. Align accurately at connections, with internal surfaces smooth.
- D. Support breechings from building structure, rigidly with suitable ties, braces, hangers and anchors to hold to shape and prevent buckling. Support vertical breechings, chimneys, and stacks at 12 foot spacing, to adjacent structural surfaces, or at floor penetrations. Refer to SMACNA HVAC Duct Construction Standards - Metal and Flexible for equivalent duct support configuration and size.
- E. Pitch breechings with positive slope up from fuel-fired equipment to chimney or stack.
- F. Level and plumb chimney and stacks.
- G. Clean breechings, chimneys, and stacks during installation, removing dust and debris.
- H. At appliances, provide slip joints permitting removal of appliances without removal or dismantling of breechings, chimneys, or stacks.

3.2 SCHEDULE

<u>EQUIPMENT</u>	<u>BREECHING</u>	<u>CHIMNEY/STACK</u>
Boiler	Steel	1. Double wall metal stack exposed in Boiler Room. 2. Chimney liner system in Shaft through roof.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Flat plate type heat exchangers.
- B. Accessories and trim.

1.2 RELATED SECTIONS

- A. Section 15510 - Hydronic Piping.
- B. Section 15515 - Hydronic Specialties.
- C. Section 15975 - Direct Digital Control Systems.
- D. Section 15980 - Instrumentation.
- E. Section 15985 - Sequence of Operation.
- F. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. ANSI/ASME - Boilers and Pressure Vessels Code.

1.4 REGULATORY REQUIREMENTS

- A. Conform to Section 8D of the ANSI/ASME Boilers and Pressure Vessels Code for manufacture of tubular heat exchangers and heat exchanger shells.

1.5 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Division 1.
- B. Submit shop drawings and product data for manufactured products and assemblies required for this project.
- C. Indicate dimensions, locations, and size of tapings and performance data.
- D. Submit manufacturer's installation instructions under provisions of Division 1.
- E. Submit manufacturer's certificate under provisions of Division 1 that heat exchangers meet or exceed specified requirements.
- F. Submit design data in sufficient detail to verify that heat exchangers meet or exceed specified requirements.

1.6 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of Division 1.
- B. Include start up and shut down instructions, assembly drawings, and spare parts lists.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Division 1.
- B. Store and protect products under provisions of Division 1.
- C. Protect internals from entry of foreign material by temporary caps on flanged openings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS - FLAT PLATE HEAT EXCHANGERS

- A. Tranter, Bell & Gossett, GEA Flat Plate.
- B. Substitutions: Under provisions of Division 1.

2.2 FLAT PLATE HEAT EXCHANGERS

- A. Design: 125 psi design pressure, ASME label.
- B. Plates: Type 304 stainless steel; minimum plate thickness of .6 mm.
- C. Gaskets: Nitril rubber. All gaskets identical one-piece construction.
- D. Connections: 2" and smaller threaded stainless steel; above 2" studed port connections. Zinc-plated studs, nuts and washers.
- E. Frame: One-piece end frames. Movable end suspended from upper guide rail.
- F. Compression Bolts: Carbon steel.
- G. Plate Hanger: Type 304 stainless steel or carbon steel with zinc yellow chromate finish.
- H. Shroud: Top and sides of plate pack enclosed with an 18 gauge, Type 304 stainless steel shroud.
- I. Performance: See drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Pipe relief valve to nearest glycol tank.

3.2 WATER TO WATER HEAT EXCHANGER TRIM

- A. Water Inlets and Outlets: Thermometer wells, pressure gauge tapings.
- B. Heated Water Outlet: Thermometer well for temperature regulator sensor, ASME rated pressure and temperature relief valve, valved drain.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Variable Frequency Drives.

1.2 RELATED SECTIONS:

- A. Division 1 - Execution and Closeout Requirements.
- B. Section 15540 - HVAC Pumps.
- C. Division 16 - Electrical.

1.3 REFERENCES

- A. NEMA ICS 3.1 - Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable Speed Drive Systems.
- B. NEMA 250 - Enclosures for Electrical Equipment (1,000 Volts Maximum).
- C. NFPA 70 - National Electrical Code.

1.4 SUBMITTALS FOR REVIEW

- A. Division 1 - Shop Drawings, Product Data, and Samples: Procedures for submittals.
- B. Product Data: Provide catalog sheets showing voltage, controller size, ratings and size of switching and overcurrent protective devices, short circuit ratings, dimensions, and enclosure details.
- C. Shop Drawings: Indicate front and side views of enclosures with overall dimensions and weights shown; conduit entrance locations and requirements; and nameplate legends.

1.5 REGULATORY REQUIREMENTS

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

1.6 DELIVERY, STORAGE AND HANDLING

- A. Accept controllers on site in original packing. Inspect for damage.
- B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

- C. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to components, enclosure, and finish.

PART 2 – PRODUCTS:

2.1 DUAL VARIABLE FREQUENCY DRIVES IN SINGLE ENCLOSURE

A. General:

1. For lead/lag application provide two enclosed variable frequency drives in a single enclosure suitable for operating the indicated loads with a single point power connection. Conform to requirements of NEMA ICS 3.1, ANSI, IEEE, and Division 26. UL listed.
2. Variable frequency drive shall not emit either conducted or radiated RFI in excess of the limitations set forth in the FCC Rules and Regulations, Part 15, Subpart J.
3. ABB, Model ACH550-PFR2 or approved equal.

B. Ratings:

1. Displacement Power Factor: Between 1.0 and 0.95, lagging, over entire range of operating speed and load.
2. Operating Ambient: 32 degrees F to 104 degrees F.
3. Minimum Efficiency at Full Load: 96 percent.

C. Design:

1. Employ microprocessor based inverter logic isolated from power circuits.
2. Employ pulse width modulated or variable voltage inverter system.
3. Employ switching power supply operating off DC link.
4. Design for ability to operate controller with motor disconnected from output.

D. Product Options and Features:

1. Display: Provide integral digital display to indicate output voltage, output frequency, and output current.
2. Status Indicators: Provide indicators for overcurrent, overvoltage, ground fault, over temperature, and input power ON.
3. Motor and Drive Protection: Input line under voltage, input line over voltage, high bus voltage, current limit, phase loss, ground fault.

4. Volts per Hertz Adjustment: $\pm 10\%$.
 5. Current Limit Adjustment: 0 - 100 percent of rated.
 6. Acceleration Rate Adjustment: 3 - 280 seconds.
 7. Deceleration Rate Adjustment: 3 - 280 seconds.
 8. Provide HAND-OFF-AUTOMATIC selector switch and manual speed control.
 9. Input Signal: 4 - 20 mA DC or 0 - 10 mV DC. Coordinate with requirements of this section.
 10. Safety Interlocks: Provide terminals for remote contact to inhibit starting under both manual and automatic mode.
 11. Control Interlocks: Provide terminals for remote contact for allowing starting in automatic mode and monitoring of status and alarm.
 12. Disconnecting Means: Provide fused disconnect to disconnect input power to each controller. Provide fused disconnect for enclosure.
 13. Automatic Restart: When input power returns to normal following a power outage the controller, after a time delay, automatically restarts.
 14. BAS Trunk Interface: VFD shall be equipped with hardware/software to allow BAS to communicate directly with VFD.
- E. Fabrication:
1. Wiring Terminations: Match conductor materials and sizes indicated.
 2. Enclosure: NEMA 250, Type 1.
 3. Finish: Manufacturer's standard enamel.
- F. Source Quality Control:
1. Inspect and product test each product specified in this section.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that surface is suitable for controller installation.
- B. Do not install controller until building environment can be maintained within the service conditions required by the manufacturer.
- C. Verify that field measurements are as indicated on shop drawings and as instructed by the manufacturer.

3.2 INSTALLATION

- A. Install in accordance with NEMA ICS 3.1.
- B. Tighten accessible connection and mechanical fasteners after placing controller.
- C. Select and install overload heater elements in variable frequency controllers to match installed motor characteristics.
- D. Select and install overload heater elements in motor controllers to match installed motor characteristics.
- E. Provide engraved plastic nameplates; refer to Section 16195 for product requirements and location.
- F. Neatly type label inside each motor controller door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating. Place in clear plastic holder.

3.3 ADJUSTING

- A. Make final adjustments to installed controller to assure proper operation of load system. Obtain performance requirements from installer of driven loads.

3.4 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation of controllers in automatic and manual modes in accordance with Division 1 – Execution and Closeout Requirements.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Metal ductwork.

1.2 RELATED SECTIONS

- A. Section 15140 - Supports and Anchors: Sleeves.
- B. Section 15290 - Duct Insulation.
- C. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. ASHRAE - Handbook 2009 Fundamentals; Chapter 21 - Duct Design.
- B. ASHRAE - Handbook 2008 Systems and Equipment Handbook; Chapter 18 - Duct Construction.
- C. International Mechanical Code - Latest Locally Adopted Edition.
- D. ASTM A 36 - Structural Steel.
- E. ASTM A 90 - Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles.
- F. ASTM A 653 - Standard Specification for Sheet Steel, Zinc-Coated (Galvanized) or Zinc Iron Alloy Coated (Galvanized) by the Hot-Dip Process.
- G. SMACNA - HVAC Duct Construction Standards - Metal and Flexible.

1.4 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Division 1.
- B. Indicate duct fittings, particulars such as gauges, sizes welds, and configuration prior to start of work for low pressure duct systems.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with SMACNA - HVAC Duct Construction Standards - Metal and Flexible.
- B. Installer: Company specializing in performing the work of this section with minimum three years experience.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Galvanized: ASTM A653 galvanized steel sheet, lock-forming quality, having G90 zinc coating in conformance with ASTM A90.
- B. Fasteners: Rivets, bolts, or sheet metal screws.
- C. Sealant: Non-hardening, water resistant, fire resistive, compatible with mating materials; liquid used alone or with tape, or heavy mastic.
- D. Hanger Rod: ASTM A 36; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

2.2 DUCTWORK FABRICATION

- A. Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated. Provide duct material, gauges, reinforcing, and sealing for operating pressures indicated.
- B. Transform duct sizes gradually, not exceeding 15 degrees divergence and 30 degrees convergence.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Duct sizes are inside clear dimensions. Refer to drawings for sizes.
- C. Install and seal ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
- D. Use double nuts and lock washers on threaded rod supports.
- E. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
- F. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- G. Outside air ductwork transitions and their connections to intake louvers shall be welded or soldered watertight, and shall be arranged to allow any water inside the duct to drain out through the louver.

3.2 DUCTWORK APPLICATION SCHEDULE

AIR SYSTEM

MATERIAL

Combustion Air

Galvanized Steel

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. DDC Control equipment.
- B. Software.
- C. Field Devices.

1.2 RELATED SECTIONS

- A. Section 16180 - Equipment Wiring Systems.
- B. Section 16195 - Electrical Identification
- C. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. ASHRAE 89 - Automatic Control Terminology for Heating, Ventilating, Air Conditioning.
- B. ASME MC85.1 - Terminology for Automatic Control.
- C. NEMA EMC1 - Energy Management Systems Definitions.

1.4 DEFINITIONS

- A. Ensure terminology used in submittals conforms to ASHRAE\89.

1.5 SYSTEM DESCRIPTION

- A. Automatic temperature control field monitoring and control system using field programmable micro-processor based units.
- B. Central and remote hardware, software, interconnecting wire and conduit, and programming as necessary for a complete and functional control system.
- C. DDC Terminal unit controls for air handling systems, reheat coils, fan coils, and products as identified in points list.
- D. Electric Controls for unit heaters and cabinet unit heaters.
- E. Damper Motors and Valve Operators: Electronic/Electric.

1.6 SUBMITTALS

- A. Submit under provisions of Division 1.

- B. Shop Drawings:
 - 1. Trunk cable schematic showing programmable control unit locations, and trunk data conductors.
 - 2. List of connected data points, including connected control unit and input device.
 - 3. System graphics indicating monitored systems, input/output points and addresses.
 - 4. System configuration with peripheral devices, batteries, power supplies, diagrams, modems, and interconnections.
 - 5. Descriptive data and sequence of operation of operating, user, and application software.
 - 6. User operations display pages.
- C. Product Data: Provide data for each system component and software module.
- D. Schedules: Provide valve, damper, and well schedules showing sizes, configuration, capacity, and location of all equipment.
- E. Manufacturer's Installation Instructions: Include for all manufactured components.

1.7 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 1.
- B. Accurately record actual location of control components, including panels, thermostats, and sensors.
- C. Revise shop drawings to reflect actual installation and operating sequences.
- D. Provide record documents in hard copy and electronic in format for VISIO. Provide newest version of VISIO software.
- E. Include data specified in "Submittals" in final "Record Documents" form.

1.8 OPERATION AND MAINTENANCE DATA

- A. Submit under provisions of Division 1.
- B. A manual including revised as-built documents of all materials required under the paragraph "SUBMITTALS" on the specification.
- C. Computerized printouts of all remote panel data file including all DDC programs, point assignments, physical terminal relationships, scales and command and alarm limits.

- D. Provide a complete documentation manual as part of the software. The intent is to provide, in conjunction with the control drawings, complete information on the control system to facilitate operation, maintenance, checkout, and verification of the system. The documentation shall be bound 8-1/2" x 11" with section dividers, with the following sections:
1. Table of contents, locating and describing the sections of the documentation manual, and including an index to the control drawings.
 2. Summary command sheet, with examples, giving instructions for logging on to the system and displaying systems status information. Provide in laminated plastic cover.
 3. Operator instructions, with examples, for making adjustments to setpoints, occupancy schedules, and other parameters in the control system.
 4. Description of naming conventions used in the program for input/output points, program variables, and custom commands.
 5. Listing of all system input/output points indicating symbolic name, unit and terminal numbers, type of point, location of device. A copy of this list shall be laminated and placed inside the appropriate DDC controller. Identification of DDC System O&M Manual items shall include the Drawing Reference Code where applicable.
 6. Listing of all variables used in the program, indicating type of variable and description.
 7. Complete program listing with comments.
 8. Description of all algorithms and methods used in implementing the control sequences, including full explanation of all key parameters (e.g., setpoints, delay factors, gain factors.)
 9. DDC system manufacturer's complete documentation package.
 10. Summary commands and codes for the operator terminal, touch screen display and printer.

1.9 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum five years documented experience.
- B. Installer: Company specializing in applying the work of this Section with minimum five years documented experience and approved by manufacturer.

1.10 COORDINATION

- A. Coordinate work under provisions of Division 1.

- B. Ensure installation of components is complementary to installation of similar components in other systems.
- C. Coordinate installation of system components with installation of mechanical systems equipment such as air handling units, air terminal units, and control valves.
- D. Ensure system is completed and commissioned to Owner's satisfaction.

1.11 PROTECTION OF SOFTWARE RIGHTS

- A. Prior to delivery of software, the Owner and the party providing the software will enter into a software license agreement with provisions for the following:
 - 1. Limiting copying.
 - 2. Preserving confidentiality.
 - 3. Prohibiting transfer to a third party.

1.12 SERVICE AND GUARANTEE

- A. The Contractor shall warrant the entire control system free of defects in workmanship and material under normal use and service for a period of one year from date of final acceptance.
- B. If, during the warranty period, any of the controls equipment or programming is found to be defective in workmanship or material, it shall be replaced or corrected by the Contractor at no cost to the Owner. However, during the entire warranty period, Physical Plant staff shall have access to a level of the program which allows for complete functionality to include the ability to reload a controller, if necessary.
- C. The Contractor shall hold the DDC passwords for program and password editing, and shall be fully responsible for maintaining the system, through the warranty period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Siemens Building Technologies.
- B. Substitutions: No substitutions.

2.2 STANDALONE DIGITAL CONTROL UNITS (SDC)

- A. Units: Modular in design and consisting of processor board with programmable RAM memory and integral interface equipment. Units to be microprocessor based with EPROM operating system. DDC programs and data files may be in EPROM with a RAM image to allow simple additions and changes. All EPROM shall be socketed for easy replacement.
- B. EPROM/RAM DDC programs and data files shall provide for instant loop recovery upon power restoration after an outage beyond that which is power backed. RAM and the clock for EPROM/RAM systems shall be provided with power backup of 4-hour instant recharge capacitor or 12-hour trickle recharged batteries. RAM images, including all user additions and changes shall be up/down line loadable to central disk for backup.
- C. RAM DDC programs and data files without EPROM backup shall be provided with 72 hours of battery backup complete with automatic monitoring and "replace battery" alarm Messaging. Upon power restoration after an outage beyond that which is power or EPROM backed, all RAM shall be immediately and automatically downloaded and the remote panel shall be automatically reinitialized.
- D. Provide the following functions:
 - 1. Mathematical: Absolute value, calculate, square root, power, sign, average, totalize.
 - 2. Logic: OR, AND, compare negate.
 - 3. Fixed Formula: High and low select, span, rate, ramp, enthalpy, wet bulb, dewpoint, relative humidity, humidity ratio, filter.
 - 4. Data Manipulation: Store, file and set.
 - 5. Display Panel: Display adjust, override, time, day, date, year, alarm scan, override scan.
 - 6. Control Routines: Self-tuning proportional, integral, and derivative control loops; lead lag, hysteresis correction and incremental control.
 - 7. Energy Management: Duty cycling, load shed, optimal run time, holiday and daylight savings time correction.
 - 8. Library: Complete libraries of control algorithms for DDC, Energy Management, and Facilities Management functions. These resident libraries of algorithms shall be drawn from for the creation of the application programming of each individual SDC.
- E. Provide self-test procedure for checking digital display and computer. Display advisories for maintenance, performance, or software problems. Identify variables

as reliable or unreliable. Variables identified as unreliable will flash when displayed and calculation will use default.

- F. Indicate alarms and deviations. Alarm scan shows alarms and identification. Continue alarm indication until acknowledged and alarm condition is corrected.
- G. Provide two communication interface ports permitting communication between SDC interface equipment, other processors, and CHS.
- H. Spare Point Capacity:
 - 1. Provide expansion capacity of at least 25% for the system. Expansion capacity shall include equal quantities of every point type; Analog input, Digital input, Digital output, and Analog output.

2.3 SDC OPERATING SYSTEM SOFTWARE

- A. System Format:
 - 1. Divide points of control or monitoring by system.
 - 2. Identify points with unique, structured point identifier reflecting "specific area" or "specific system", and "specified point".
- B. Input Process:
 - 1. Select from the menu one of four general types of commands based upon password clearance: Command points, information points, build parameters, and modify parameters. Commands not available by password clearance shall be deleted from video display.
 - 2. Enter memory changes through keyboard or mouse of Centralized Host System (CHS).
 - 3. Enter commands as alpha/numeric character strings. Where commands require data for limits, setpoint, and time, enter value in same engineering units as controlled variable.
 - 4. Operator input shall not inhibit alarm reporting. Echo input on associated output device, to either execute or abort.
- C. Operator Access Control: Restrict any operator commands through use of software password.
- D. Information Access: Obtain point status information from any designated output device with access command. Point status consists of point identification, numerical value (analog points) and associated engineering units, and individual function label indicating that point is on/off or in Alarm/Normal condition. Output includes date and time of execution.

- E. Point Display: Video display includes a complete dynamic graphic image of systems in schematic with descriptive icons of major components to provide a complete understanding by the operator of system operation. This shall include status of single point or group of points with high and low limits (if applicable). Refresh display at least every 20 seconds.
- F. Alarm summary includes status of points in alarm condition.
- G. Alarm Reporting:
 - 1. Alarm outputs contain descriptor, point identification, point data, engineering units, and date and time.
 - 2. Display alarm reports audibly over CHS system speakers and on video. Display multiple alarms in order of occurrence with print capability if desired. The CHS shall maintain a log of all alarms so that they may be reviewed at a later date.
 - 3. Inhibit reporting of associated analog and binary alarms upon HVAC system shutdown. Upon restart, inhibit alarm reporting for operator pre-determined time.
 - 4. Operator specifies if alarm required acknowledgment.
 - 5. Provide two alarm levels, critical and maintenance (Operator adjustable).
- H. Advisories:
 - 1. Lockout summary which contains status of points in locked out condition.
 - 2. Continuously interrogate system hardware and programmable control units for failure or tampering and report if operational or not operational.
 - 3. Power failure detection, time and date.
 - 4. System communication failure with operator device, field interface unit, point, programmable control unit.
- I. Data Base Save/Restore:
 - 1. Provide program which allows saving or restoring of operating data.
 - 2. CD-RW disk unit shall save or restore system operating data.
 - 3. Data includes:
 - a. Analog limits and differentials
 - b. Start-stop times

- c. Access/secure times
 - d. Lockout/unlock times
 - e. Setpoint values and adjustment times
 - f. Limits and differential values
 - g. Totalization points, limits, and current values
 - h. Alarm messages and their assignments
 - i. Load control program operational parameters
 - j. HVAC control program operational parameters
- J. DDC Programs:
- 1. Provide DDC programs to meet the control strategies as called for in the sequence of operation sections of these specifications. Each remote panel shall have resident in its memory and available to the programs a full library or DDC algorithms, intrinsic control operators, arithmetic, logic, and relational operators for implementation of control sequences.
 - 2. All DDC setpoints, gains, parameters, and time constants associated with DDC programs shall be available to the operator for display and modification via the central operator interface and/or portable operators terminal as noted in the Data Control and Graphic Summary.
 - 3. The execution interval of each DDC loop shall be adjustable from two to 30 seconds.
 - 4. Each DDC program shall operate within a single fully field programmable and fully stand-alone DDC panel. Under no circumstances other than point/data sharing (with failure default instructions) shall a DDC program be dependent upon any communications link.
 - 5. Power Failure Motor Restart: Provide program to restore systems to normal operating conditions following power outage, and to enforce emergency operating conditions during power outage. Automatically stagger restart of loads to correct operating condition if normal or emergency power is available.

2.4 NETWORKING COMMUNICATIONS

- A. The design of the DDC System shall network existing operator workstations and stand-alone DDC Controllers. The network architecture shall consist of two levels, a high performance peer-to-peer network and DDC Controller specific local area networks.

