Project Manual For:

AKIACHAK DERA-RPSU Project
Project No. 23084

State of Alaska
Alaska Energy Authority
813 W Northern Lights Blvd, Anchorage, Alaska 99503

Advertising Date: March 28, 2023

This page is blank intentionally.

DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS

DIVISION 01 – GENERAL REQUIREMENTS

DIVISION 02 - 33 - TECHNICAL SPECIFICATIONS

DRAWINGS (Bound Separately)

END TABLE OF CONTENTS

ALASKA ENERGY AUTHORITY

INVITATION TO BID

for Construction Contract

Date **March 28, 2023**

Akiachak DERA-RPSU, Project No. 23084

Location of Project: Akiachak, Alaska
Contracting Officer: Daniela Patterson
Issuing Office: Alaska Energy Authority (Authority)

State Funded [ ] Federal Aid [x]

Description of Work: This EPA and State appropriation funded contract is for the replacement of diesel engine-generators and related improvements to the existing diesel power plant in the community of Akiachak, Alaska, as described herein and shown in the Drawings. The Contractor shall furnish all labor, materials, supervision, equipment, tools, transportation, quality control, and supplies required to complete the work.

The Engineer's Estimate is between **$1,000,000 and $2,000,000**

All portions of the work shall be substantially completed by dates indicated in Section 01 11 13 - Summary of Work.

Bidders are invited to submit single bid, for furnishing all labor, equipment, and materials and for performing all work for the project described above. Bids will be opened publicly on **April 18, 2023** at **2:00 PM** local time, **Due to the COVID-19 the bid opening will be conducted telephonically.** Potential bidders may attend telephonically by calling **1-888-585-9008** and when prompted enter **351 122 943 #**.

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 MARKED AS FOLLOWS:

Bid for Project: **Project No. 23084** **Akiachak DERA-RPSU Project**	**ATTN:** **Daniela Patterson, Contracting Officer** **Alaska Energy Authority** **813 West Northern Lights Blvd.** **Anchorage, AK 99503**

Mailed Bids, amendments or withdrawals transmitted must be received in the above specified post office box no later than 4 hours prior to the scheduled time of bid opening. **Hand-delivered bids**, amendments or withdrawals must be received in the **Bid Drop Box in front of the Alaska Energy Authority**, prior to the scheduled time of bid opening. **Emailed bid** amendments or withdrawals must be received in the email inbox prior to the scheduled time of bid opening, addressed to **Daniela Patterson**, Email: AEAProcurement@akenergyauthority.org

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 Authority 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:

See attached Special Notice to Bidders for this project.

Electronic Plans and Specifications may be ordered, for the price of **$0.00** from:

Alaska Energy Authority
813 West Northern Lights Blvd.
Anchorage, AK 99503

(907) 771-3026

All questions relating to design features, constructability, quantities, or other 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:

Daniel Aicher
Project Manager
813 West Northern Lights Blvd.
Anchorage, AK 99503
Phone: (907) 771-3954
Email: DAicher@akenergyauthority.org

All questions relating to bidding procedures should be directed to:

Daniela Patterson
Contracting Officer
813 West Northern Lights Blvd.
Anchorage, AK 99503
Phone: (907) 771-3026
Email: AEAProcurement@akenergyauthority.org

The Bid Calendar, Planholder lists, and Bid Results information are available on the Internet at:
https://www.aideaaeaprocurement.org/

Reminder: 3 AAC 109.220 requires all Bidders to have a valid Alaska Business License and an Alaska Contractor's Certificate of Registration prior to award.

INFORMATION TO BIDDERS

The Authority 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. The person signing the proposal must initial any erasures or changes made to the bid.

(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 25D-14), or a certified check, cashier's check or money order made payable to the Alaska Energy Authority. 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 requirements of bid security accompanying the bid. An individual surety will not be accepted as a bid security.

The Authority will hold the bid securities of the two lowest bidders until the Contract has been executed, after which they will be returned. All other 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 Authority 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 To Bid. 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 the bidder received no addenda, the word "None" should be shown as specified.

Every effort will be made by the Authority 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, 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 To Bid. 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 To Bid.

All questions must be received 72 hours before the bid opening. Questions submitted after the deadline may be rejected by the Authority.

WITHDRAWAL OR REVISION OF BIDS

A bidder may withdraw or revise a bid after it has been deposited with the Authority, 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.

Emailed 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 25D-16 shall be used to submit such modifications.