- B. Access to system data shall not be restricted by the hardware configuration of the DDC system. The hardware configuration of the DDC System network shall be totally transparent to the user when accessing data or developing control programs.
- C. Peer-to-Peer Network Level:
 - 1. Operator workstations and DDC Controllers shall directly reside on a network such that communications may be executed directly between DDC Controllers, directly between existing workstations and between DDC Controllers and existing workstations on a peer-to-peer basis.
 - 2. Systems that operate via polled response or other types of protocols that rely on a central processor, file server, or similar device to manage panel-to-panel communications will not be allowed.
 - 3. All operator devices either network resident or connected via dial-up modems shall have the ability to access all point status and application report data or execute control functions for any and all other devices via the peer-to-peer network. Access to data shall be based upon logical identification of building equipment. No hardware or software limits shall be imposed on the number of devices with global access to the network data.
 - 4. Network design shall include the following provisions:
 - a. Provide high-speed data transfer rates for alarm reporting, quick report generation from multiple controllers and upload/download efficiency between network devices. System performance shall insure that an alarm occurring at any DDC Controller is displayed at existing workstations and/or alarm printers within 5 seconds.
 - b. Support of any combination of DDC Controllers and operator workstations directly connected to the peer-to-peer network. A minimum of 40 devices shall be supported on a single network.
 - c. Message and alarm buffering to prevent information from being lost.
 - d. Error detection, correction and retransmission to guarantee data integrity.
 - e. Synchronization of real-time clocks, to include automatic daylight savings time updating between all DDC Controllers shall be provided.
- D. DDC Controller Local Area Network (LAN):
 - 1. This level communication shall support a family of application specific controllers and shall communicate bi-directionally with the peer-to-peer network through DDC Controllers for transmission of global data.
 - 2. Application specific controllers shall be arranged on the LANs in a functional relationship manner with DDC Controllers. For example, a VAV terminal unit

controller shall be on a LAN from the DDC Controller that is controlling its corresponding AHU.

3. A maximum of 32 application specific controllers may be configured on individual DDC Controller LANs to insure adequate global data and alarm response times.

E. Telecommunication Capability:

1. Auto-dial/auto-answer communications shall be provided to allow DDC Controllers to communicate with existing remote operator stations and/or remote terminals on an intermittent basis via telephone lines.
2. Auto-dial DDC Controllers shall automatically place calls to existing workstations to report alarms or other significant events.
 - a. DDC Controllers shall be able to store a minimum of 10 phone numbers of at least 20 digits. Retry a single primary number at a fixed interval until successful.
 - b. The auto-dial program shall include provisions for handling busy signals, "no answers" and incomplete data transfers. Provide as a minimum 3 secondary numbers when communications cannot be established with the primary device.
3. Operators at existing dial-up workstations shall be able to perform all control functions, all report functions and all database generation and modification functions as described for workstations connected via the network. Routines shall be provided to automatically answer calls from remote DDC Controllers. The fact that communications are taking place with remote DDC Controllers over telephone lines shall be completely transparent to an operator.
 - a. An operator shall be able to access remote buildings by selection of any facility by its logical name. The workstation dial-up program shall store the phone numbers of each remote site, so the user shall not be required to remember or manually dial telephone numbers.
 - b. A PC workstation may serve as an operator device on a network, as well as a dial-up workstation for multiple auto-dial DDC Controllers or networks. Alarm and data file transfers handled via dial-up transactions shall not interfere with network activity, nor shall network activity keep the workstation from handling incoming calls.
4. Dial-up communications shall make use of Hayes compatible modems and voice-grade telephone lines. Provide modems rated at 56K baud meeting V.90.

2.5 FIELD DEVICES

A. Temperature Sensors.

1. Resistance temperature detectors (RTD's) type sensors compatible with DDC system. Room sensors shall have a temperature range of 32 to 125 degrees F, accurate to .5 degrees F. Duct and pipe mounted temperature sensors shall have a temperature range suitable for the application accurate to .5% over the range.
2. Use insertion elements in ducts not affected by temperature stratification or smaller than one square meter. Use averaging elements where larger or prone to stratification, sensor length 2.5 m or 5 m as required.
3. Provide wall-mounted room sensors with temperature indication and set point adjustment within an adjustable pre-set range. (70-75)

B. Pressure Sensors.

1. Unidirectional with ranges not exceeding 150 percent of maximum expected input.
2. Temperature compensated with typical thermal error of 2 percent of full scale in temperature range of 40 to 120 degrees F.
3. Accuracy: One percent of full scale with repeatability 0.3 percent.
4. Output: MA or VDC with power at 12 to 28 vdc.
5. Provide building static pressure sensing head for each building pressure sensor.

C. Equipment Operation Sensors.

1. Status Inputs for Fans: Differential pressure switch with adjustable range of 0 to 5 inches wg or as required to accurately sense fan operation.
2. Status Inputs for Pumps: Differential pressure switch piped across pump with adjustable pressure differential range of 8 to 60 psi or as required to accurately sense pump operation.
3. Status Inputs Where Differential Pressure Sensing is Impractical: Current sensitive relay with current transformers, adjustable and set to 175 percent of rated motor current.
4. Provide analog transducers to provide an indication of power flowing to each fan or pump.

D. Valve Operators:

1. General: Provide smooth proportional control with sufficient power to provide tight seal against maximum system pressures. Provide spring return for two position control and for fail safe operation.
2. The actuator shall have electronic overload or digital rotation sensing circuitry to prevent damage to the actuator throughout the rotation of the actuator.
3. For power-failure/safety applications, a mechanical, spring return mechanism shall be used. Non-mechanical forms of fail-safe are not acceptable.
4. All spring return actuators shall be capable of both clockwise or counterclockwise spring return operation by changing the mounting orientation. Spring return actuators should be capable of mounting directly into a jackshaft up to 1.05" in diameter.
5. 24 VAC/DC actuators shall not require more than 10 VA for AC or 8 watts for DC application.
6. Actuators shall have an external manual gear release or manual crank to aid in installation and allow manual positioning when the actuator is not powered.
7. Actuators shall have an external direction of rotation switch to aid in installation and provide proper control response.
8. Actuators shall be connected with a flexible steel conduit and conduit fitting to provide easy hookup to an electrical junction box.
9. The actuators shall be licensed under Underwriters Laboratories Standard 873 and Canadian Standards Association Class 4813 02. They must be manufactured under ISO 9001.
10. Actuators shall have a 2 year manufacturer's warranty, starting from the date of installation.
11. Number: Sufficient to achieve unrestricted movement throughout damper range. Provide one damper operator for maximum 36 sq. ft. damper section.
12. Valves shall spring return to normal position as indicated on freeze, fire, or temperature protection.
13. Actuators shall have a position indicator Open and Closed positions identified.

E. Control Valves.

1. Up to and including 2 inches: Bronze body, bronze trim, rising stem, renewable composition disc, screwed ends. Rated for 125 psig at 250 degrees F.

2. Over 2 inches: Iron body, bronze trim, rising stem, plug-type disc, flanged ends, renewable seat and disc. Rated for 125 psig at 250 degrees F.
3. Size for 3 psig maximum pressure drop at design flow rate.
4. Coordinate operator mounting with an involved trades.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Electrical material and installation shall be in accordance with appropriate requirements of Division 16 including wiring identification, equipment wiring, etc.
- C. Provide with 120v AC, 15 amp dedicated emergency power circuit to each programmable control unit.
- D. Provide a 1/2 inch conduit with pull wire from the DDC modem to the telephone board.
- E. Install wiring in conduit in all inaccessible and exposed locations. Plenum rated cable may be used in accessible ceiling spaces. Open cable to be installed in a neat workmanlike manor. Provide a dedicated conduit with grounded shield twisted pair cable connecting all DDC panels. Flexible metal conduit shall be steel. Aluminum not acceptable.
- F. Provide separable sockets for liquid temperature sensors.
- G. Mount control panels adjacent to associated equipment on vibration free walls or free standing angle iron supports. One cabinet may accommodate more than one system in same equipment room. Provide engraved plastic nameplates for instruments and controls inside cabinet and engraved lamicaid nameplates on cabinet face.
- H. Install "hand/off/auto" selector switches to over-ride automatic interlock controls when switch is in "hand" position.
- I. After completion of installation, test and adjust control equipment. Submit data showing set points and final adjustments of controls.
- J. Install all microprocessor based controls located in a harsh environment or in any area subject to water damage in a NEMA 12 enclosure. At a minimum the DDC panel located in the boiler room shall be mounted in a NEMA 12 enclosure.
- K. All control cabinets shall be U.L. listed and labeled.

3.2 MANUFACTURER'S FIELD SERVICES

- A. Prepare and start systems under provisions of Division 1.

- B. Start-up and commission systems. Allow sufficient time for start-up and commissioning prior to placing control systems in permanent operation.

3.3 OPERATOR TRAINING

- A. Provide one four hour on-site training session prior to Substantial Completion, for five personnel.
 - 1. Session shall consist of hands-on operator training to make the operators familiar with the sequences of the operation and comfortable with the operation of the Anchorage Pioneers' Home DDC system. This training shall be on-site using the DDC system installed under this Contract.
- B. Train the Using Agency's designated staff to enable them to do the following:
 - 1. Proficiently operate the system.
 - 2. Understand control system architecture and configuration.
 - 3. Understand DDC system components.
 - 4. Understand system operation, including DDC system control and optimizing routines (algorithms).
 - 5. Operate the workstation and peripherals.
 - 6. Log on and off the system.
 - 7. Access graphics, point reports and logs.
 - 8. Adjust and change system set points, time schedules, and holiday schedules.
 - 9. Recognize malfunctions of the system by observation of the printed copy and graphical visual signals.
 - 10. Understand system drawings and Operation and Maintenance manuals.
 - 11. Understand the job layout and location of control components.
 - 12. Access data from DDC controllers and SDC's.
 - 13. Operate portable operator's terminals.
 - 14. Make and change graphics on the workstation.
 - 15. Create, delete and modify alarms, including annunciation and routing of these.

16. Create, delete and modify point trend logs and graph or print these both on an ad-hoc basis and at users-definable time intervals.
 17. Create, delete and modify reports.
 18. Add, remove and modify system's physical points.
 19. Create, modify and delete programming.
 20. Add panels when required.
 21. Add operator interface stations.
 22. Create, delete and modify system displays, both graphical and others.
 23. Perform DDC system field checkout procedures.
 24. Perform DDC controller unit operation and maintenance procedures.
 25. Perform workstation and peripheral operation and maintenance procedures.
 26. Perform DDC system diagnostic procedures.
 27. Configure hardware including PC boards, switches, communication and I/O points.
 28. Maintain, calibrate, troubleshoot, diagnose and repair hardware.
 29. Adjust, calibrate and replace system components.
- C. Provide course outline and materials thirty days in advance of the training for approval by the Engineer. The instructor(s) shall provide one copy of the approved training materials per student.
- D. The instructor(s) shall be factory-trained instructors experienced in presenting this material.
- E. Classroom training shall be done using a network of working controllers representative of the hardware installed under this contract.

3.4 DEMONSTRATION

- A. Provide systems demonstration under provisions of Division 1.
- B. Demonstrate complete operation of systems, including sequence of operation.
- C. The Contractor shall demonstrate to the satisfaction of the contracting agency proper operation, function of the control system.

- D. The Contractor shall provide portable temperature measuring equipment as required to show conformance with the project specifications. Temperature measurement shall be by hand-held digital unit with minimum accuracy of +/-0.1 degrees F.
- E. The DDC control program shall be fully operational without "bugs", a complete listing shall be available. The modern communication system shall be online and functional.
- F. Copy of complete history listings, demonstrating the operation of all air, hydronic, and building static pressure systems, and of four temperature control zones as selected by the contracting agency. The histories shall include a transition from unoccupied to occupied schedules, with approximately 24 hours of data under each schedule.
- G. The hydronic system balance report, as specified in Section 15990, shall be available.
- H. The Contractor shall demonstrate the alarm reporting system, including occurrence of alarm condition, annunciation, correction, and clear for points selected by the contracting agency.
- I. The Contractor shall demonstrate the functions and location of each system to the contracting agency, and indicate its relationship to the drawings and specifications.
- J. The Contractor shall submit a certificate of completion of demonstration to be countersigned by the contracting agency.

3.5 SYSTEM TURN-OVER

- A. Upon completion of the installation, the Contractor shall start up the system, perform all necessary calibration, testing, and diagnostics to ensure proper operation. An acceptance test in the presence of the contracting agency shall be performed. When the system performance is deemed satisfactory by the contracting agency, the system will be accepted for beneficial use and placed under warranty.
- B. The Contractor shall turn over to the Owner DDC system passwords for status monitoring and parameter adjusting access levels.
- C. Contractor shall provide two complete copies of the working DDC control program at the end of the warranty period. One copy shall be a complete printed copy and the other shall be an electronic copy provided on a CD-ROM.

3.6 GRAPHICS SCHEDULE

- A. Provide graphics at the Maintenance central control computer.
- B. Graphics to be dynamic and include all building system listed in the I/O Summary.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Pressure gauges and pressure gauge taps.
- B. Thermometers and thermometer wells.

1.2 RELATED SECTIONS

- A. Section 15510 – Hydronic Piping.
- B. Section 15975 - Direct Digital Control Systems.
- C. Section 15985 - Sequence of Operation.
- D. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. ASME B40.1 - Gauges - Pressure Indicating Dial Type -Elastic Element.
- B. ASTM E1 - Specification for ASTM Thermometers.

1.4 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Product Data: Include list which indicates use, operating range, total range and location for manufactured components.
- C. Submit manufacturer's installation instructions under provisions of Division 1.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Do not install instrumentation when areas are under construction, except for required rough-in, taps, supports and test plugs.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Trerice.
- B. Weksler.
- C. Marshalltown.
- D. Substitutions: Under provisions of Division 1.

2.2 PRESSURE GAUGES

- A. ASME B40.1, 4-1/2 inch diameter drawn steel case, phosphor bronze bourdon tube, rotary brass movement, brass socket, with front recalibration adjustment, black scale on white background, one percent mid-scale accuracy, scale calibrated in psi, Grade AA, Model 500X manufactured by Trerice.

2.3 PRESSURE GAUGE TAPS

- A. Gauge Cock: Tee or lever handle, brass for maximum 150 psig, Model 865 manufactured by Trerice.
- B. Needle Valve: Stainless Steel for maximum 3000 psig, Model 735 manufactured by Trerice.
- C. Pulsation Damper: Pressure snubber, brass with 1/4 inch connections, Model 870 manufactured by Trerice.

2.4 STEM TYPE THERMOMETERS

- A. ASTM E1, 9 inch scale, adjustable angle, red appearing mercury, lens front tube, cast aluminum case with enamel finish and clear Lexan window, brass stem, cast aluminum adjustable joint with positive locking device, 2 percent of scale accuracy to ASTM E77, scale calibrated in degrees F, Model BX9 manufactured by Trerice.

2.5 THERMOMETER SUPPORTS

- A. Socket: Brass separable sockets for thermometer stems with or without extensions as required, and with cap and chain.

2.6 TEST PLUGS

- A. Test Plug: 1/4 inch or 1/2 inch brass fitting and cap for receiving 1/8 inch outside diameter pressure or temperature probe with neoprene core for temperatures up to 200 degrees F Petes Plug manufactured by Peterson Equipment Co.
- B. Test Kit: Carrying case, internally padded and fitted containing one 3-1/2 inch diameter pressure gauges, two gauge adapters with 1/8 inch probes, two 1-3/4 inch dial thermometers, Model 1500 manufactured by Peterson Equipment Company.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide one pressure gauge per pump, installing taps before strainers and on suction and discharge of pump. Pipe to gauge.

- C. Install pressure gauges with pulsation dampers. Provide needle valve to isolate each gauge.
- D. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inch for installation of thermometer sockets.
- E. Install thermometer sockets adjacent to controls system thermostat, transmitter, or sensor sockets. Refer to Section 15975.
- F. Provide instruments with scale ranges selected according to service with largest appropriate scale.
- G. Install gauges and thermometers in locations where they are easily read from normal operating level.
- H. Locate test plugs where indicated.

3.2 PRESSURE GAUGE SCHEDULE

<u>LOCATION</u>	<u>SCALE RANGE</u>
Pumps	0 - 100 PSI

3.3 PRESSURE GAUGE TAP SCHEDULE

<u>LOCATION</u>	<u>SCALE RANGE</u>
Control valves 1 inch (25 mm) & larger - inlets and outlets Heat exchangers - inlets and outlets Boilers - inlets and outlets	

3.4 STEM TYPE THERMOMETER SCHEDULE

<u>LOCATION</u>	<u>SCALE RANGE</u>
Headers to central equipment	30-240
Heat exchangers - inlets and outlets	30-240
Boilers - inlets and outlets	30-240
Water zone supply and return	30-240

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Boilers.
- B. Pumps.
- C. Heat Exchangers.

1.2 RELATED SECTIONS

- A. Section 15975 - Direct Digital Control Systems.
- B. Other sections referring to or affecting Work of this Section.

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 1.
- 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.
- C. Include flow diagrams for each control system, graphically depicting control logic.
- D. Include draft copies of graphic displays indicating mechanical system components, control system components, and controlled function status and value.

1.5 PROJECT RECORD DOCUMENTS

- A. Submit documents under provisions of Division 1.
- B. Accurately record actual setpoints and settings of controls, including changes to sequences made after submission of shop drawings.

1.6 GENERAL REQUIREMENTS

- A. All setpoints, reset ratios, minimum outside air percentages, duty cycle ratios, and other control loop parameters shall be adjustable at the DDC controller using named variables.
 - 1. Zone setpoints shall be individually adjustable for each zone.

- B. All DDC control loops shall be PI or PID as required to provide responsive, accurate, non-cycling control of all HVAC functions. All proportional, integral, and derivative gain factors shall be implemented as named variables.
- C. Minimum required control tolerances shall be as follows:
 - 1. Space temperatures shall be maintained within 1.0 degrees of setpoint when outside air temperature is less than 55 degrees F.
 - 2. Hydronic systems discharge temperature shall be maintained within 2.0 degrees F of setpoint. Boilers shall operate with a 20 degree F dead band, adjustable.
- D. Upon loss of control power:
 - 1. 2-way control valves shall fail to full heat.
- E. Morning start-up, or restart of building upon power outage:
 - 1. Largest inductive loads shall be started first, then largest of the heating pumps.
 - 2. Then remaining mechanical equipment.
- F. All specific operational sequences shall be maintained under both normal power and emergency power. All fan systems will shut down when fire alarm system is in alarm under both normal and emergency power.

1.7 SYSTEMS MONITORING ALARMS

- A. Provide status monitoring and alarm reporting systems in the DDC software, in accordance with Section 15975.
- B. Alarm points shall be of the following types:
 - 1. CRITICAL. Critical system requires immediate attention.
 - 2. WARNING. Non-critical warning or cautionary alarm.
 - 3. ROOM. Non-critical warning or cautionary alarm.
- C. Report CRITICAL alarms immediately at the Network and Building Management Systems levels. Delay 30 seconds to avoid nuisance alarms. Report WARNING and ROOM alarms once a day at 9:00 am as a batch function.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 AIR HANDLING UNIT HEATING COILS: EXISTING UNITS HV-1, SAF-1, SAF-2

- A. Supply Air Temperature:
1. Heating Mode: Reuse existing sequence.

3.2 GLYCOL HEAT EXCHANGER CONTROL

- A. HX-3.
1. Glycol Heating Pump CP-SB10.
 - a. Pump shall run continuously when snowmelt system is enabled.
 - b. Monitoring and alarms: Pump failure initiates a critical alarm.
 2. Water Heating Pump CP-SB11.
 - c. Pump shall run continuously when snowmelt system is enabled.
 - d. Monitoring and alarms: Pump failure initiates a critical alarm.
 3. 3-Way Mixing Valve: Modulate to maintain 120 degree F (adjustable) glycol set point when snow or ice is detected by snowmelt sensor. Modulate set point to maintain slab temperature (adjustable) during idle. The snowmelt system shall run in idle during the snowmelt season (adjustable) to provide quick response.

3.3 SOUTH BUILDING EXISTING BOILER CONTROL, (B-1, B-2, B-3)

- A. The primary boiler is enabled when the outside air temperature is below 60 degrees F.
- B. Boilers are controlled in modulating lead / lag sequence to maintain heating water supply temperature (Adjustable).
- C. Boiler modulates to reset water supply temperature (Adjustable) linear as follows:

<u>O/A</u>	<u>HWS</u>
60 degreesF	140 degrees F
-20 degrees F	190 degrees F

- D. Minimum return temp 130°F (Adjustable), initiate low temp alarm if temperature drops below minimum.
- E. Boilers are sequenced with one boiler being designated the primary boiler. Primary boiler designation alternates every month. Non-primary boilers are enabled in response to heating load as required.

- F. Provide domestic hot water priority, override reset schedule as required.
 - G. Monitoring and alarms: One boiler failure initiates a maintenance alarm, failure of two boilers initiates a critical alarm. See input/output summary.
- 3.4 HEATING CIRCULATION PUMPS, SOUTH BUILDING, CP-SB01, CP-SB02, CP-SB03, CP-SB04
- A. When the outside air temperature is below 60 degrees F the primary pump runs.
 - B. When the primary pump fails the stand-by pump runs.
 - C. Primary pump designation alternates every month.
 - D. Coordinate with balancer to determine pressure to meet design flow. VFD shall modulate pump speed to maintain constant pressure (adjustable).
 - E. Monitoring and alarms: One pump failure, initiates a maintenance alarm, both pump failure initiates a critical alarm. See input/output summary.
- 3.5 BOILER CIRCULATION PUMPS, CP-SB-16, CP-SB-17, CP-SB-18 (One Per Boiler)
- A. The pump runs continuously when its respective boiler is enabled, otherwise it is "off".
 - B. Monitoring and Alarms: Pump failure indicates critical alarm.
- 3.6 INPUT/OUTPUT SUMMARY
- A. I/O summary attached.

ANCHORAGE PIONEER HOME
SOUTH BUILDING BOILER REPLACEMENT
ANC 13-50C

DIVISION 15
SECTION 15985
SEQUENCE OF OPERATION

PAGE: 1 BUILDING: SYSTEM:	DI							AI				DO			AO		ALARM			EMS PROGRAMS								COMPUTE					
	STATUS CONTACT	FLOW SWITCH	WATER DIFF. PRESS. SWITCH	DUCT SMOKE/FIRE ALARM	FILTER DIFF. PRESS. SWITCH	GAS USAGE (PULSE)	KW USAGE (PULSE)	TEMPERATURE	CARBON MONOXIDE	PRESSURE	AIR VOLUME	START/STOP	DAY/NIGHT	OPEN/CLOSE	CONTROL LOOP	CONTROL POINT ADJUST	TEMPERATURE	SYSTEM FAILURE	MAINTENANCE	OPTIMUM START/STOP	ZERO ENERGY BAND	LEAD/LAG	NIGHT CYCLE	DUTY CYCLE	REDUCED OCCUPANCY	KW DEMAND LIMIT	ECONOMIZER CYCLE	CUSTOM PROGRAMMING	HOURS	GPM/GALLONS	BTU	KWH/KWD (PEAK)	CCF GAS
POINT DESCRIPTION																																	
Boiler Control B-1, 2, 3																																	
Status	X																																
Enable/Disable												X			X																		
Boiler Control															X																		
Heating Supply Temperature								X																									
Heating Return Temperature								X																									
Heating Supply Setpoint																																	
Outside Temperature								X																									
Boiler Alarm																		X															
Low Water Temperature Alarm																	X																
Lead/Lag															X																		
No Flow Alarm		X																	X														
Boiler Pumps, CP-SB16 to CP-SB18																																	
Status	X																																
Start/Stop												X																					
Primary Pumps CP-SB01 to SB04																																	
Status	X																																
Enable/Disable												X																					
Lead/Lag															X																		
Differential Pressure			X																														
VFD															X																		
Snowmelt Heat Exchanger HX-3																																	
CP-SB10 Status	X																																
CP-SB10 Start Stop												X																					
CP-SB11 Status	X																																
CP-SB11 Start Stop												X																					
Snowmelt Sensor								X																									
Glycol Supply Temp Sensor								X																									
Glycol Return Temp Sensor								X																									
Hot Water Supply Temp Sensor								X																									
Hot Water Return Temp Sensor								X																									
3-Way Mixing Valve															X																		

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Testing, adjustment, and balancing of hydronic systems.
- B. Measurement of final operating condition of HVAC systems.

1.2 RELATED SECTIONS

- A. Section 15514 – Finned-Tube Water Boilers.
- B. Section 15515 - Hydronic Specialties.
- C. Section 15540 - HVAC Pumps.
- D. Section 15975 - Direct Digital Controls.
- E. Section 15980 - Instrumentation.
- F. Section 15985 - Sequence of Operation.
- G. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. NEBB - Procedural Standards for Testing, Balancing and Adjusting of Environmental Systems.

1.4 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Submit name and qualifications of adjusting and balancing agency for approval with initial mechanical submittals. Submit a project specific agenda and work plan.
- C. Submit a complete, blank, project-specific balancing report with the initial mechanical submittals for approval. The blank report shall include all forms required to record all data listed in Part 3 of this specification for each device to be balanced. Include equipment tag numbers or room numbers on all forms.
- D. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect/Engineer and for inclusion in operating and maintenance manuals.
- E. Provide reports in soft cover, letter size, 3-ring binder manuals, complete with index page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.

- F. Include detailed procedures, agenda, sample report forms, prior to commencing system balance.
- G. Submit reports on NEBB forms.

1.5 PROJECT RECORD DOCUMENTS

- A. Submit record documents under provisions of Division 1.
- B. Accurately record actual locations of balancing valves and setting.

1.6 QUALITY ASSURANCE

- A. Agency shall be company specializing in the adjusting and balancing of systems specified in this Section with minimum three years documented experience. A NEBB Certified Testing, Balancing and Adjusting Supervisor experienced in performance of this work shall directly supervise all work performed under this section.
- B. Total system balance shall be performed in accordance with NEBB Procedural Standards for Testing, Balancing and Adjusting of Environmental Systems.

1.7 SEQUENCING AND SCHEDULING

- A. Sequence work under the provisions of Division 1.
- B. Schedule work under the provisions of Division 1.
- C. Sequence work to commence after completion of systems and schedule completion of work before Substantial Completion of Project.
- D. Coordinate with the Control System Contractor to insure that a control system technician is on site during balancing and testing. Do not commence any system balancing and testing unless control system technician is available.

1.8 SCOPE OF WORK

- A. The following systems are included in the Scope of Testing, Adjusting and Balancing:
 - 1. All new work installed under this contract.

PART 2 - PRODUCTS

2.1 AGENCIES

- A. Alaska Air Balancing, Demming Balancing, or Approved.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Before commencing work, verify that systems are complete and operable. Ensure the following:
 - 1. Equipment is operable and in a safe and normal condition.
 - 2. Temperature control systems are installed complete and operable.
 - 3. Proper thermal overload protection is in place for electrical equipment.
 - 4. Hydronic systems have been flushed, filled, and vented.
 - 5. Correct pump rotation.
 - 6. Proper strainer baskets are clean and in place.
 - 7. Service and balance valves are open.
- B. Report any defects or deficiencies noted during performance of services to Architect/Engineer.
- C. Promptly report abnormal conditions in mechanical systems or conditions which prevent system balance.
- D. If, for design reasons, system cannot be properly balanced, report as soon as observed.
- E. Beginning of work means acceptance of existing conditions.

3.2 PREPARATION

- A. Provide instruments required for testing, adjusting, and balancing operations. Make instruments and technician available to Architect/Engineer to facilitate spot checks during testing.
- B. Provide additional balancing devices as required.

3.3 INSTALLATION TOLERANCES

- A. Adjust hydronic systems to plus or minus 10 percent of design.

3.4 ADJUSTING

- A. Adjust work under provisions of Division 1.
- B. Recorded data shall represent actually measured, or observed condition.

- C. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
- D. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
- E. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

3.5 WATER SYSTEM PROCEDURE

- A. Adjust water systems to provide required or design quantities.
- B. Use calibrated fittings and pressure gauges to determine flow rates for system balance. Where flow metering devices are not installed, base flow balance on temperature difference across various heat transfer elements in the system.
- C. Adjust systems to provide specified pressure drops and flows through heat transfer elements prior to thermal testing. Perform balancing by measurement of temperature differential in conjunction with air balancing.
- D. Effect system balance with automatic control valves fully open to heat transfer elements.
- E. Effect adjustment of water distribution systems by means of balancing cocks, valves, and fittings. Do not use service or shut-off valves for balancing unless indexed for balance point.
- F. Where available pump capacity is less than total flow requirements or individual system parts, full flow in one part may be simulated by temporary restriction of flow to other parts.

3.6 SCHEDULE

<u>Equipment</u>	<u>Hydronic Balance</u>
HVAC Pumps	X
Heat Exchanger	X

3.7 REPORT FORMS

- A. Balancing and testing shall include recording and measurement of all items listed below:
 - 1. Title Page:
 - a. Company name.
 - b. Company address.
 - c. Company telephone number.

- d. Project name.
 - e. Project location.
 - f. Project Architect.
 - g. Project Engineer.
 - h. Project Contractor.
 - i. Project altitude.
2. Instrument List:
- a. Instrument.
 - b. Manufacturer.
 - c. Model.
 - d. Serial number.
 - e. Range.
 - f. Calibration date.
3. Electric Motors:
- a. Manufacturer.
 - b. Model/frame.
 - c. HP/BHP.
 - d. Phase, voltage, amperage; nameplate, actual, no load.
 - e. RPM.
 - f. Service factor.
 - g. Starter size, rating, heater elements.
4. Pump Data:
- a. Identification/number.
 - b. Manufacturer.
 - c. Size/model.
 - d. Impeller.
 - e. Service.
 - f. Design flow rate, pressure drop, BHP.
 - g. Actual flow rate, pressure drop, BHP.
 - h. Discharge pressure.
 - i. Suction pressure.
 - j. Total operating head pressure.
 - k. Shut off, discharge and suction pressures.
 - l. Shut off, total head pressure.
5. Heat Exchanger:
- a. Identification/number.
 - b. Location.
 - c. Service.
 - d. Manufacturer.
 - e. Model number.
 - f. Primary water entering temperature, design and actual.
 - g. Primary water leaving temperature, design and actual.
 - h. Primary water flow, design and actual.

- i. Primary water pressure drop, design and actual.
 - j. Secondary water entering temperature, design and actual.
 - k. Secondary water leaving temperature, design and actual.
 - l. Secondary water flow, design and actual.
 - m. Secondary water pressure drop, design and actual.
6. Combustion Test:
- a. Boiler manufacturer.
 - b. Model number.
 - c. Firing rate.
 - d. Overfire draft.
 - e. Gas meter timing dial size.
 - f. Gas meter time per revolution.
 - g. Gas pressure at meter outlet.
 - h. Gas flow rate.
 - i. Heat input.
 - j. Burner manifold gas pressure.
 - k. Percent carbon monoxide (CO).
 - l. Percent carbon dioxide (CO₂).
 - m. Percent oxygen (O₂).
 - n. Percent excess air.
 - o. Flue gas temperature at outlet.
 - p. Ambient temperature.
 - q. Net stack temperature.
 - r. Percent stack loss.
 - s. Percent combustion efficiency.
 - t. Heat output.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Basic Electrical Requirements specifically applicable to Division 16 Sections, in addition to Division 1 - General Requirements.
- B. "DIVISION 1 - GENERAL REQUIREMENTS" applies in its entirety to the electrical work covered by "DIVISION 16 - ELECTRICAL".

1.2 SPECIFICATION TERMINOLOGY

- A. In many instances the words "has," "has been," "shall," "shall be," "will," and "will be" and so forth have been deliberately omitted. These words are inferred and considered a part of these specifications as if appearing in each instance.
- B. Definitions:
 - 1. "Provide": Includes all material, labor, sub-contracts, and appurtenances required for a complete, finished, satisfactory operating system. Furnish and Install.
 - 2. "Furnish": Purchase and deliver to job site, products as shown and specified. Installation not required under Division 16, unless otherwise indicated.
 - 3. "Install": Set in place and connect ready for use, in a complete, finished, satisfactory operating condition products that have been furnished.
 - 4. "Product" is a generic term which includes materials, equipment, fixtures and any physical item used on the project.
 - 5. "As-Built Drawings": See Division 1.
 - 6. "Shop Drawings": See Division 1.

1.3 WORK INCLUDED

- A. Unless specifically stated elsewhere, provide all work shown, described, or otherwise indicated on the contract drawings and specifications is required under this contract.
- B. Work is not complete until all systems are complete, finished, and in satisfactory operating condition.
- C. Bring any questionable items or apparent conflicts to the attention of the Owner's Representative during the bidding period and request clarification.

1.4 PERMITS, FEES AND INSPECTIONS

- A. Obtain and pay for all permits, licenses, fees, inspections, approvals and other arrangements necessary to perform the electrical work. Request inspections from the authority having jurisdiction and submit copies of inspection reports to the Owner's Representative. Upon completion of the project, furnish the Owner's Representative the original final inspection certificate.

1.5 COORDINATION

- A. Coordinate all work with the serving utilities and provide equipment and installation in accordance with the utility requirements.
- B. Lay out all work in advance and coordinate with other trades to avoid conflicts. Coordinate and cooperate with all trades to complete the work within the project schedule. Make, at no additional cost, any changes necessary as a result of failure to properly coordinate, supervise, or schedule the work. Make such changes as directed by the Owner's Representative.
- C. Prior to rough-in, verify locations for junction boxes, disconnect switches, stub-ups, etc., for connection to equipment furnished or installed by others. Prior to rough-in, verify information shown on electrical drawings with approved shop drawings of equipment furnished or installed by others. Notify Owner's Representative of any conflicts.

1.6 DRAWING PRESENTATION

- A. Electrical drawings are diagrammatic and do not show all details of the work required. Locations of electrical items are approximate unless dimensioned. Review civil, architectural, structural, and mechanical drawings and adjust locations as directed to avoid conflict. Owner's Representative may direct minor adjustments in equipment locations. Make these adjustments at no extra cost providing direction is received prior to rough-in. Do not scale drawings; field verify dimensions and locations.
- B. The drawings and specifications are complimentary; what is shown on one is as binding as if called for on both.

1.7 ELECTRICAL REFERENCE SYMBOLS

- A. Symbols are based on industry standards supplemented by special symbols for the particular project. Refer to the legend to identify symbols shown on plans.

1.8 PROJECT/SITE CONDITIONS

- A. Become thoroughly familiar with the project, the site, and the local conditions under which the work is to be performed. Failure to do so does not relieve the Contractor from contract requirements.
- B. Install work as shown on drawings, unless prevented by project conditions.

- C. When proposing changes, submit proposal showing proposed rearrangement of work to meet project conditions, including changes to work specified in other sections. Obtain permission of Owner's Representative before proceeding.

1.9 REFERENCES

- A. Furnish material and equipment which has been tested and conforms to the applicable referenced standards. Install material and equipment in accordance with the requirements and within the limits of the standards.
 - 1. American Society for Testing and Material - ASTM.
 - 2. American National Standards Institute - ANSI.
 - 3. Insulated Cable Engineers Association - ICEA.
 - 4. Institute of Electrical and Electronics Engineers - IEEE.
 - 5. National Electrical Manufacturers' Association - NEMA.
 - 6. National Fire Protection Association - NFPA.
 - 7. Underwriters' Laboratories, Inc. - U.L.
 - 8. Factory Mutual Systems - FM.
 - 9. National Electrical Contractors Association - NECA "Standard Practices for Good Workmanship in Electrical Contracting."
 - 10. International Electrical Testing Association, Acceptance Testing Specifications - NETA, ATS.
 - 11. FEMA 413 - Installing Seismic Restraints for Electrical Equipment.

1.10 REGULATORY REQUIREMENTS

- A. Perform all work in accordance with the edition of the following codes, including state and local amendments, statutes, and ordinances, in effect at the time of bid opening.
 - 1. NFPA 70, National Electrical Code.
 - 2. International Building Code.
 - 3. International Fire Code.
 - 4. International Mechanical Code.
 - 5. Americans with Disabilities Act.

6. ANSI C-2, National Electrical Safety Code.

1.11 SUBMITTALS

- A. Submit under the provisions of Division 1.
- B. In the absence of specific Division 1 requirements, submit five (5) printed copies and one (1) electronic copy of submittal data to the Owner's Representative within 30 days of award of contract.
- C. Submit complete data on all material and equipment to be incorporated into the project.
 1. Include catalog numbers, wiring diagrams, dimensions and performance data.
 2. Do not order product or begin work until submittals have been approved.
 3. Clearly identify item being submitted.
- D. Include project name, contractor's name, and Division 16 subcontractor's name, address and telephone number on each cover. Index and tab by specification section or drawing number and identify each item by name, number or designation used on drawings or specifications. Submittals not organized as described will be returned for reorganization without detailed review.
 1. Submit hard copies in neatly bound, hard cover loose-leaf three ring binders.
 2. Electronic submittal shall be organized as described above and in this section.
- E. Partial submittals will be considered for review provided that they are complete for the categories listed below:
 1. Raceways, fittings, wire and cable, miscellaneous materials.
 2. Motor controls and disconnects.
 3. Individual specialty subsystems.
- F. Submittal review is for general design and arrangement and does not relieve the Contractor from any contract document requirements. Where equipment is scheduled or specified by manufacturer's name and catalog designations, the manufacturer's published data and/or specification for that item, in effect on bid date, are considered part of specification. Approval of other manufacturer's item proposed is contingent upon compliance therewith. Where a substitute product or system causes additional work, provision of a complete and satisfactory working installation is the sole responsibility of the Contractor.

- G. Where substitute material or equipment is proposed by Contractor, Owner's Representative may require letter from manufacturer of proposed substitute certifying and guaranteeing suitability for application and duty required prior to approval.
- H. Revise and resubmit submittal data as required. Identify all changes made since previous submittal. All costs associated with the review of more than one resubmittal, where additional review is required due to incomplete, inaccurate, or inadequate submittals, are the responsibility of the Contractor.

1.12 SITE OBSERVATIONS

- A. Request construction observation at least 48 hours prior to covering any buried or concealed work; pulling of wire or cable; installation of lighting fixtures; or placing covers on outlets, cabinets, panelboards, or switchgear.
- B. Cooperate with the Owner's Representative during observations and demonstrate installation complies with contract requirements. Correct any deficiencies noted prior to proceeding with the work.
- C. Request special inspections as required by Section 16191.

1.13 OPERATION AND MAINTENANCE MANUALS

- A. Submit under the provisions of Division 1.
- B. In the absence of specific Division 1 requirements, submit two copies of complete manuals 60 days prior to substantial completion.
- C. Submit in neatly bound hard cover loose-leaf three ring binders. Include project name, Contractor's name, address and telephone number, Division 16 subcontractor's name, address, and telephone number on each cover.
- D. Prepare data in the form of an instruction manual with a table of contents and a tabbed fly leaf for each section. Provide a separate section for each product or system installed.
- E. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- F. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- G. Type Text: As required to supplement product data. Provide logical sequence of operations for each procedure, incorporating manufacturer's instructions.

- H. For Each Item of Equipment and Each System: List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts. Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- I. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include any special operating instructions. Include reprogramming instructions for all programmable equipment.
- J. Maintenance Requirements: Include routine procedures and guide for troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, and checking instructions.
- K. Provide servicing and lubrication schedule, and list of lubricants required.
- L. Provide a copy of all approved shop drawings.
- M. Provide a copy of manufacturer's recommended spare parts list for applicable equipment.
- N. Include copies of warranties and bonds.
- O. Include logs of all tests performed.
- P. After review, make corrections as noted. Unless otherwise noted in Division 1, resubmit six corrected copies 14 days prior to substantial completion inspection.

For each system include, as applicable, startup, routine normal operating procedures, shutdown, emergency shutdown, testing, troubleshooting, routine maintenance and cleaning, routine repair, adjustment, and reassembly. Include reprogramming instructions for all field programmable equipment.

1.14 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following record documents; record actual revisions to the work:
 - 1. Contract drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change orders and other modifications to the contract.
 - 5. Reviewed shop drawings, product data, and samples.

- B. Record revisions concurrent with construction progress.
- C. Legibly mark and record product substitutions or alternates utilized, changes made by addendum or change order, changes made in conduit routing or circuiting, and changes in equipment locations. Accurately dimension locations of buried or concealed equipment.
- D. Upon project completion, submit record documents to Owner's Representative.

1.15 TESTING

- A. Notify Owner's Representative at least 48 hours prior to conducting tests. Conduct the final test in the presence of the Owner's Representative. Have instruments available for measuring light intensities, voltage and current values, and for demonstration of continuity, grounds, or open circuit conditions. Provide personnel to take measurements and make tests. Test in accordance with appropriate sections of NETA ATS. The Contractor is responsible for all test requirements.
- B. Before performing tests, check all components of the system for proper installation and operation.
- C. Furnish necessary personnel, equipment, and instruments. Demonstrate satisfactory operation of the entire installation in accordance with contract documents.
- D. Perform tests required under other sections of specifications. Submit logs of all test results to the Owner's Representative.
- E. When specified in individual specification sections, provide authorized representative and trained technician to be present at site to inspect, check and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- F. Repair, replace or adjust, as directed by the final observation report, all components of the installation that do not meet specified requirements.
- G. Request observation of retesting after all corrections have been completed.
- H. All costs associated with additional observation, which are required as a result of incomplete work, are the responsibility of the Contractor.

1.16 INSTRUCTION OF OWNER PERSONNEL

- A. Before final completion, at a mutually agreeable time, instruct Owner's designated personnel in operation, adjustment, and maintenance of equipment and systems.

- B. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- C. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.
- D. Demonstrate start-up, operation, control, adjustment, reprogramming, troubleshooting, servicing, maintenance, and shutdown of each item of equipment.
- E. Provide the number of hours of instruction as indicated for each system.

System or Equipment	Hours of Instruction
Electrical Distribution Equipment	2

- F. Provide one-half of the specified instruction at time of substantial completion and other half at time of final completion. Each instruction session shall cover all pertinent material. The first session is to cover all necessary material and provide "hands on" demonstrations. The second session is to review material previously covered, cover material in greater detail, and answer users' questions.

1.17 CERTIFICATE OF COMPLETION

- A. Submit, at time of request for substantial completion inspection, a completed letter in the following format:

I, (Printed Name) , of (Firm) , certify that the electrical work is complete in accordance with Contract Plans and Specifications, and authorized change orders (copies attached) and will be ready for substantial completion as of (Date). I further certify that the following specification requirements have been fulfilled:

- 1. Operating manuals completed and instructions of operating personnel performed for all systems, (Date) , (Signature, Owner's Representative) .
- 2. As-Built drawings up-to-date and ready to deliver to Owner's Representative.
- 3. All other tests required by Specifications have been performed.
- 4. All spare parts turned over to Owner.
- 5. All systems are fully operational.

Signed: _____

1.18 SUBSTANTIAL COMPLETION

- A. Clean all fixtures and equipment. Repair any damaged surfaces.
- B. Adjust all equipment to straight, plumb and level condition. Adjust all equipment to operate within manufacturer's recommended tolerances and as specified.
- C. Turn over to Owner's Representative all operation and maintenance manuals and record drawings.

1.19 WARRANTIES

- A. Provide warranty as required by Division 1.
- B. In the absence of specific Division 1 requirements, provide warranty certifying that the Contractor shall promptly repair or replace all defective material and workmanship to the satisfaction of the Owner.
- C. Unless otherwise stated, the warranty begins on the date of written final acceptance of the project by the Owner's Representative and extends for a period of one year.
- D. In the event of equipment or component failure during the warranty period, it is the Contractor's responsibility to repair or replace such defective equipment or components and bear all associated costs.
- E. The Contractor shall pursue manufacturer's written or implied warranties to the extent necessary to obtain replacement equipment or components prior to any other action being initiated. Provide proof of action taken upon request. Inform Owner in writing of the cause of failure.

PART 2 – PRODUCTS

2.1 ALL MATERIAL AND EQUIPMENT

- A. Unless otherwise indicated, new and unused; currently manufactured model, standard product. Products specified are based upon nationally recognized manufacturers who have adequate replacement stock and service personnel locally available. Use only products that meet these requirements.
- B. Similar Items: By the same manufacturer throughout the project.
- C. Comply with referenced standards, listed by U.L. or other testing agency acceptable to the authority having jurisdiction. Listed specifically for the application where used.
- D. Unless Otherwise Indicated, All Outdoor Equipment: NEMA 3R enclosures, galvanized hardware, corrosion resistant, compatible with -40°F temperature.

- E. Transport, handle and store in accordance with manufacturer's instructions. Store in original containers with seals and labels intact.
- F. Cover and protect all items against dirt, water, chemical, and mechanical damage.
- G. Store in dry, heated enclosure all items subject to thermal or moisture damage.
- H. Suitable for use in Seismic Design Category D.

2.2 ACCEPTABLE MANUFACTURERS

- A. Unless otherwise stated in Division 1: Manufacturer's names, trade names, and model numbers of products, systems, or installations specified are the "Basis of Specification". Unless noted as "No Substitution", Contractor may submit for consideration a substitution of a manufacturer, product, system, or installation under provisions of Division 1. If such submittal is made, written certification is required from the Contractor that the substitution meets or exceeds characteristics of the "Basis of Specification" and that changes in work, including but not limited to changes in dimensions, access openings, clearances, tolerances, utility requirements, characteristics, and connections, will not adversely affect the cost, design, function, performance or operation of other components or of the building. The Architect/Engineer's and/or Owner's Representative review and/or approval of such substitution will not relieve the Contractor of his responsibilities to perform the work and pay costs of additional Architectural/Engineering design services and construction costs attributed to the use of the substitution.

PART 3 – EXECUTION

3.1 ALL MATERIALS AND EQUIPMENT

- A. Install in accordance with referenced standards and regulatory requirements.
- B. Install in accordance with manufacturer's instructions and recommendations.
- C. Install in accordance with National Electrical Contractors Association "Standard Practices for Good Workmanship in Electrical Contracting."
- D. Install using experienced craftsmen skilled in the trade and in the particular section of work involved.
- E. All workmanship is subject to approval.
- F. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement caused by Seismic Design Category D activity. Provide adequate backing, blocking and reinforcement at attachment points to accept the forces involved.

- G. Obtain written permission of Owner's Representative before cutting, welding or piercing any structural members.
- H. Repair any damage caused by installation of electrical products to original condition.
- I. Keep the work area neat, clean, and orderly. Clean up periodically.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Electrical demolition and remodel.

1.2 RELATED SECTIONS

- A. Division 1.
- B. Section 16010 – Basic Electrical Requirements.
- C. Other sections referring to or affecting Work of this Section.

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 casual field observations and existing documents. Visit site, and verify existing conditions. Report discrepancies, unusable equipment, equipment needing repair, and unsafe conditions to Owner's Representative before disturbing existing installation.
- D. Beginning of demolition means Contractor 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 qualified and experienced in such operations. Comply with the applicable requirements of NFPA 70E.

- C. Existing Electrical System: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Obtain permission from Owner's Representative at least 24 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.

3.3 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Demolish and extend existing electrical work under provisions of Division 1, Section 16010, and this Section.
- B. Remove, relocate, and extend existing installations to accommodate new construction.
- C. Remove abandoned wiring to source of supply.
- D. Unless otherwise noted, disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
- E. Maintain circuit continuity to existing equipment that remains in use.
- F. Repair adjacent construction and finishes damaged during demolition and extension work.
- G. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.
- H. Extend existing installations using materials and methods as specified in other sections.

3.4 CLEANING AND REPAIR

- A. Clean and repair existing materials and equipment Which are affected by work under this contract and which remain or are to be reused.
- B. Panelboards Affected by work under this contract: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

3.5 INSTALLATION

- A. Install relocated materials and equipment under the provisions of other sections.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. This section covers types of conduit and conduit fittings approved for use on this project. Type, size, and installation methods shall be as shown on the drawings, required by code and specified in the following.

1.2 RELATED SECTIONS

- A. Section 16010 - Basic Electrical Requirements.
- B. Section 16130 - Boxes.
- C. Section 16170 - Grounding and Bonding.
- D. Section 16190 - Supporting Devices.
- E. Section 16191 - Seismic Restraint.
- F. Section 16195 - Electrical Identification.
- G. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. ANSI C80.1 - Electrical Rigid Steel Conduit.
- B. ANSI C80.3 – Steel Electrical Metallic Tubing.
- C. ANSI C80.5 – Electrical Rigid Aluminum Conduit.
- D. ANSI C80.6 – Electrical Intermediate Metal Conduit.
- E. ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable.
- F. NEMA RV 3 – Application and Installation Guidelines for Flexible and Liquid Tight Flexible Metal Conduit.

1.4 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 1 and Section 16010.
- B. Accurately record actual routing of conduits larger than two inches, all service and feeder conduits.

1.5 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. Verify routing and termination locations of conduit prior to rough-in.
- C. Conduit routing is shown on drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

PART 2 – PRODUCTS

2.1 CONDUIT REQUIREMENTS

- A. Minimum Size: 3/4 inch.
- B. Provide factory elbows on EMT larger than 1-1/2 inches.
- C. Wet and Damp Locations: Use rigid steel, or intermediate metal conduit. Use liquidtight flexible metal conduit for equipment connections.
- D. Indoor Dry Locations:
 - 1. Concealed or Exposed Above 4' Above Floor: Use rigid steel, intermediate metal conduit, or electrical metallic tubing. Use flexible conduit for equipment connections.
- E. Provide separate grounding conductors, provide conduit sizes required to conform to fill requirements of N.E.C. with grounding conductor considered as insulated additional conductor.

2.2 METAL CONDUIT

- A. Rigid Steel Conduit: ANSI C80.1.
- B. Rigid Aluminum Conduit: ANSI C80.5.
- C. Intermediate Metal Conduit (IMC): ANSI C80.6, UL 1242.
- D. Fittings and Conduit Bodies: ANSI/NEMA FB 1; material to match conduit. Use threaded fittings.
- E. Bushings: Insulated type.
- F. Grounding Bushings: Insulated type with compression lug connectors.

2.3 FLEXIBLE METAL CONDUIT

- A. UL 1.
- B. Description: Interlocked steel construction.

- C. Fittings: ANSI/NEMA FB 1, steel or malleable iron.

2.4 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. UL 360.
- B. Description: Interlocked steel construction with PVC jacket.
- C. Fittings: ANSI/NEMA FB 1, steel or malleable iron, insulated throat.
- D. For exterior use: Designed for -60°F and listed for direct bury, Liqueflex type ATLA.

2.5 ELECTRICAL METALLIC TUBING (EMT)

- A. Description: ANSI C80.3; galvanized tubing.
- B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel or malleable iron, compression, set screw, or indenter type. Use insulated throat fittings.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Install conduit in accordance with NECA "Standard Practices for Good Workmanship in Electrical Contracting." Maintain mechanical and electrical continuity in all runs, and at boxes and fittings. Unless otherwise noted, install all conduits concealed except at surface mounted equipment.
- B. Install conduit in accordance with manufacturer's instructions and recommendations.
- C. Arrange supports to prevent misalignment during wiring installation.
- D. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers for steel conduit and EMT.
- E. Group related conduits; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional conduits.
- F. Fasten conduit supports to building structure and surfaces under provisions of Section 16190.
- G. Do not support conduit with wire or perforated pipe straps.
- H. Do not attach conduit to ceiling support wires or suspended ceiling grid. Maintain minimum 8" clearance between conduit and lay-in ceiling to allow future fixture relocation.
- I. Arrange conduit to maintain headroom and present neat appearance.

- J. Route exposed conduit parallel and perpendicular to building lines.
- K. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- L. Route permanently concealed conduit from point-to-point.
- M. Do not install conduits in slabs, beams, columns or other structural members without specific approval.
- N. Maintain adequate clearance between conduit and piping.
- O. Maintain 12 inch clearance between conduit and surfaces with temperatures exceeding 104 degrees F.
- P. Cut conduit square using saw or pipe cutter; de-burr cut ends.
- Q. Bring conduit to shoulder of fittings; fasten securely.
- R. Use conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.
- S. Install no more than equivalent of three 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one-shot bender to fabricate or use factory elbows for bends in metal conduit larger than 1-1/2 inch size. Flattened or dented bends not acceptable.
- T. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- U. Provide suitable fittings to accommodate expansion and deflection where conduit crosses control and expansion joints. Provide expansion fittings with grounding jumpers in straight runs over 200' long. Cross seismic joints with flexible conduit. Provide slack loop adequate to accommodate allowable designed movement.
- V. Provide suitable pull string in each empty conduit except sleeves and nipples.
- W. Use suitable caps to protect installed conduit against entrance of dirt and moisture. Maintain in place until conductors are installed.
- X. Ground and bond conduit under provisions of Section 16170.
- Y. Identify conduit under provisions of Section 16195.
- Z. Use approved sealing compound to satisfy requirement of Article 300-7, N.E.C., for different temperature portions of raceways, including those passing from interior to exterior portions of structure.
- AA. Do not exceed N.E.C. requirements for raceway, pull/junction or outlet box fill.

- BB. Provide additional pull boxes as required to avoid excessive conductor pulling tensions.
- CC. Do not use flexible conduit as a substitute for conduit or EMT. Use only in lengths required to absorb vibration or movement, and allow fixture relocation.

3.2 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit with fire stopping to preserve fire resistance rating of partitions and other elements. Install in accordance with UL fire resistance directory for system used. Use T & B, Hilti, or equivalent by 3M or materials and methods specified in Division 7 to seal penetrations. Use STI "EZ Path" for sleeves through rated assemblies for comm/data cables.
- B. Seal watertight all exterior wall penetrations.
- C. Seal airtight all penetrations through smoke partitions, fan plenums, ductwork, and vapor barriers.
- D. Repair any damage caused by installation of conduit.
- E. Conduit not allowed embedded in spray applied fireproofing or between structural steel members and gypboard.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Building wire and cable, plenum cable, flexible cords, specialty conductors, wiring connectors and connections.

1.2 RELATED SECTIONS

- A. Section 16111 - Conduit.
- B. Section 16130 - Boxes.
- C. Section 16195 - Identification.
- D. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. Section 16010 - Basic Electrical Requirements.

1.4 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. Wire and cable routing shown on Drawings is approximate unless dimensioned. Route wire and cable as required to meet Project Conditions.
- C. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and provide lengths required.

1.5 COORDINATION

- A. Coordinate Work under provisions of Division 1 and Section 16010.
- B. Determine required separation between cable and other work.
- C. Determine cable routing to avoid interference with other work.

PART 2 – PRODUCTS

2.1 BUILDING WIRE AND CABLE

- A. Description: Single conductor insulated wire.
- B. Conductor: Copper.
- C. Insulation: Voltage Rating: 600 volts.

- D. Insulation: ANSI/NFPA 70; Type XHHW 90 degrees C. insulation for all outdoor and unheated locations. Type THHN/THWN 90 degrees C. or XHHW 90 degrees C. insulation for warm indoor locations. Type THHN 90 degrees C. insulation for warm, dry indoor locations only.

2.2 FLEXIBLE CORDS AND CABLE

- A. Description: ANSI/NFPA 70, Type S for #18-# 12, Type G for all larger conductors. Provide ground conductor in all cords and cables.
- B. Conductors: Stranded copper.
- C. Identification: Outer jacket shall be permanently marked to identify cord type, number and size of conductors.

2.3 SPECIALTY CONDUCTORS

- A. Wire and cable for special purpose applications not covered above shall be as shown on plans, or as specified in other sections. Where not specifically described, provide cable as recommended by system or equipment manufacturer.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire and cable has been completed.
- C. Verify that raceway installation is complete and supported.

3.2 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

3.3 WIRING METHODS

- A. Install all wiring systems in raceway unless otherwise specifically noted or specified.
- B. Concealed Dry Interior Locations: Use only building wire in raceway.
- C. Exposed Dry Interior Locations: Use building wire in raceway.
- D. Wet or Damp Interior Locations: Use building wire in raceway.
- E. Use other wiring methods when specifically indicated on Drawings, or specified in other sections.

3.4 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Except as otherwise specified, use solid conductor for #10 AWG and smaller, stranded conductor for #8 AWG and larger.
- C. Use stranded conductors for control circuits.
- D. Use conductor not smaller than 12 AWG for power and lighting circuits.
- E. Use conductor not smaller than 14 AWG for control circuits.
- F. Use 10 AWG conductors for 20 ampere, 120 volt home runs longer than 75 feet.
- G. Pull all conductors into raceway at same time. Do not exceed allowable pulling tensions. Provide additional pull boxes, if required.
- H. Use suitable wire pulling lubricant conforming to U.L. requirements for insulation and raceway. Use "Lubaduk" or as approved. Use only low-temperature "Lubaduk" for exterior use.
- I. Protect cable from damage.
- J. Use suitable cable fittings and connectors.
- K. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- L. Clean conductor surfaces before installing lugs and connectors.
- M. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- N. Use compression connectors for conductor splices and taps, 8 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor or provide factory insulating cap matched to connector, and rated 600 volt minimum.
- O. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller. Ideal "Wingnut" or equivalent by 3M.
- P. Install circuiting as shown on plans. Home runs may be combined unless otherwise noted or specified. Where combined, so indicate on as-builts. Do not combine home runs to any panelboards with 200% rated neutrals.
- Q. Do not install thermoplastic insulated conductors when temperature is below 20° F.
- R. Comply with requirements of N.E.C. 310-4 for conductors in parallel.

3.5 INTERFACE WITH OTHER PRODUCTS

- A. Identify wire and cable under provisions of Section 16195.
- B. Identify each conductor with its circuit number or other designation indicated on Drawings.
- C. Provide all power and control conductors that terminate on equipment or terminal strips with solderless lugs or compression terminals.

3.6 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Division 1 and Section 16010.
- B. Inspect wire and cable for physical damage and proper connection.
- C. Measure tightness of pressure connections. Torque measurements shall comply with manufacturer's recommended values and NEMA Standards.
- D. Verify continuity of each branch circuit conductor.
- E. Verify continuity and proper connection of all control, communication, and signal wiring.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Wall and ceiling outlet boxes, floor boxes, pull and junction boxes.

1.2 RELATED SECTIONS

- A. Section 16140 - Wiring Devices.
- B. Section 16160 - Cabinets and Enclosures.
- C. Section 16180 - Equipment Connections.
- D. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. Section 16010 - Basic Electrical Requirements.
- B. ANSI/NEMA FB 1 – Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable.
- C. ANSI/NEMA OS 1 - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
- D. NEMA 50 - Enclosures for Electrical Equipment.
- E. U.L. 514A – Metallic Outlet Boxes.

1.4 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 1 and Section 16010.
- B. Accurately record actual locations and mounting heights of outlet, pull, and junction boxes that were added or relocated.

1.5 PROJECT CONDITIONS

- A. Verify field measurements are as shown on Drawings.
- B. Verify locations of boxes and outlets prior to rough-in.
- C. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose. Refer to mechanical drawings, architectural reflected ceiling plans, elevations, and details for additional information.

- D. Provide pull and junction boxes as necessary to avoid exceeding maximum allowable pulling tensions and maximum number of bends allowed.

PART 2 – PRODUCTS

2.1 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel. Boxes Larger Than 100 Cubic Inches: UL 50. Enclosures for electrical equipment.
- B. Surface-Mounted Cast Metal Box: NEMA 250, Type 3R flat-flanged, surface-mounted junction box.
 - 1. Material: Galvanized cast iron.
 - 2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements. Size per NEC Article 314. Provide covers, extension rings, hangers and other accessories approved for the application. See Section 16140 for device mounting heights.
- B. Install electrical boxes to maintain headroom and to present neat mechanical appearance. Install plumb and true to building lines. Install so covers are accessible and removable after building construction is completed.
- C. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- D. Install boxes to preserve fire resistance rating of structure, using materials and methods.
- E. Align adjacent wall-mounted outlet boxes for switches, thermostats, and similar devices with each other.
- F. Use flush mounting outlet boxes in finished areas.
- G. Do not install flush mounting boxes back-to-back or use through-wall boxes in walls; provide minimum 6 inch separation. Provide minimum 24 inches separation in acoustic and fire rated walls.
- H. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- I. Use stamped steel bridges to fasten flush mounting outlet box between studs.

- J. Install flush mounting box without damaging wall insulation or vapor barrier or reducing its effectiveness.
- K. Support boxes independently of conduit. Securely fasten in position.
- L. Use gang boxes where more than one device is mounted together. Do not use sectional box.
- M. Use gang boxes with plaster ring for device mounting.
- N. Use cast outlet boxes for exposed work in the following locations. Provide NEMA 3R boxes unless otherwise noted outdoors and in wet locations.
 - 1. All exterior, damp, and wet locations.
 - 2. Where exposed to severe mechanical damage.
 - 3. All exposed interior locations below 48" above floor.
 - 4. Where shown on drawings.
- O. Large Pull Boxes: Boxes larger than 100 cubic inches in volume or 12 inches in any dimension.
 - 1. Interior Dry Non-Hazardous Locations: Use hinged enclosure under provisions of Section 16160.
 - 2. Other Locations: Use surface-mounted cast metal box.
- P. For outlet boxes flush-mounted in sound rated or acoustically insulated walls, provide Lowry outlet box pads or STI Spec-Seal Firestop Putty Pads for sound isolation. Caulk between gyp board and box with acoustical sealant.

3.2 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate installation of outlet boxes with equipment furnished under other Sections.
- B. Coordinate locations and sizes of required access doors with other work.
- C. Locate flush mounting boxes in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- D. Coordinate mounting heights and locations of outlets mounted above baseboard heaters, counters, benches and backsplashes to avoid conflict.

3.3 ADJUSTING

- A. Install knockout closure in unused box openings.

END OF SECTION

PART 1 – GENERAL

1.1 WORK INCLUDED

- A. Hinged cover enclosures.
- B. Cabinets.
- C. Spare fuse cabinets.

1.2 REFERENCES

- A. Section 16010 - Basic Electrical Requirements.
- B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- C. ANSI/NEMA ICS 6 - Industrial Control and Systems Enclosures.
- D. UL 50- - Enclosures for Electrical Equipment.

1.3 SUBMITTALS

- A. Manufacturer's data for cabinets and enclosures indicating size, type, material, cover and other pertinent data.

PART 2 – PRODUCTS

2.1 HINGED COVER ENCLOSURES

- A. Construction: NEMA 250; Type 1 for indoor, dry, non-hazardous locations. Type 3R for outdoor or wet locations. In hazardous locations, enclosures rated for class and group noted.
- B. Finish: Manufacturer's standard enamel finish over phosphatized or galvanized steel.
- C. Covers: Continuous hinge, held closed by flush latch, key operable. Provide hasp and staple for padlock where noted.

2.2 CABINETS

- A. Cabinet Boxes: Galvanized steel sized as indicated or as required for equipment and conductors installed. Provide 3/4 inch thick plywood backboard painted matte white, for mounting terminal blocks. Gray baked enamel finish for surface mounted boxes.
- B. Cabinet Fronts: Steel, flush or surface type as indicated with concealed trim clamps, concealed hinge and flush lock keyed to match branch circuit panelboard; finish in gray baked enamel.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Install cabinets and enclosures plumb; anchor securely to wall and structural supports at each corner, minimum. Provide blocking and supports where required. Install flush mounted cabinets so trim fits tight against finished surface. Install trim plumb.
- B. Install so covers are accessible and code required clearances are available upon completion of construction.
- C. From each flush mounted cabinet, stub out spare conduits to nearest accessible ceiling space. Size and number as noted.
- D. Mount top of cabinets 6'-6" above finished floor.
- E. Clean interior and exterior of all cabinets and enclosures prior to final inspection.
- F. Provide accessory feet for free-standing equipment enclosures. Brace and secure to withstand Seismic Design Category D forces without damage.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Grounding conductors, equipment grounding conductors and bonding.

1.2 RELATED SECTIONS

- A. Sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. Section 16010 - Basic Electrical Requirements.

1.4 PERFORMANCE REQUIREMENTS

- A. Grounding System Resistance: 15 ohms.

PART 2 – PRODUCTS

2.1 WIRE

- A. Material: Stranded copper.

2.2 CONNECTIONS

- A. Enclosure Connections: Approved pressure connectors or lugs in firm contact with clean bare metal surface.
- B. Accessible Connections to Rods, Pipes, Structure, Etc.: Approved clamps, pressure connectors, or lugs designed to prevent electrolysis.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Install Products in accordance with manufacturer's instructions.
- B. Provide bonding to meet Regulatory Requirements.
- E. Provide bare or green insulated copper grounding conductor in each power and lighting raceway throughout project regardless of raceway types. Size as required by N.E.C. for equipment grounding conductor. Make all connections tight to provide a continuous, permanent, and effective ground path from outlet to grounding electrode.
- C. Provide grounding bushings and bonding jumpers where knockouts or reducing washers are used.

3.2 FIELD QUALITY CONTROL

- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.
- B. Inform Owner's Representative and authority having jurisdiction 48 hours before covering foundation electrodes.
- C. Use suitable test instrument to measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations. Use the fall-of-potential method or a clamp-on ground resistance test instrument accurate to within $\pm 1.5\%$ in the 1 to 50 ohm range. Use instrument calibrated within the past 12 months. Submit test results.

END OF SECTION

PART 1 – GENERAL

1.1 WORK INCLUDED

- A. Electrical connections to equipment specified under other Sections or furnished by Owner.

1.2 RELATED SECTIONS

- A. Division 15 - Mechanical.
- B. Section 16191 - Seismic Restraint.
- C. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. Section 16010 - Basic Electrical Requirements.

PART 2 – PRODUCTS

- 2.1 Materials shall be as required by Division 16.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Verify that equipment is ready for electrical connection, wiring, and energization. Verify that equipment and system voltage and phase are compatible. Reconnect multi-voltage equipment as required. Inform Owner's Representative of any conflicts.

3.2 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.

3.3 INSTALLATION

- A. Use wire and cable with conductor and insulation type suitable for temperatures encountered in heat-producing equipment and compatible with equipment terminals.
- B. Make conduit connections to equipment using flexible conduit. Provide adequate length of slack conduit to absorb equipment movement and vibration. Use liquidtight flexible conduit in damp or wet locations.
- C. Install pre-finished cord set where connection with attachment plug is indicated or specified, 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. Provide starters and disconnects as indicated and specified. Provide disconnects where required but not furnished with equipment.
- F. Make wiring connections in control panel or in wiring compartment of pre-wired equipment in accordance with manufacturer's instructions. Provide interconnecting wiring as required.
- G. Install disconnect switches, controllers, control stations, and control devices such as limit switches and temperature switches as required. Connect with conduit and wiring unless otherwise indicated.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Conduit and equipment supports.
- B. Anchors and fastening hardware.

1.2 QUALITY ASSURANCE

- A. Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry. Supports shall be adequate to withstand Seismic Design Category D forces without damage.

1.3 REFERENCES

- A. Section 16010 - Basic Electrical Requirements.
- B. Section 16191 - Seismic Restraint.

PART 2 – PRODUCTS

2.1 MATERIAL

- A. Support Channel: Galvanized or painted steel.
- B. Hardware: Corrosion resistant. Galvanized, cadmium plated, or painted steel.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Fasten hanger rods, conduit clamps, and junction boxes to building structure using precast insert system, expansion anchors, preset inserts, or beam clamps.
- B. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board 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. Use beam clamps on structural steel elements.
- C. Do not fasten supports to piping, ductwork, mechanical equipment, or conduit.
- D. Do not use powder-actuated anchors.
- E. Do not drill or cut structural members without written permission of project structural engineer.

- F. 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.
- G. In wet locations install free-standing electrical equipment on concrete pads.
- H. Install surface-mounted cabinets with minimum of four anchors.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Seismic restraint for electrical fixtures, equipment, and raceways.

1.2 RELATED SECTIONS

- A. Section 16010 - Basic Electrical Requirements.
- B. Section 16111 - Conduit.
- C. Section 16190 - Supporting Devices.
- D. Section 16480 - Motor Controls.
- E. Other sections relating to or affecting Work of this Section.

1.3 REFERENCES

- A. Section 16010 - Basic Electrical Requirements.
- B. IBC Section 1613 – Earthquake Loads.

1.4 SYSTEM DESCRIPTION

- A. Provide seismic restraints for all electrical equipment to withstand Seismic Design Category D forces.
- B. Standard fastening methods are considered adequate restraint for the following equipment: unless additional support is required by IBC 1613.
 - 1. Buried and concealed conduit.
 - 2. Conduit fastened directly to the structure.
 - 3. Flush mounted boxes, cabinets, and panelboards.
- C. Provide other electrical equipment with seismic restraints specifically designed for the equipment installed as required by IBC 1613.

1.5 SUBMITTALS

- A. Submit product data, details, installation instructions, and calculations stamped by a registered professional engineer certifying that installation will withstand Seismic Design Category D forces.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Mason Industries, Consolidated Kinetics Corporation, Vibration Mountings and Control.

2.2 SWAYBRACING

- A. Structural steel or steel channel for rigid bracing.
- B. Cable for flexible mounting of suspended equipment.

2.3 ANCHORS

- A. Wedge anchors in concrete; Hilti Kwik Bolt, Mason Industries, or equal.

2.4 VIBRATION EQUIPMENT

- A. All directional double deflection neoprene or spring seismic rated isolators. Provide horizontal and vertical restraints as required by IBC 1613.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that supporting surfaces are adequate and ready to receive work.
- B. Verify that manufacturers' installation instructions and shop drawings are available to installer.

3.2 INSTALLATION

- A. Install in accordance with manufacturers instructions.
- B. Provide adequate backing. Install restraints to avoid damage to surface where mounted.
- C. Provide flexible conduit connections with adequate slack to absorb equipment movement without damage to equipment or conduit system.
- D. Provide flexible conduit across seismic joints with adequate slack to absorb building movement without damage.

3.3 ADJUSTMENT

- A. After installation is complete, adjust all adjustable mounts to achieve manufacturer's recommendation clearance.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Nameplates and tape labels, wire and cable markers, conductor color coding, conduit identification.

1.2 RELATED SECTIONS

- A. Section 16130 - Boxes.
- B. Section 16160 - Cabinets and Enclosures.
- C. Section 16440 - Disconnect Switches.
- D. Section 16480 - Motor Controls.
- E. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. Section 16010 - Basic Electrical Requirements.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Nameplates: Engraved three-layer laminated plastic, white letters on a black background
- B. Wire and Cable Markers: Plastic, split sleeve or tubing type.
- C. Conduit Systems Identification: Spray paint.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Degrease and clean surfaces to receive nameplates.
- B. Install nameplates parallel to equipment lines.
- C. Secure nameplates to equipment fronts using screws, rivets, or permanent adhesive. Secure nameplate to inside face of recessed panelboard doors in finished locations.

3.2 WIRE IDENTIFICATION

- A. Provide wire markers on each conductor, including neutrals, in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Identify with branch circuit or feeder number for power circuits, and with control wire number as indicated on equipment manufacturer's shop drawings for control wiring.
- B. Color code by line or phase as follows. 120/208 volt systems: Black, red, blue and white.

3.3 NAMEPLATE ENGRAVING SCHEDULE

- A. Provide nameplates to identify all electrical distribution and control equipment, and loads served.
- B. Provide nameplates of minimum letter height as scheduled below.
- C. Feeder Conduits, Spare Conduits: 1/4 inch; label each end with circuit or purpose. Attach with bead chain in indoor dry locations, nylon cord elsewhere.

- 3.4 For power systems, label the cover of each junction box with the identification of branch circuits or feeders contained within. These labels may be self adhesive embossed tape. Minimum of 1/2" wide.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Disconnect switches, fuses and enclosures.

1.2 REFERENCES

- A. Section 16010 - Basic Electrical Requirements.
- B. UL 248 – Low Voltage Fuses.
- C. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches.

PART 2 – PRODUCTS

2.1 DISCONNECT SWITCHES

- A. Acceptable Manufacturers: Square D, G.E., Cutler Hammer.
- B. Fusible Switch Assemblies: NEMA KS 1; Type HD; quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle with defeatable interlock to prevent opening front cover with switch in ON position. Handle lockable in OFF position. Fuse Clips: Designed to accommodate Class R fuses.
- C. Nonfusible Switch Assemblies: NEMA KS 1; Type HD; quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle with defeatable interlock to prevent opening front cover with switch in ON position. Handle lockable in OFF position.
- D. Enclosures: NEMA KS 1; Type 1 for indoor use, Type 3R for exterior use unless otherwise indicated.

2.2 FUSES

- A. Fuses 600 Amperes and Less: Size as indicated on Drawings or as required by equipment; dual element, current limiting, time delay, one-time fuse, Class RK5 for motor circuits, Class RK1 for other applications. Voltage rating to match system.
- B. Interrupting Rating: 200,000 rms amperes.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Install disconnect switches where indicated on Drawings and as specified. Provide horsepower rated disconnect switches with size to match load.
- B. Provide fused switch type for all three phase motors rated 7.0 full load amperes and below. Provide non-fused switch type for all three phase motors rated above 7.0 full load amperes unless fused switch is required by equipment served. Size fuses for approximately 115% of motor full load current and in accordance with NEC 430.52. Locate in sight of motor accordance with NEC 430.102(B).
- C. Install fuses in fusible disconnect switches.
- D. On inside cover of each fused disconnect, provide label indicating motor horsepower, motor full load amps, and correct fuse size.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Manual motor starters, magnetic motor starters, combination magnetic motor starter/disconnects, and motor control centers.

1.2 RELATED SECTIONS

- A. Division 15 - Mechanical Equipment.
- B. Section 16190 - Supporting Devices.
- C. Section 16191 - Seismic Restraint.
- D. Section 16195 - Electrical Identification.
- E. Section 16440 - Disconnect Switches. ‘
- F. Other sections referring to or affecting Work of this Section.

1.3 REFERENCES

- A. Section 16010 - Basic Electrical Requirements.
- B. ANSI Z535.4 – Product Safety Signs and Labels.
- C. NEMA ICS 6 - Enclosures for Industrial Controls and Systems.
- D. UL 248 – Low Voltage Fuses.
- E. UL 489 - Molded Case Circuit Breakers.
- F. NEMA ICS 2 - Industrial Control and Systems Controllers, Contractors, and Overload Relays.
- G. NEMA KS 1 - Enclosed Switches.
- H. UL 845 - Motor Control Centers.
- I. NEMA ICS 18 – Motor Control Centers.
- J. NFPA 70E – Electrical Safety Requirements for Employee Workplaces.

1.4 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 16010.
- B. Provide connection diagrams indicating connections for all remote control devices to terminal strip for each motor control center on as-built drawings.

- C. Provide product data on motor starters and combination motor starters, relays, pilot devices, and switching and overcurrent protective devices. Include ratings, size, and enclosure data.
- D. Submit manufacturer's instructions under provisions of Section 16010.

1.5 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of Section 16010.
- B. Include spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 16010.
- B. Store and protect products under provisions of Section 16010.
- C. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- D. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to motor control center components, enclosure, and finish.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Square D, G.E., Cutler-Hammer.

2.2 MANUAL MOTOR STARTERS

- A. Fractional Horsepower Manual Starter: NEMA ICS 2; AC general-purpose Class A manually operated, 1 or 2 pole, full-voltage controller for fractional horsepower motors, with thermal overload unit set at approximately 115% of measured full load current in each phase, and toggle operator.
- B. Enclosure: NEMA ICS 6; NEMA 1 indoors, NEMA 3R, outdoors, unless otherwise indicated.

2.3 MAGNETIC MOTOR STARTERS

- A. Magnetic Motor Starters: NEMA ICS 2; AC general-purpose Class A magnetic controller for induction motors rated in horsepower and for all three phase motors.
- B. Full Voltage Starting: Non-reversing type unless otherwise indicated.

- C. Reduced Voltage Starting: Closed transition autotransformer type. Provide where specifically indicated. Set at 65% tap unless otherwise indicated.
- D. Coil Operating Voltage: 120 volts, 60 Hertz.
- E. Size: NEMA ICS 2; size as shown on Drawings or as required for motor size installed.
- F. Overload Relay: NEMA ICS 2; melting alloy. At Contractor's option, provide Solid State type with the following characteristics:
 - 1. Phase loss protection.
 - 2. Phase unbalance protection.
 - 3. LED power indication.
 - 4. Self powered.
 - 5. Insensitive to ambient temperatures.
 - 6. 3 to 1 trip current adjustment.
 - 7. Compatible replacement for melting alloy type.
 - 8. Square D Motor Logic.
- G. Enclosure: NEMA ICS 6; NEMA 1 indoors, NEMA 3R outdoors unless otherwise indicated.
- H. Separately Enclosed Combination Motor Starters: Combine motor starters with non-fusible or fusible switch disconnect in common enclosure. Provide fused switch type for all three phase motors rated 7.0 full load amperes and below. Size fuses for approximately 115% of motor full load current. All fuses Class RK-5. Provide non-fused switch type for all three phase motors rated above 7.0 full load amperes, unless equipment served requires fused disconnect.
- I. Auxiliary Contacts: NEMA ICS 2; two N.O. and two N.C. contacts in addition to seal-in contact.
- J. Indicating Lights: NEMA ICS 2; RUN: green in front cover. Provide in each starter.
- K. Selector Switches: NEMA ICS 2; HAND/OFF/AUTO, in front cover. Provide in each starter.
- L. Control Power Transformers: 120 volt secondary, 50 VA minimum, with fused secondary.

2.4 CONTROLLER OVERCURRENT PROTECTION AND DISCONNECTING MEANS

- A. Circuit Breakers: NEMA AB 1; thermal magnetic circuit breakers with integral thermal and instantaneous magnetic trip in each pole. Lockable in off position.
- B. Fusible and Nonfusible Switch Assemblies: NEMA KS 1; heavy duty quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle. Provide defeatable interlock to prevent opening front cover with switch in ON position. Handle lockable in OFF position. Fuse clips to accommodate Class R fuses.
- C. Non-automatic circuit breakers and manual motor starting switches may be used as disconnects where both short circuit protection and overload protection are provided elsewhere.

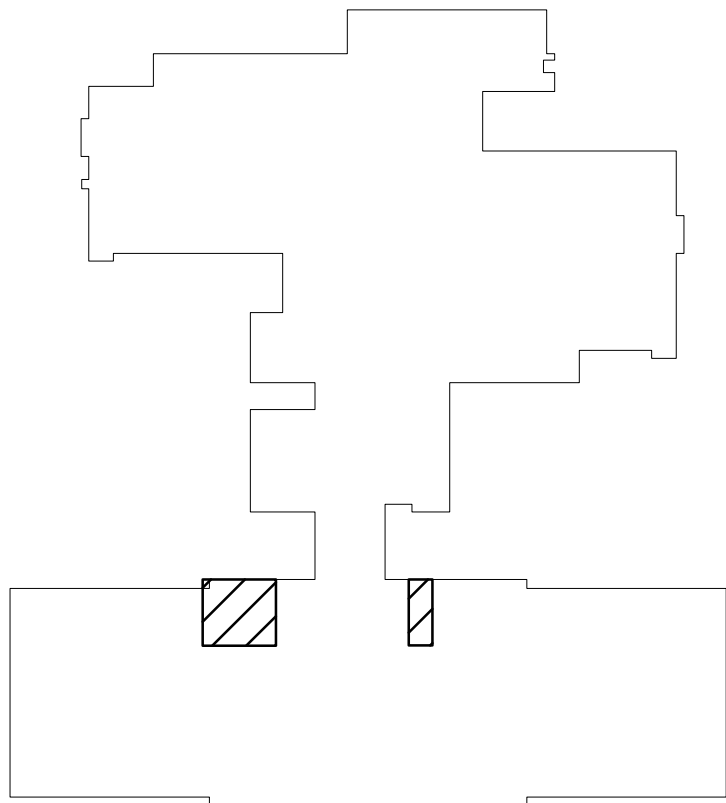
PART 3 – EXECUTION

3.1 INSTALLATION

- A. Unless otherwise specifically indicated, provide each motor with starter and disconnect. Coordinate all work with equipment specified in other divisions. Install motor control equipment in accordance with manufacturer's instructions.
- B. Select and install heater elements in motor starters to match installed motor characteristics. Adjust Solid State overload relay to protect specific motor where installed.
- C. Arrange control circuits for manual, auto, and other signal inputs from mechanical control panels or other pilot devices, and arrange control power to de-energize control circuits whenever operating power supply to particular equipment is disconnected.
- D. Motor Data: Provide neatly typed label inside each motor starter enclosure door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, manufacturer's catalog number of correct overload heater size, and schematic wiring diagram.
- E. Perform field adjustments of protective devices and modifications to equipment to place equipment in final operating condition. Adjust settings in accordance with approved short circuit and protective device coordination study prior to substantial completion.

END OF SECTION

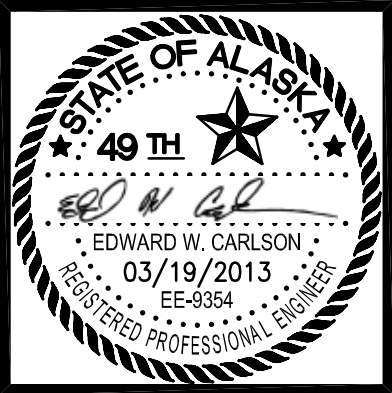
(E) PANEL: BR									
PROJECT: PIONEERS HOME BOILER		MOUNTING		MAINS		OPTIONS			
LOCATION: Room BXX		⊙ SURFACE		⊙ LUGS		☐ FEEDTHRU		☐ SHUNT TRIP	☐ ISO GND BAR
VOLTAGE: 208Y/120 VOLT		⊙ FLUSH		⊙ CB		☐ SUBFEED LUG		☐ SUBFEED BRKR	☒ SOLID NEUTRAL
CIRCUIT DESCRIPTION		KVA	AMP	P	CKT	CKT	AMP	P	KVA
RECEPTACLES **		0.5	20	1	1	2	20	1	0.1
GMT 4 **		0.5	20	1	3	4	20	1	
WATER HTR #2 **		0.6	20	1	5	6	20	1	0.8
(NEW) B-2 (1-1/2 HP)		2.4	15	3	7	8	15	3	2.4
"					9	10			
(NEW) B-1 (1-1/2 HP)		2.4	15	3	13	14	40	3	6.0
"					15	16			
(NEW) CP-SE03 & CP-SB04, (7.5 HP ea.)		8.7	60	3	19	20	25	1	1.6
"					21	22	25	1	1.6
(NEW) SPARE			20	1	25	26	70	3	11.1
(NEW) SPARE			20	1	27	28			
(NEW) SPARE			20	1	29	30			
CTRLS COMPRESSOR		1.3	20	3	31	32	15	3	2.4
"					33	34			
"					35	36			
USED **		0.3	20	1	37	38	20	1	0.4
USED **		0.3	20	1	39	40	20	1	
USED **		0.3	20	1	41	42	20	1	0.4
CONNECTED LOAD:			45.7 KVA		126.9 A				
DEMAND LCAD:			47.6 KVA		132.1 A				
DATE:									
REV:									
									FED FROM 200/3 IN PANEL'B'



KEY PLAN

LEGEND		
ABBR.	EXPLANATION	SYMBOL
XFMR	TRANSFORMER	
NIC	NOT IN CONTRACT	
CKT	CIRCUIT – NUMBER AS NOTED (TYP.)	CKT--XX
UON	UNLESS OTHERWISE NOTED	
A/100	LIGHTING FIXTURE DESIGNATION – SEE SCHEDULE	
ETR	EXISTING TO REMAIN	
N.L.	NIGHT LIGHT	
WP	WEATHERPROOF	
(E)	EXISTING	
C	CONDUIT, CONCEALED. SIZE AS NOTED (TYP.)	
	CONDUIT, UNDERGROUND OR UNDERFLOOR	
↓	CONDUIT, EXPOSED	
FLEX	CONDUIT, FLEXIBLE	
	MULTI–OUTLET ASSEMBLY–RECEPTACLES AS INDICATED	
	HOMERUN TO PANEL/CIRCUITS AS NOTED	
#X	WIRE COUNT OF # 12 UON/SPECIFIED	
UP	CONDUIT UP	
DN	CONDUIT DOWN	
PNL	PANELBOARD – SEE SCHEDULES	
	REFER TO INDICATED NOTE	
RECPT	TELEPHONE RECEPTACLE	
	TELEPHONE RECEPTACLE IN FLOOR BOX	
	DUPLEX RECEPTACLE – NEMA 5–20R	
	QUADRUPLX RECEPTACLE – NEMA 5–20R	
	DUPLEX RECEPTACLE – NEMA 5–20R GFCI TYPE	
	ISOLATED GRD DUPLEX RECEPTACLE – NEMA 5–20R	
	DUPLEX RECEPTACLE – NEMA 5–20R SPLIT WIRED	
	DUPLEX RECEPTACLE IN FLOOR BOX	
	RECEPTACLE – NEMA CONFIGURATION AS NOTED	
↓	TELEVISION RECEPTACLE	
J–BOX	JUNCTION BOX	
	SINGLE PHASE MOTOR – SIZE AS INDICATED	
	THREE PHASE MOTOR – SIZE AS INDICATED	
	MOTOR CONTROLLER	
	MOTOR DISCONNECT	
	COMBINATION STARTER/DISCONNECT	
SW	SWITCH – SINGLE POLE	
	SWITCH – TWO POLE	
	SWITCH – THREE WAY	
	SWITCH – FOUR WAY	
	SWITCH – DIMMING TYPE	
	SWITCH – OCCUPANCY SENSOR	
	SWITCH – THERMAL OVERLOAD	
	SWITCH – LOW VOLTAGE	
	CALL–IN SWITCH	
	SWITCH – WITH TIMER	
FS	SPRINKLER FLOW SWITCH	
TS	SPRINKLER TAMPER SWITCH	
	PHOTOELECTRIC TYPE SMOKE DETECTOR	
	IONIZATION TYPE SMOKE DETECTOR	
	HEAT DETECTOR–F INDICATES FIXED TEMP ONLY C INDICATES ABOVE CEILING	
	RESIDENTIAL TYPE SMOKE DETECTOR	
	DUCT MOUNTED SMOKE DETECTOR	
	FIRE ALARM HORN/STROBE	
	FIRE ALARM STROBE	
	WEATHERPROOF FIRE ALARM HORN	
	FIRE ALARM MANUAL STATION	
FACP	FIRE ALARM CONTROL PANEL	
FANN	FIRE ALARM REMOTE ANNUNCIATOR	
TTB/C	TELEPHONE TERMINAL BOARD/CABINET	
STBY	STANDBY CIRCUIT	
PC	PHOTOCELL	
TC	TIMECLOCK	
	CLOCK	
	COMBINATION CLOCK/SPEAKER	
	MAGNETIC DOOR SWITCH	
	SECURITY ALARM PANEL	
	EXIT SIGN – SELF POWERED	
	BATTERY–POWERED EMERGENCY LIGHT	
	LIGHTING FIXTURES – VARIOUS TYPES AS NOTED	
	SHADING INDICATES EMERGENCY LIGHTING FIXTURE	
	DIAGONAL LINE INDICATES STANDBY FIXTURE	
	SMOKE DETECTOR	
	DOOR CHIMES	
	FAN W/ LIGHT	
	EXISTING TO REMAIN (ETR)	
	DEMOLITION (DEMO)	
	NEW	

THIS IS A STANDARD LEGEND, ALL SYMBOLS SHOWN ON LEGEND ARE NOT NECESSARILY ON THE DRAWING(S).



MBA Consulting Engineers, Inc.

3812 Spenard Road, Suite 200 • Anchorage, AK 99517
(907) 274–2622 • FAX (907) 274–0914
Email: mbaconsulting@alaska.com

ANCHORAGE PIONEER HOME

BOILER REPLACEMENT

DRAWN BY CLR

CHECKED BY EWC

DATE 03–19–2013

REVISIONS

DRAWING TITLE
LEGENDS & SCHEDULES

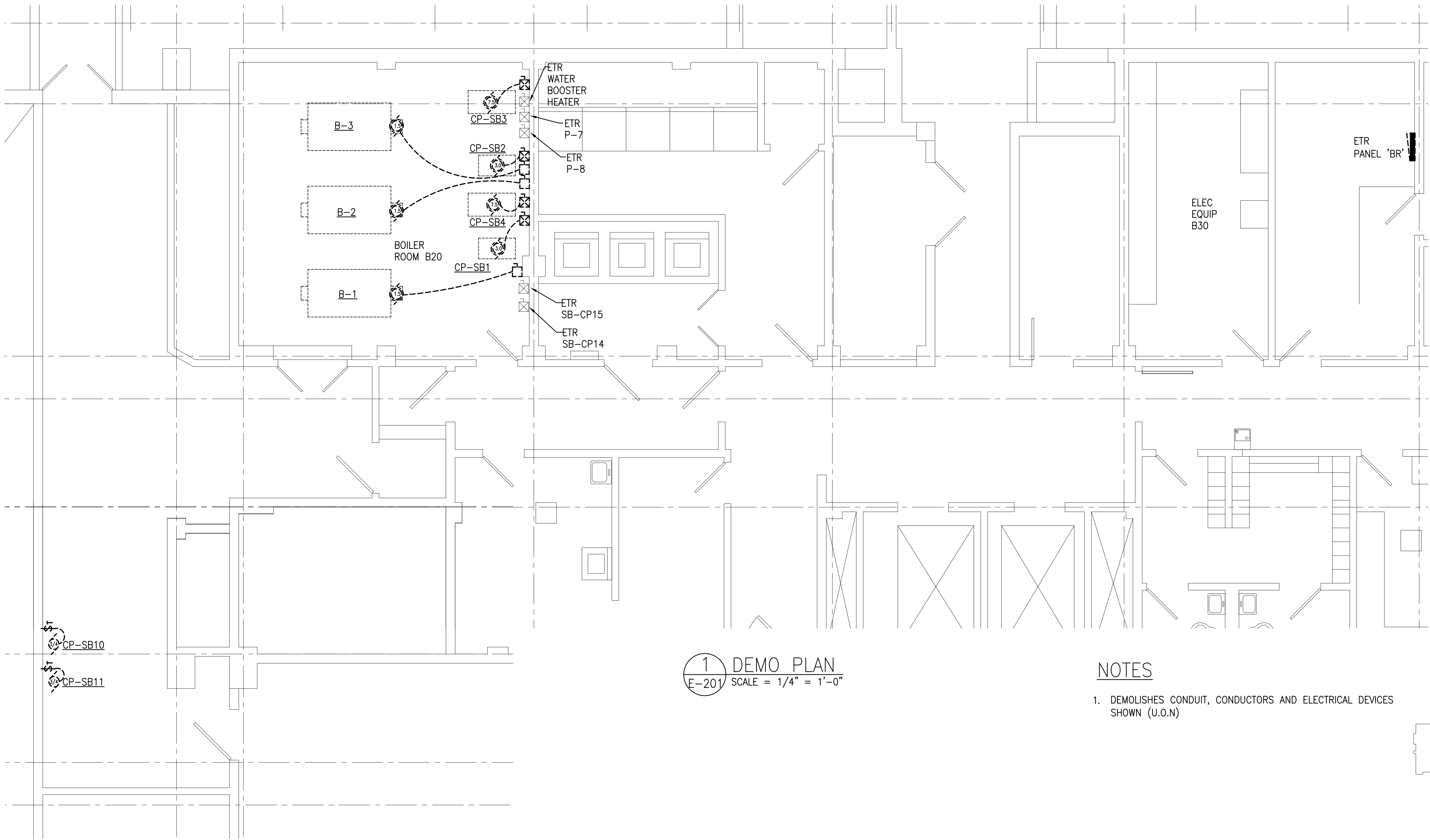
JOB NO. 12044

© 2012 MBA Consulting Engineers, Inc.

SHEET NO.

E–101

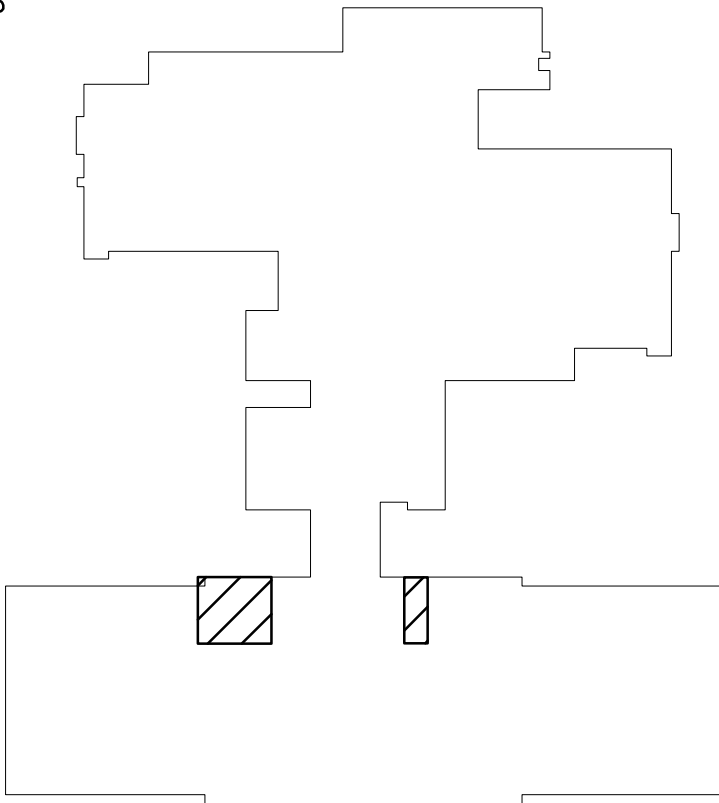
OF



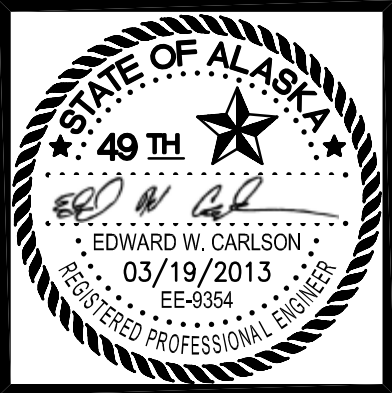
1 DEMO PLAN
E-201 SCALE = 1/4" = 1'-0"

NOTES

1. DEMOLISHES CONDUIT, CONDUCTORS AND ELECTRICAL DEVICES SHOWN (U.O.N)



KEY PLAN



MBA Consulting Engineers, Inc.

3812 Spenard Road, Suite 200 • Anchorage, AK 99517
(907) 274-2622 • FAX (907) 274-0914
Email: mbaconsulting@alaska.com

ANCHORAGE PIONEER HOME

BOILER REPLACEMENT

DRAWN BY CLR

CHECKED BY EWC

DATE 03-19-2013

REVISIONS

DRAWING TITLE
DEMO PLAN

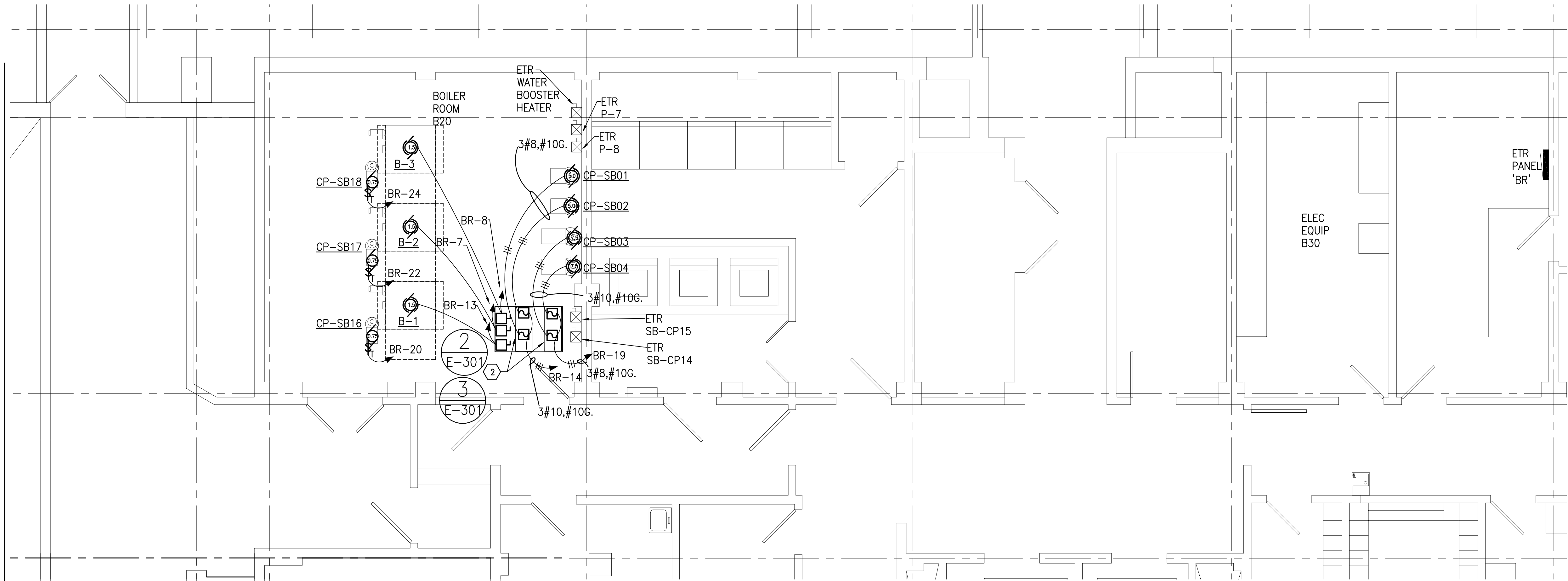
JOB NO. 12044

© 2012 MBA Consulting Engineers, Inc.

SHEET NO.

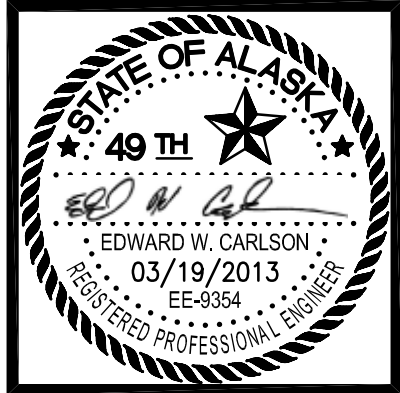
E-201

OF



NOTES

- 1. REUSE EXISTING CONDUIT WHERE PRACTICAL, NOT CONDUCTORS.
- 2. PROVIDE FREE STANDING 3/4" UNISTRUT FRAME FOR MOTOR CONTROLLERS AND VFD'S. PROVIDE ENCLOSURE WITH TWO VFD'S. BOTH VFD'S SHARE SINGLE THREE PHASE FEEDER CIRCUIT. DISCONNECTS INCLUDED WITH VFD'S. MOUNT FRAME SO THAT FACE OF VFD IS FLUSH WITH THE EDGE OF PYLASTER. SEE 2/E301 AND MECHANICAL SPECIFICATIONS 15875.
- 3. REUSE EXISTING CONDUIT AND CONDUCTORS. CHANGE EXISTING CIRCUIT BREAKER IN PANEL TO 30/1 AND RECONNECT.
- 4. RECONNECT TO EXISTING CIRCUIT.



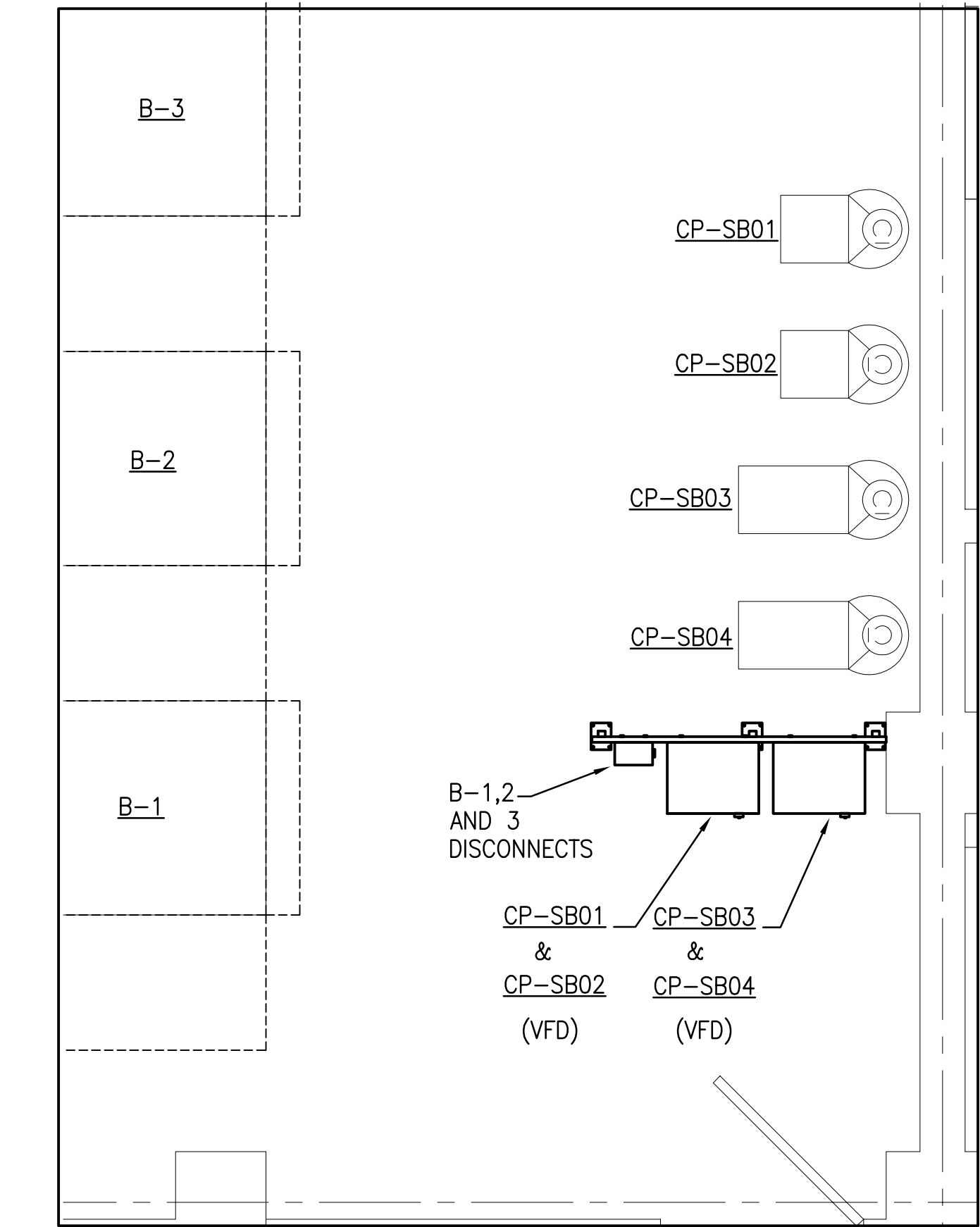
MBA Consulting Engineers, Inc.
3812 Spanard Road, Suite 200 • Anchorage, AK 99517
(907) 274-2622 • FAX (907) 274-0914
Email: mbaconsulting@alaska.com

**ANCHORAGE PIONEER HOME
BOILER REPLACEMENT**

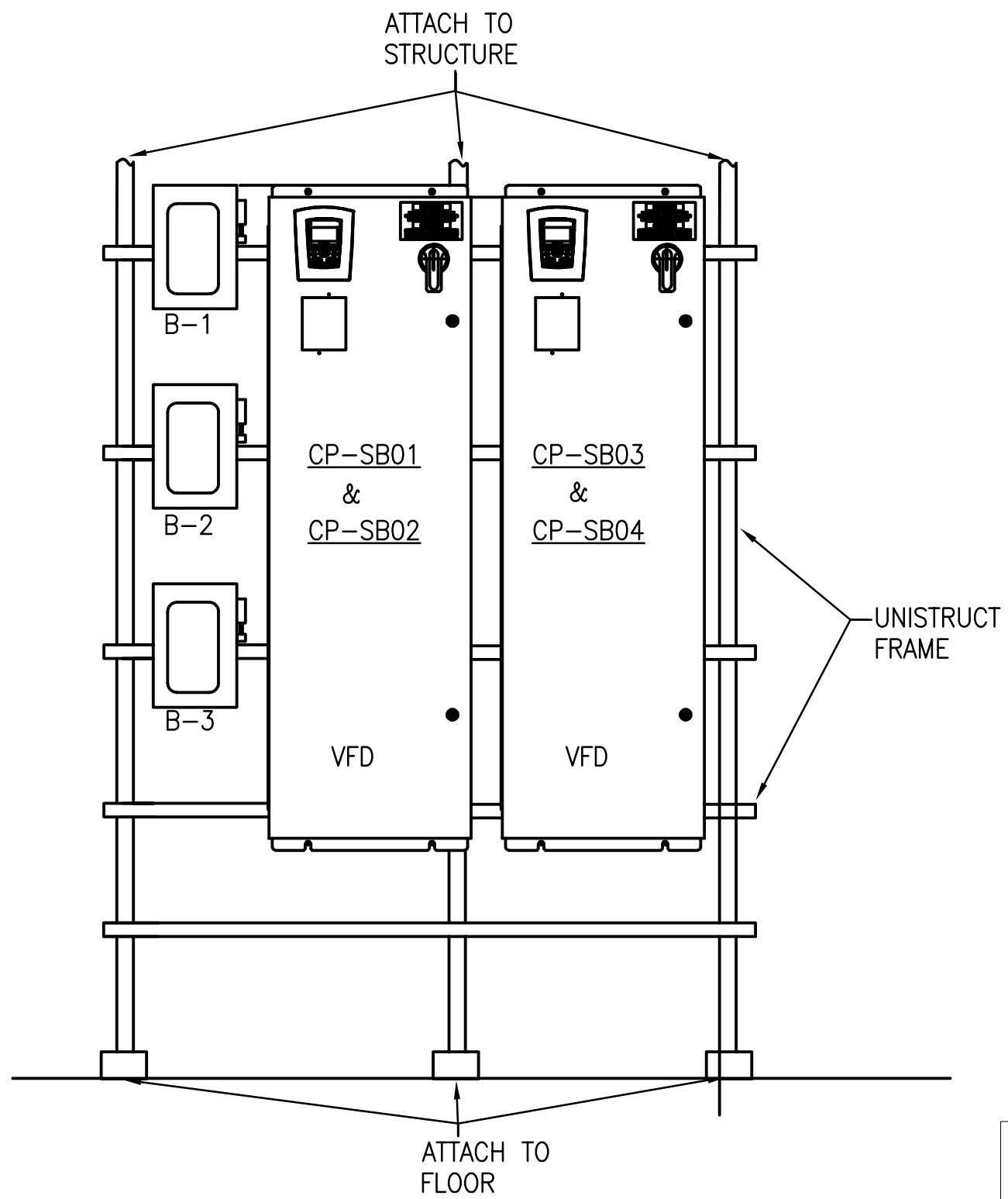
DRAWN BY CLR
CHECKED BY EWC
DATE 03-19-2013
REVISIONS
DRAWING TITLE
POWER PLAN
AND DETAIL
JOB NO. 12044
© 2012 MBA Consulting Engineers, Inc.

SHEET NO.
E-301
OF

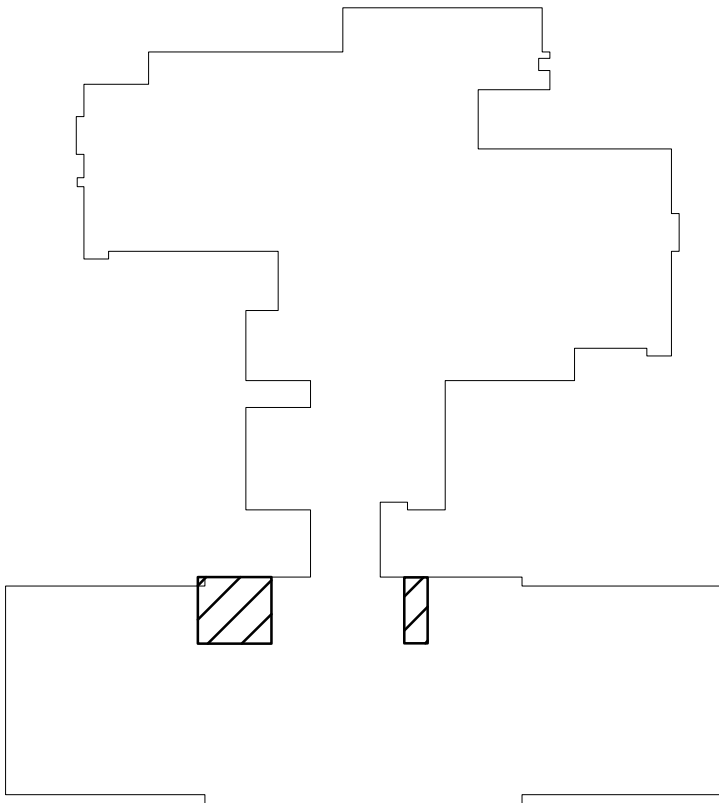
1 POWER PLAN
E-301 SCALE = 1/4" = 1'-0"



2 MOTOR CONTROLLER/VFD PLAN VIEW
E-301 SCALE = 1/2" = 1'-0"



3 MOTOR CONTROLLER/VFD ELEVATION
E-301 SCALE = 1" = 1'-0"



KEY PLAN

BOILER SCHEDULE									
SYMBOL	TYPE	FLUID (%)	FUEL	AGA INPUT MBH	GROSS OUTPUT MBH	CONTROLLER AMPS VOLTS/PH		DESIGN BASIS PRODUCT	
B-1 B-2 B-3	COPPER FIN	WATER	GAS	2,000	1,760	6.0	208 / 3	THERMAL SOLUTIONS, MODEL EVS-2000S, 1-1/2 HP BLOWER DIRECT VENT, FULL MODULATION, WITH TRIM PER IMC CHAPTER 10	

PUMP SCHEDULE											
SYMBOL	LOCATION	SERVICE	FLUID		GPM	HEAD FT.	RPM	MOTOR HP/VOLTS/PH	DESIGN BASIS PRODUCT		
			TYPE	TEMP.							
CP-SB16 17, 18	MECH ROOM	BOILER CIRCULATION	WATER	190	130	15	-	3/4 /120/1	ARMSTRONG 4380-3x3x6-0.75 HP		
CP-SB01	MECH ROOM	PHASE 1 LOOP	WATER	190	151	45	-	5 /208/3	ARMSTRONG 4380-3x3x8-5 HP		
CP-SB03	MECH ROOM	PHASE 2 LOOP	WATER	190	260	50	-	7.5 /208/3	ARMSTRONG 4380-3x3x8-7.5 HP		
CP-SB10	CORRIDOR B19	SNOWMELT LOOP	60%PG	120	34	12	-	1/3 /120/1	ARMSTRONG 4380-2x2x6-0.33. HP		
CP-SB11	CORRIDOR B19	HEAT EXCHANGER	WATER	190	35	37	-	1 /120/1	ARMSTRONG 4380-1.5x1.5x8-1 HP		

PROVIDE VFDs FOR PUMPS CP-SB01, CP-SB02, CP-SB03, CP-SB04. FIELD VERIFY P.G. PERCENTAGE OF SNOWMELT SYSTEM.

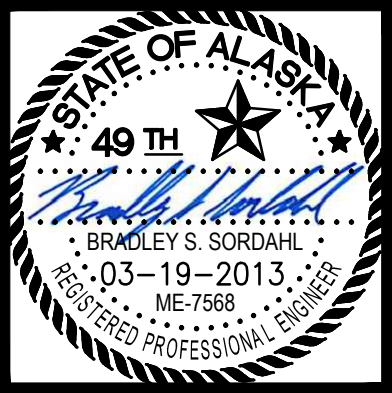
HEAT EXCHANGER SCHEDULES												
SYMBOL	MBH	FLUID		GPM		HOT TEMP.		COLD TEMP.		PRESS. DROP		DESIGN BASIS PRODUCT
		HOT	COLD	HOT	COLD	IN	OUT	IN	OUT	HOT	COLD	
HX-3	331	WATER	60% PG	34	35	170	150	98	120	1.4	2.0	GRAHAM MODEL GP151-350L-13, TYPE: BRAZE PLATE, 2" FPT

MISCELLANEOUS EQUIPMENT SCHEDULE

AS-1	TANGENTIAL AIR SEPARATOR, B&G MODEL R-6F, 6" FLANGE, STRAINER.
AS-4	AIR ELIMINATOR WITH DIRT SEPRATOR, SPIROTHERM MODEL VDR200FT, COPPER BUNDLE OF COELESCING MEDIUM FILLING ENTIRE INTERNAL AREA OF FITTING, AUTO AIR VENT, DRAIN VALVE, SWEAT CONNECTIONS.
ET-4	EXPANSION TANK: AMTROL MODEL EXTROL 60.
EWS-1	EYEWASH STATION: SELF-CONTAINED EYEWASH UNIT. TRANSPARENT 7 GALLON IMPACT RESISTANT TANK, HINGED EYEWASH TRAY, STAINLESS STEEL CLAMPS TO PEDESTAL. BRADLEY S19-921. PROVIDE MANUFACTURER RECOMMENDED SOLUTION. MOUNT PER MANUFACTURERS RECOMMENDATION FOR GRAVITY FED FLUSH.
NT-1	JM MODEL JM-20 CONDENSATE NEUTRALIZING TUBE., RATED FOR 20 GPH AND 2000 MBH.

LEGEND & ABBREVIATIONS		
ABBR.	EXPLANATION	SYMBOL
A	AIR -- COMPRESSED	
	AIR EXTRACTOR	
	AIR FLOW MEASURING DEVICE	
	AIR FOIL TURNING VANES	
AAV	AUTOMATIC AIR VENT	
AFF	ABOVE FINISHED FLOOR	
BDD	BACKDRADFT DAMPER	
BD	BALANCING DAMPER	
	BALANCING/ISOLATION VALVE	
	BALL VALVE	
CC	COOLING COIL	
CFM	CUBIC FEET/MINUTE	
CO	CLEANOUT	
CV	CHECK VALVE	
CW	COLD WATER	
DD	DUCT DETECTOR	
	DUCT IDENTIFICATION SYMBOL	
(E)	EXISTING	
E/A	EXHAUST AIR	
	EXPANSION COMPENSATOR	
F	FIRE	
FCO	FLOOR CLEANOUT	
FD	FIRE DAMPER	
FDC	FIRE DEPARTMENT CONNECTION	
FD	FLOOR DRAIN	
	FLEXIBLE CONNECTION	
	FLEXIBLE DUCT	
	FLOW CONTROL VALVE	
FOS	FUEL OIL SUPPLY	
FOR	FUEL OIL RETURN	
G	GAS	
	GLOBE VALVE	
GS	GLYCOL SUPPLY	
GR	GLYCOL RETURN	
HB	HOSE BIBB	
HC	HEATING COIL	
HW	HOT WATER	
HWC	HOT WATER CIRCULATION	
HWR	HEATING WATER RETURN	
HWS	HEATING WATER SUPPLY	
MOD	MOTOR OPERATED DAMPER	
MOV	2-WAY MOTOR OPERATED VALVE	
MOV	3-WAY MOTOR OPERATED VALVE	
NIC	NOT IN CONTRACT	
O/A	OUTSIDE AIR	
	PIPE ANCHOR	
	PIPE GUIDE	
POC	POINT OF CONNECTION	
	PRESSURE GAGE	
PRV	PRESSURE RELIEF VALVE	
PW	PUMPED WASTE	
R/A	RETURN AIR	
RD	ROOF DRAIN	
RL	RAIN LEADER	
RV	RELIEF VALVE	
	RETURN AIR SLOT	
	RETURN/EXHAUST AIR REG. OR GRILLE	
S	SANITARY SOIL	
S/A	SUPPLY AIR	
	SQUARE HEAD COCK	
	STRAINER WITH DRAIN VALVE	
SD	STORM DRAIN	
SL	ACOUSTICALLY LINED DUCT	
SP	SPRINKLER	
	STATIC PRESSURE SENSOR	
	SUPPLY AIR SLOT W/FLEX DUCT	
	SUPPLY AIR REG. GRILLE, OR DIFFUSER	
TW	TEMPERED WATER	
	THERMALLY INSULATED DUCT OR PIPE	
	THERMOMETER	
T'STAT	THERMOSTAT	
T'STAT	RETURN AIR THERMOSTAT	
	UNION	
V	VENT	
VTR	VENT THRU ROOF	
WCO	WALL CLEANOUT	
W	WASTE	

THIS IS A STANDARD LEGEND, SOME SYMBOLS SHOWN ON LEGEND ARE NOT NECESSARILY ON THE DRAWING.



MBA Consulting Engineers, Inc.

3812 Spenard Road, Suite 200 • Anchorage, AK 99517
(907) 274-2622 • FAX (907) 274-0914
Email: mbaconsulting@alaska.com

ANCHORAGE PIONEER HOME

BOILER REPLACEMENT

DRAWN BYMSM

CHECKED BYBSS

DATE03-19-2013

REVISIONS

DRAWING TITLE
LEGENDS, SCHEDULES
AND ABBREVIATIONS

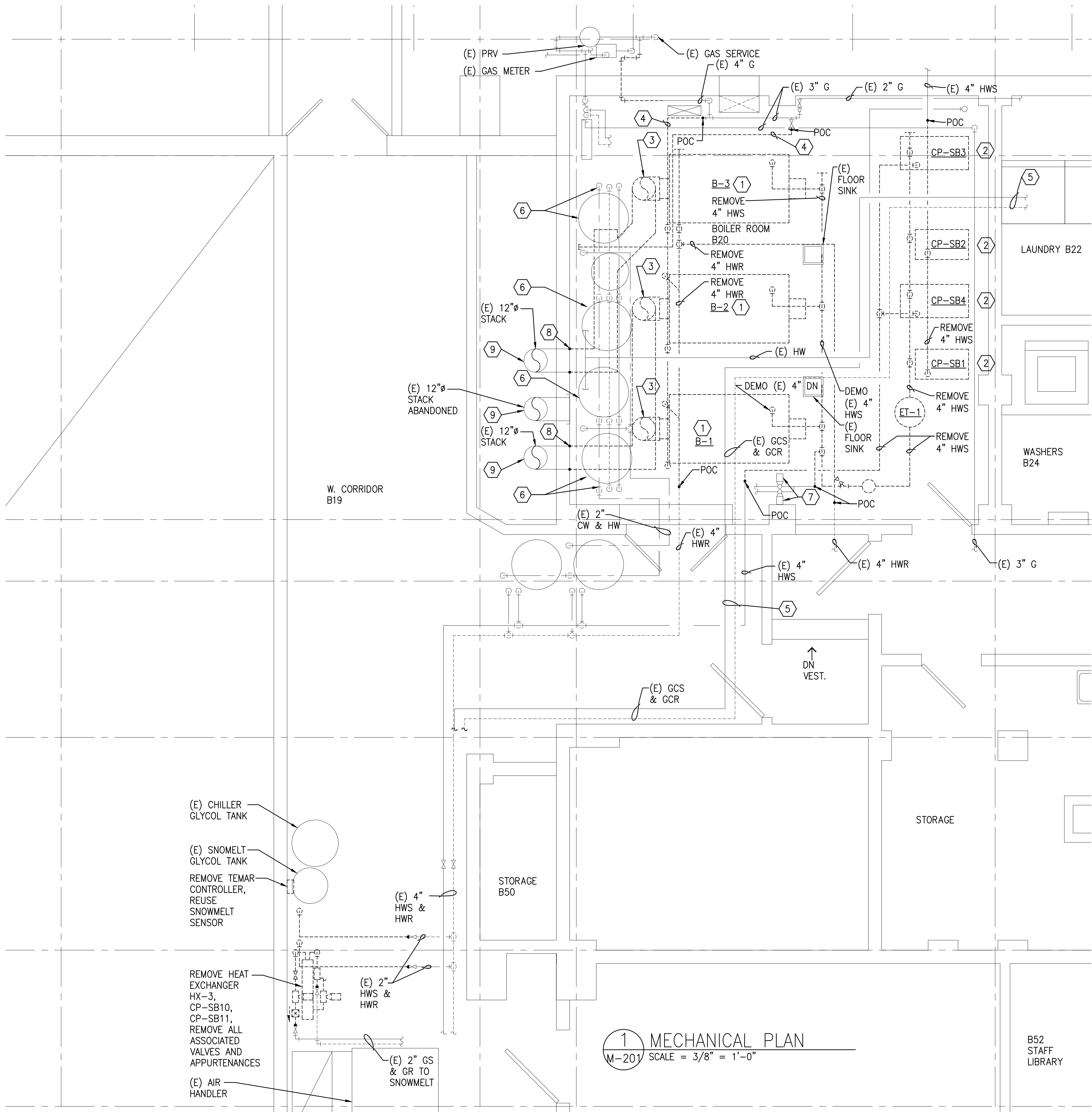
JOB NO.12044

© 2012 MBA Consulting Engineers, Inc.

SHEET NO.

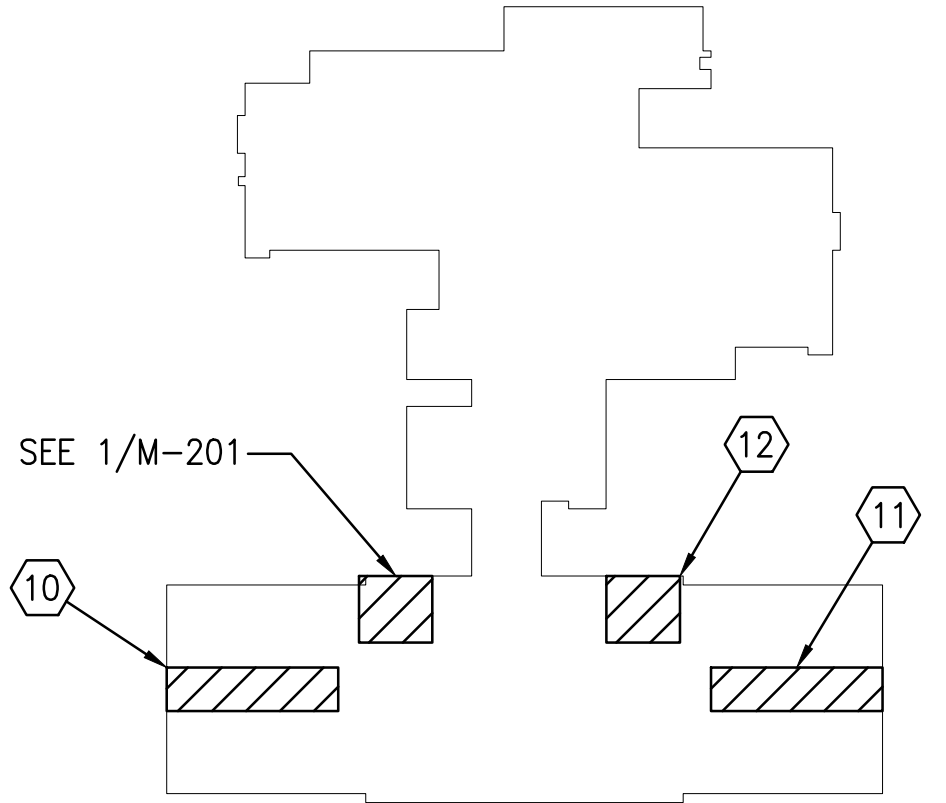
M-101

OF



DEMO SHEET NOTES:

- 1 REMOVE EXISTING BOILER, CONTROLS AND ACCESSORIES.
- 2 REMOVE EXISTING BASE MOUNTED PUMPS, PIPING AND APPURTENANCES TO POINT OF CONNECTION.
- 3 REMOVE EXISTING BOILER STACK TO LOCATION SHOWN.
- 4 REMOVE EXISTING GAS PIPING TO LOCATION SHOWN.
- 5 EXISTING CHILLED GLYCOL PIPING TO REMAIN.
- 6 EXISTING DOMESTIC WATER PIPING AND INDIRECT FIRED HEATERS TO REMAIN.
- 7 EXISTING HEATING PUMPS SERVING HOT WATER GENERATORS TO REMAIN.
- 8 REMOVE STACK TO WITHIN WITHIN 3 INCHES OF WALL SURFACE.
- 9 EXISTING STACK RUNNING UP THROUGH ROOF. REMOVE STACK TERMINATION ON ROOF.
- 10 SAF-1, LOCATED ON 6TH FLOOR MECHANICAL ROOM 600, CLOSE BYPASS BALANCING VALVE ON 3-WAY VALVE ASSEMBLY. ASSEMBLY WILL BE REUSED AS A 2-WAY ASSEMBLY. HANG SIGN ON BYPASS BALANCING VALVE STATING "NORMALLY CLOSED".
- 11 SAF-2, LOCATED ON 6TH FLOOR MECHANICAL ROOM 603, CLOSE BYPASS BALANCING VALVE ON 3-WAY VALVE ASSEMBLY. ASSEMBLY WILL BE REUSED AS A 2-WAY ASSEMBLY. HANG SIGN ON BYPASS BALANCING VALVE STATING "NORMALLY CLOSED".
- 12 HV-1, LOCATED IN BASEMENT FLOOR VENTILATION ROOM 18, CLOSE BYPASS BALANCING VALVE ON 3-WAY VALVE ASSEMBLY. ASSEMBLY WILL BE REUSED AS A 2-WAY ASSEMBLY. HANG SIGN ON BYPASS BALANCING VALVE STATING "NORMALLY CLOSED".
13. STAGE DEMOLITION AND NEW WORK TO MAINTAIN AT LEAST (2) BOILERS OPERABLE TO MAINTAIN CONTINUOUS HOT WATER GENERATOR OPERATION.



KEY PLAN

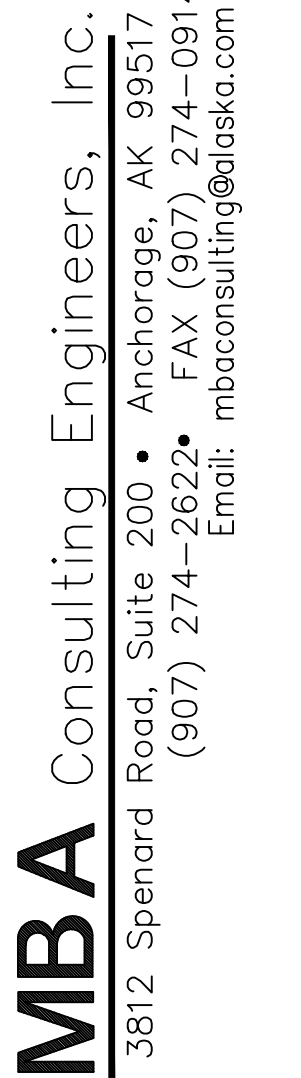


MBA Consulting Engineers, Inc.
3812 Spenard Road, Suite 200 • Anchorage, AK 99517
(907) 274-2622 • FAX (907) 274-0914
Email: mbaconsulting@alaska.com

ANCHORAGE PIONEER HOME
MECHANICAL PLANS

DRAWN BY TLC/MSM
CHECKED BY BSS
DATE 03-19-2013
REVISIONS
DRAWING TITLE MECHANICAL PLAN
JOB NO. 12044
© 2012 MBA Consulting Engineers, Inc.

SHEET NO.
M-201
OF

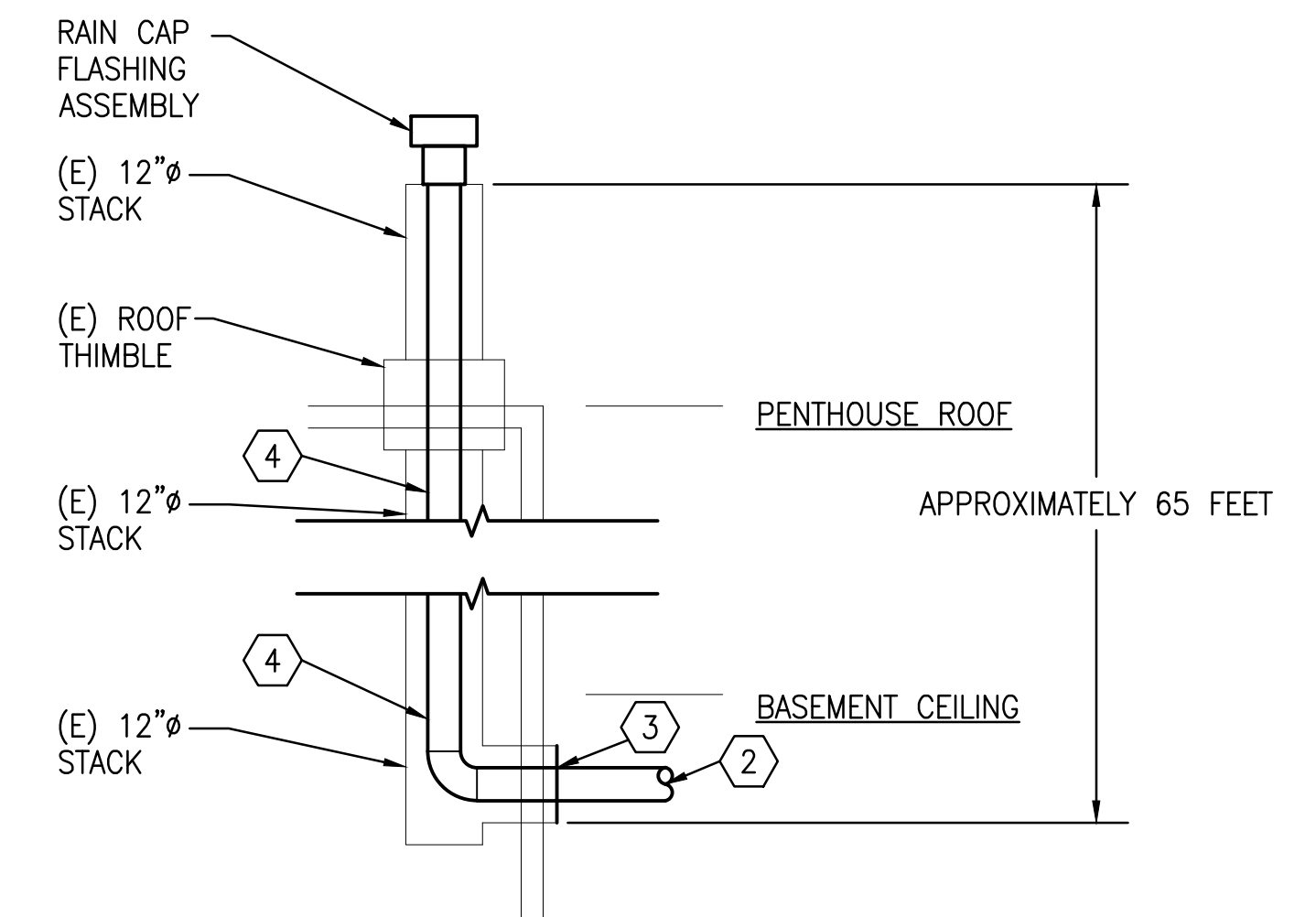


BOILER REPLACEMENT

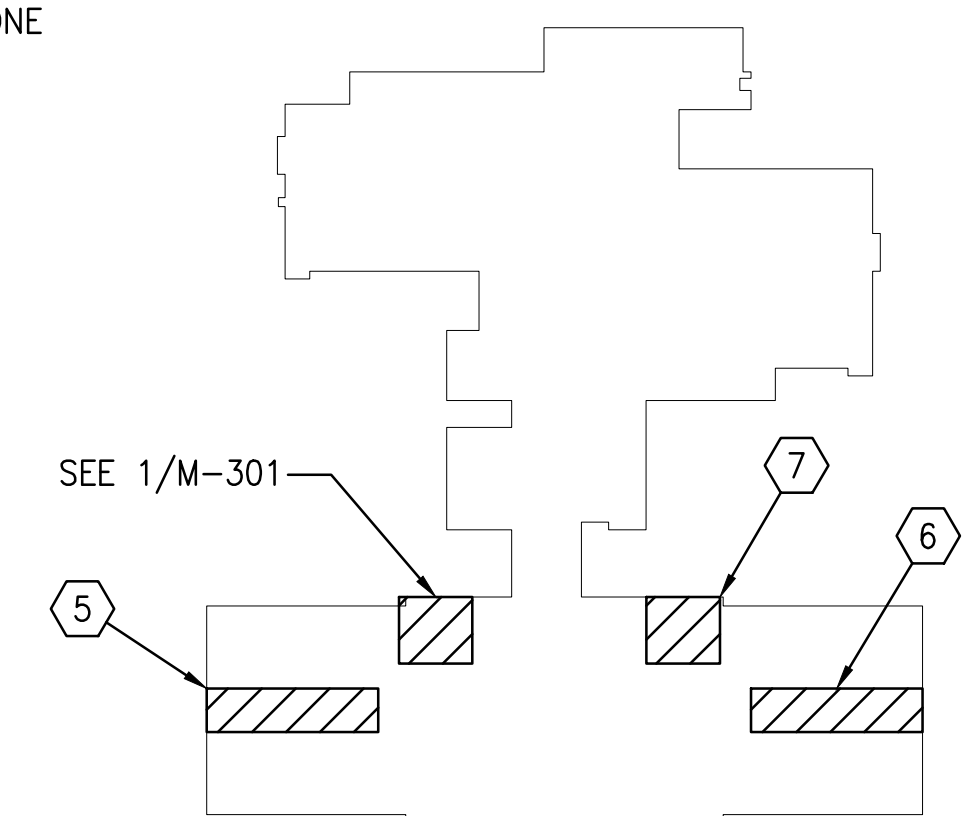
M-301

OF

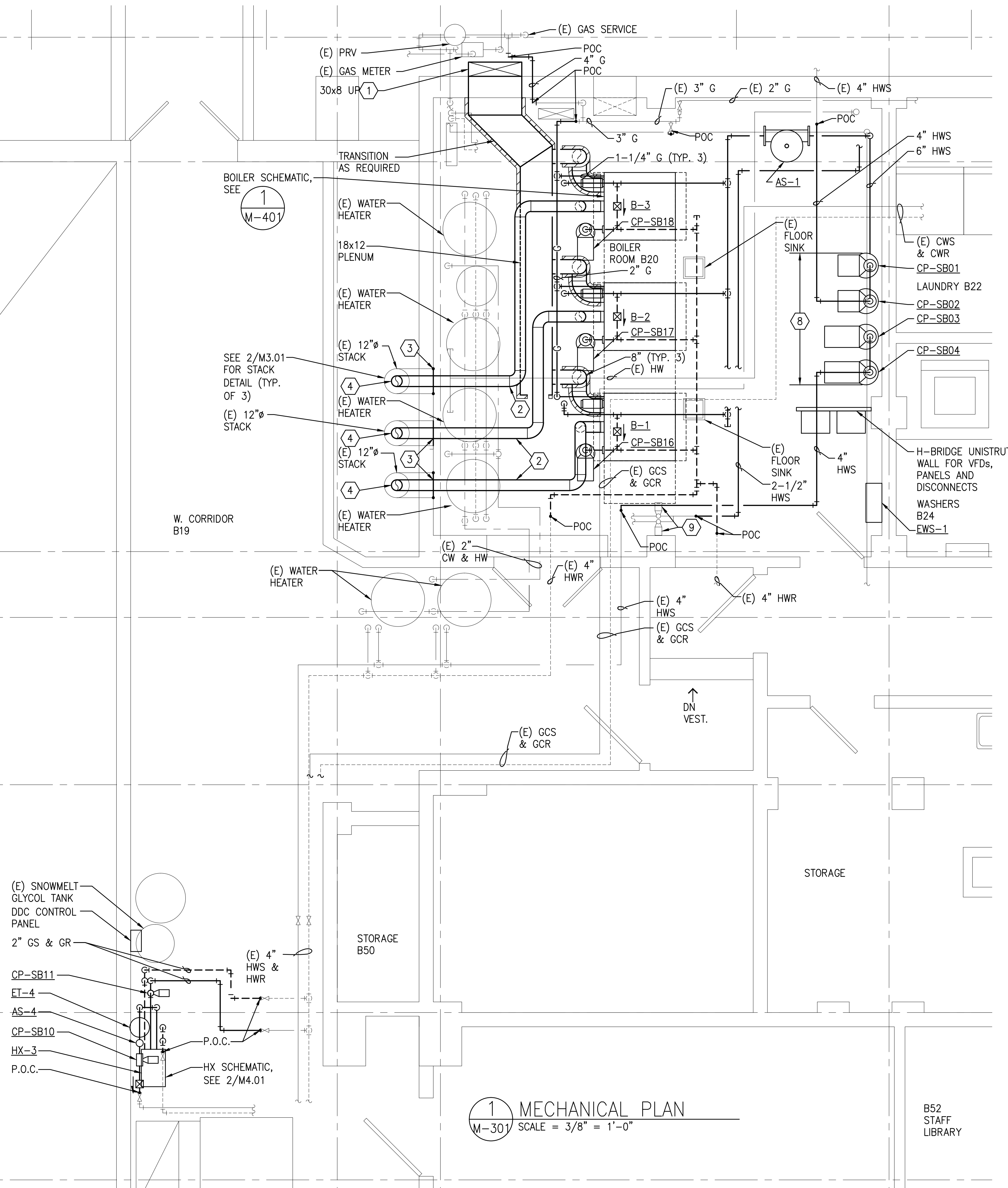
1. 30x18 COMBUSTION AIR INTAKE. TERMINATE AT 30x12 HOOD, MINIMUM 10 FT ABOVE GAS METER ASSEMBLY. SEE DETAIL 3/M4.01.
2. WITHIN MECHANICAL ROOM, 6" FLUE FROM BOILERS SHALL BE METAL-FAB DOUBLE WALL MODEL CG AL29-4C VENT SYSTEM, OR APPROVED EQUAL
3. TRANSITION FROM CG DOUBLE WALL STACK TO Z-VENT SMOOTHCORE VENT CHIMNEY LINER.
4. ROUTE Z-VENT SMOOTHCORE CHINEY LINER UP EXISTING 12" STACK, TERMINATE ON ROOF WITH MANUFACTURER'S RECOMMENDED RAIN CAP / FLASHING ASSEMBLY.
5. SAF-1, LOCATED ON 6TH FLOOR MECHANICAL ROOM 600, TEST HEATING COIL VALVE CONTROL.
6. SAF-2, LOCATED ON 6TH FLOOR MECHANICAL ROOM 603, TEST HEATING COIL VALVE CONTROL.
7. HV-1, LOCATED IN BASEMENT FLOOR VENTILATION ROOM 18, TEST HEATING COIL VALVE CONTROL.
8. PUMPS ARE BEING INSTALLED ON WALL SPACE MADE AVAILABLE FROM DEMOLITION OF EXISTING ELECTRICAL GEAR, SEE ELECTRICAL. THE MAXIMUM HORIZONTAL WALL SPACE AVAILABLE IS APPROXIMATELY 6 FEET.
9. EXISTING HEATING PUMPS SERVING HOT WATER GENERATORS.
10. STAGE DEMOLITION AND NEW WORK TO MAINTAIN AT LEAST (2) BOILERS OPERABLE TO MAINTAIN CONTINUOUS HOT WATER GENERATOR OPERATION.

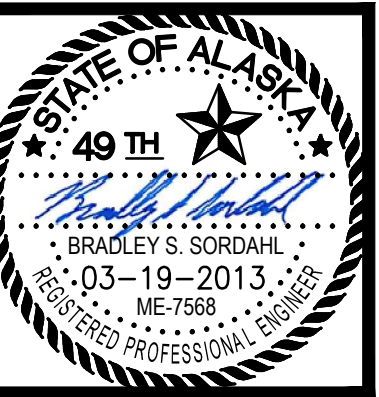


2 STACK DETAIL
M-301 SCALE = NONE



KEY PLAN



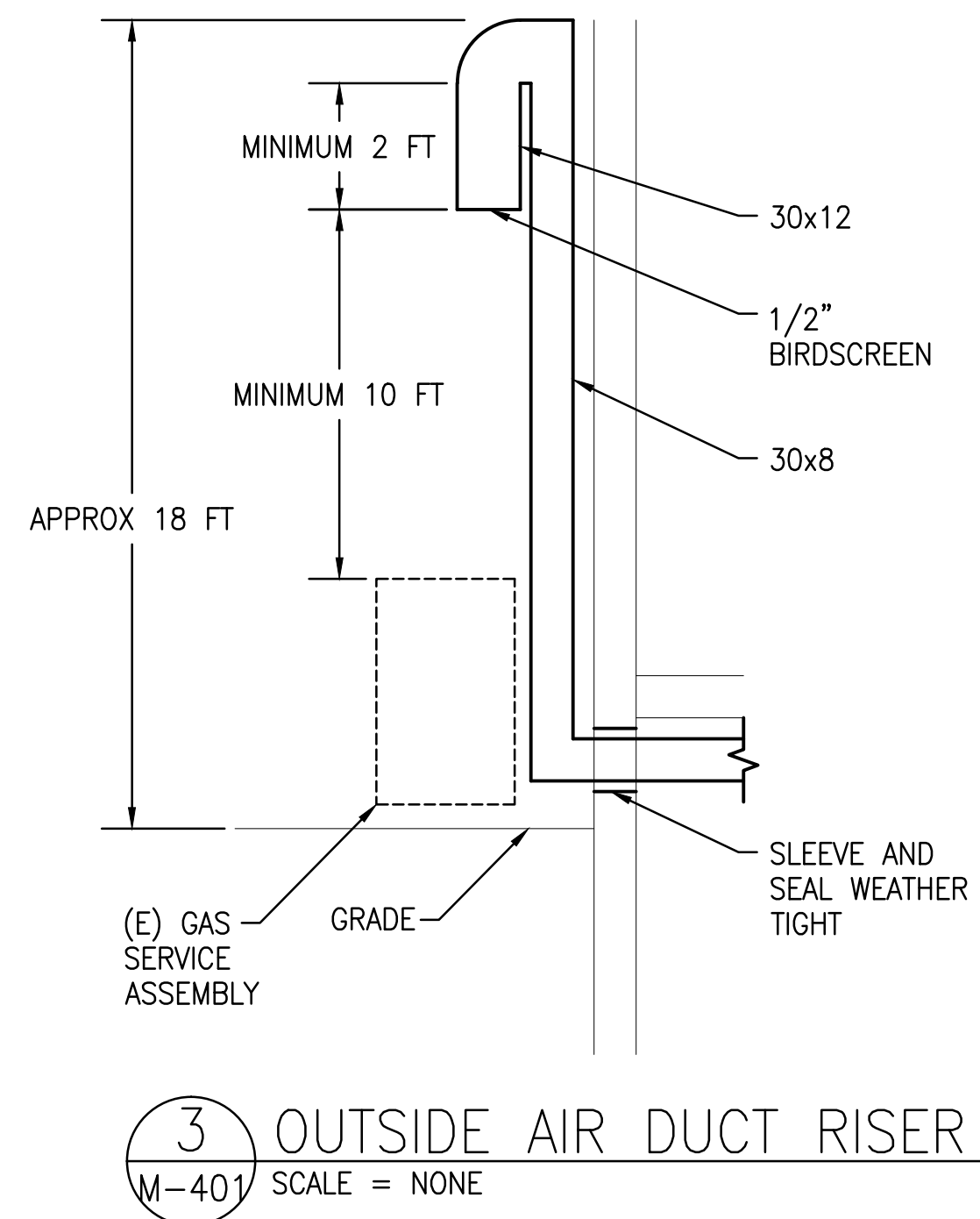
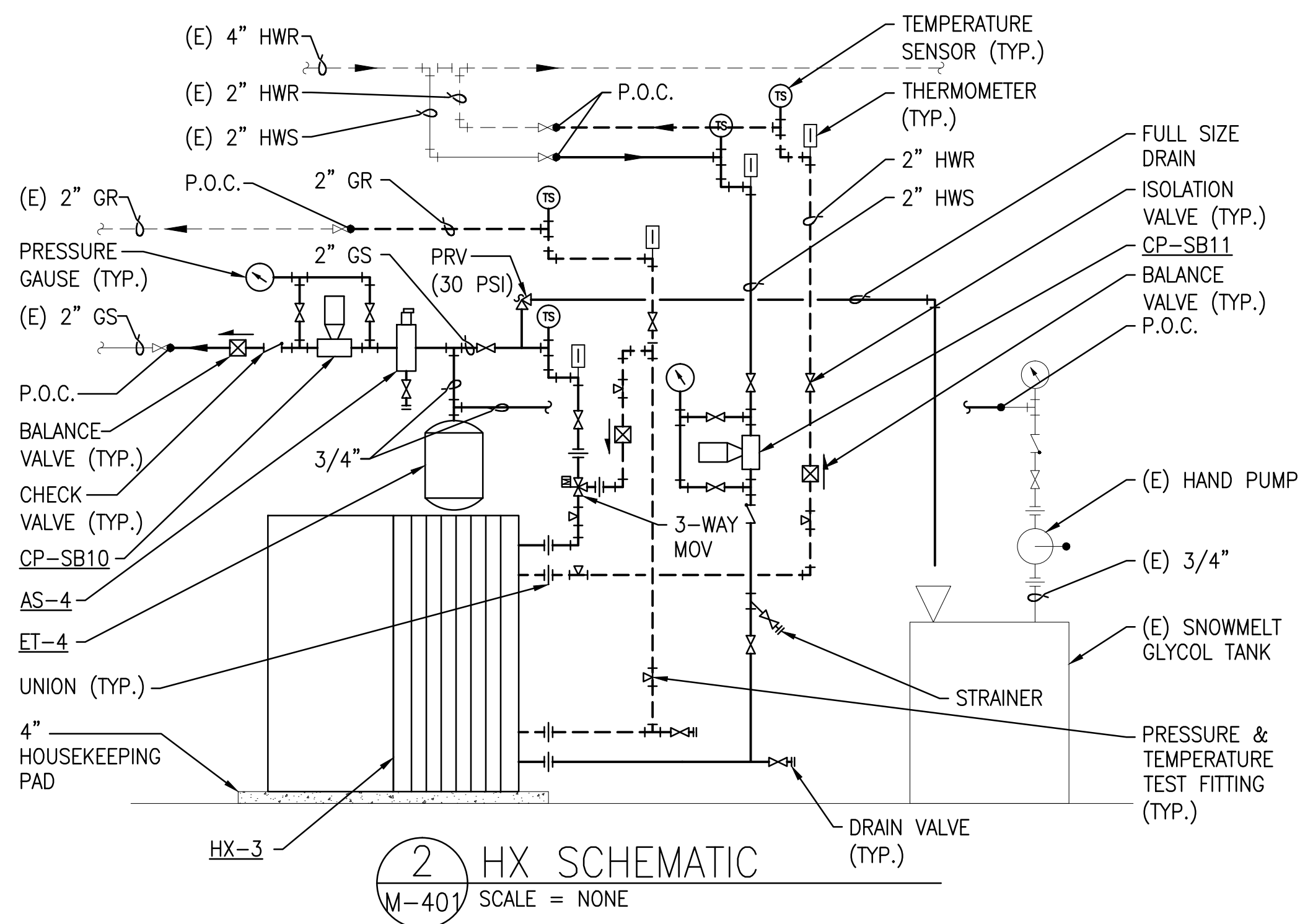
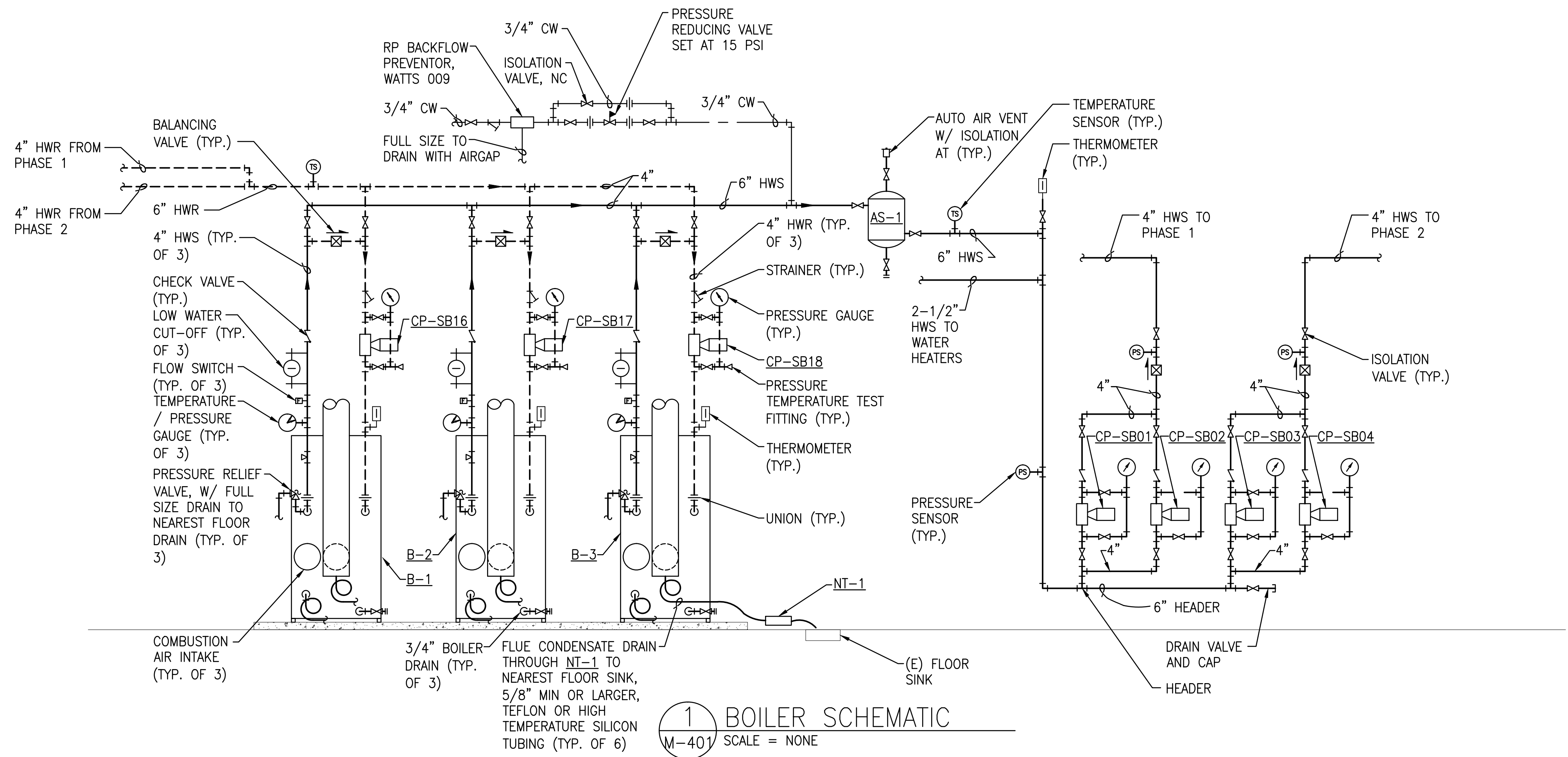


MBA Consulting Engineers, Inc.
3812 Spenard Road, Suite 200 • Anchorage, AK 99517
(907) 274-2622 • FAX (907) 274-0914
Email: mbaconsulting@alaska.com

ANCHORAGE PIONEER HOME
BOILER REPLACEMENT

DRAWN BY MSM
CHECKED BY BSS
DATE 03-19-2013
REVISIONS
DRAWING TITLE
BOILER SCHEMATIC
JOB NO. 12044
© 2012 MBA Consulting Engineers, Inc.

SHEET NO.
M-401
OF



ANCHORAGE PIONEERS' HOME BOILER REPLACEMENT

Anchorage, Alaska

Mechanical: Bradley S. Sordahl, PE
MBA Consulting Engineers, Inc.
3812 Spenard Road, Suite 200 • Anchorage, AK 99517
(907) 274-2622 FAX (907) 274-0914
Email: mbaconsulting@alaska.com

Electrical: Edward W. Carlson, PE
MBA Consulting Engineers, Inc.
3812 Spenard Road, Suite 200 • Anchorage, AK 99517
(907) 274-2622 FAX (907) 274-0914
Email: mbaconsulting@alaska.com

NOTIFICATION OF POTENTIAL HAZARDS

ASBESTOS, LEAD AND OTHER HAZARDOUS MATERIALS ARE PRESENT IN THE BUILDING THAT MAY IMPACT THE WORK OF ALL TRADES. REGULATED AIR CONTAMINANTS, 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. REFER TO SPECIFICATION SECTION 00230, HAZARDOUS MATERIALS SURVEY REPORT; SECTION 01561, AIRBORNE CONTAMINANT CONTROL; AND DIVISION 13 SPECIFICATIONS FOR SPECIFIC INFORMATION CONCERNING DISTURBING, REMOVING AND DISPOSING OF THESE MATERIALS AND THE INSTALLATION OF NEW MATERIALS OR COMPONENTS.

THIS NOTIFICATION IS PROVIDED IN ACCORDANCE WITH EPA AND OSHA REQUIREMENTS.

SHEET LIST

T1.0 TITLE SHEET
M101 LEGEND, SCHEDULES, & KEY PLANS
M201 1ST FLOOR PLUMBING
M301 2ND FLOOR PLUMBING & ENLARGED PLANS
M401 1ST & 2ND FLOOR HVAC PLANS
E101 LEGEND & SCHEDULES
E201 DEMO PLAN
E301 POWER PLAN AND PARTIAL POWER RISER DIAGRAM

GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE MOST RECENT ADOPTED EDITION OF THE INTERNATIONAL BUILDING CODE, INTERNATIONAL FIRE CODE, NFPA, INTERNATIONAL MECHANICAL CODE, UNIFORM PLUMBING CODE, INTERNATIONAL FUEL GAS CODE, NATIONAL ELECTRICAL CODE, AND ALL LOCAL AND STATE OF ALASKA CODE REGULATIONS AND AMENDMENTS.
2. THE ORGANIZATION OF THESE DRAWINGS IS NOT INTENDED TO CONTROL THE DIVISION OF WORK AMONG SUB-CONTRACTORS. THE DIVISION OF THE WORK SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
3. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONARY MEASURES TO PROTECT THE PUBLIC AND ADJACENT PROPERTIES FROM DAMAGE THROUGHOUT CONSTRUCTION. CONTRACTOR ASSUMES ALL LIABILITY FOR DAMAGES INCURRED DURING CONSTRUCTION.
4. THE CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT AND MATERIALS REQUIRED TO COMPLETE ALL WORK AS SHOWN OR AS IMPLIED ON THESE DRAWINGS AND THE SPECIFICATIONS..
5. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL FACILITIES FOR HEAT, DOMESTIC HOT WATER, LIGHT AND POWER WITHIN THE PREMISES AND IN THE CONSTRUCTION AREA DURING THE ENTIRE CONSTRUCTION PERIOD. PROVIDE NECESSARY MATERIALS AND LABOR FOR POWER CONNECTIONS FOR MACHINES, PORTABLE, ETC. AS USED BY OTHER TRADES, REGARDLESS OF SIZE.
6. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO CONSTRUCTION. IF A CONDITION NOT COVERED IN THE DRAWINGS IS ENCOUNTERED, OR IF A DIMENSIONAL ERROR IS FOUND, THE CONTRACTOR SHALL NOTIFY THE CONTRACTING AUTHORITY BEFORE COMMENCING WITH THAT PORTION OF THE WORK.
7. ALL COMPONENTS, EQUIPMENT, ETC., SHALL BE INSTALLED PER MANUFACTURERS PRINTED RECOMMENDATIONS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL RUBBISH AND DEBRIS RESULTING FROM CONSTRUCTION.
9. ALL DIMENSIONS ARE TO FACE OF STUDS, FACE OF PANEL SHEATHING, GRID LINES, FACE OF ROUGH OPENING, UNLESS INDICATED OTHERWISE

Vicinity Map