RECEIPT AND OPENING OF BIDS

(a) The Authority must receive all bids, including any amendment or withdrawal prior to the scheduled time of bid opening. Any bid, amendment, or withdrawal that has not actually been received by the Authority 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 Authority for the premature opening of, or failure to open, a bid improperly addressed or identified.

(c) The Authority 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 Authority 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 Authority'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 Authority 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.

ALASKA ENERGY AUTHORITY

SUPPLEMENTARY INFORMATION TO BIDDERS

This document modifies or adds to the provisions of Alaska Energy Authority's form 25D-3, INFORMATION TO BIDDERS.

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 AUTHORITY 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 nonresponsive."

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 AUTHORITY's intent to Award the Contract and the successful Bidder will be requested to execute certain documents, including the Contract form and bonds."

Special Notice to Bidders

A non-mandatory pre-bid meeting is scheduled for **April 10, 2022, 10:00 AM.**

Due to the COVID-19 the Pre-Bid Meeting will be conducted telephonically. Potential bidders may attend telephonically by calling **1-888-585-9008,** when prompted enter **351 122 943 #**. If calling in, please be respectful of other callers and call from a phone that can be muted so as to cancel out background noise and the possibility of feedback. Contact the Contract Officer, Daniela Patterson, at (907) 771-3026 for more information.

This is not a mandatory meeting, and there will not be a scheduled site visit prior to the bid opening.

ALASKA ENERGY AUTHORITY

REQUIRED DOCUMENTS

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 25D-9)**
2. **Bid Schedule**
3 **Bid Security**
4. Any bid revisions must be submitted by the bidder prior to bid opening on the following form:

   Bid Modification (Form 25D-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 25D-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. **Construction Contract (Form 25D-10A)**
2. **Payment Bond (Form 25D-12)**
3. **Performance Bond (Form 25D-13)**
4. **Contractor's Questionnaire (Form 25D-8)**
5. **EEO-1 Certification (25A-304)**
6. **Certificate of Insurance** (from carrier)

FEDERAL EEO BID CONDITIONS

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246). FOR ALL NON-EXEMPT FEDERAL AND FEDERALLY-ASSISTED CONSTRUCTION CONTRACTS TO BE AWARDED IN THE STATE OF ALASKA

1. Definitions. As used in these specifications:

   a. "**Covered area**" means the geographical area described in the solicitation from which this contract resulted;

   b. "**Director**" means Director, Office of Federal Contract Compliance Programs (OFCCP), United States Department of Labor (DOL), or any persons to whom the Director delegates authority;

   c. "**Employer**" identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

   d. "**Minority**" includes:

      (1) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

      (2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin, regardless of race);

      (3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

      (4) American Indian or Alaska Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the DOL in the covered area, either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades that have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or subcontractor's failure to make good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7(a) through 7(p) of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

Covered construction contractors performing construction work in geographical areas where they do not have a federal or federally-assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any OFCCP office or from federal procurement contracting officers.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period of an approved training program and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

   a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligations to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

   b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

   c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

   d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

   e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the DOL. The Contractor shall provide notice of these programs to the sources compiled under 7(b) above.

   f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendent, general foreman, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and dispositions of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-used toilet, necessary changing facilities and necessary sleeping facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontractors from minority and female construction contractors and suppliers, including circulations of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations 7(a) through 7(p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any or more of its obligations under 7(a) through 7(p) of these specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized.)

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any subcontract with any person or firm debarred from government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the OFCCP. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunities. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic apprentice, trainees, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that the existing records satisfy this requirement, Contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws that establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Programs).

16. The Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

17. The Contractor shall provide written notification to the Department, for all subcontracts documents as follows: the name, address and telephone number of subcontractors and their employer identification number; the estimated dollar amount of the subcontracts; estimated starting and completion dates of the subcontracts; and the geographical area in which the contract is to be performed.

    This written notification shall be required for all construction subcontracts in excess of $10,000 at any tier for construction work under the contract resulting from this project's solicitation.

18. As used in the Bid Notice, and in the contract resulting from this project's solicitation, the "covered area" is the State of Alaska.

STATE OF ALASKA
ALASKA ENERGY AUTHORITY

EEO-1 CERTIFICATION

Federal- Contracts

Akiachak DERA-RPSU Project

Project No. 23084

This certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor [41 CFR 60-1.7 (b) (1)] and must be completed by the successful Bidder and each proposed Subcontractor participating in this contract.

PLEASE CHECK APPROPRIATE BOXES

The [ ]Bidder [ ] Proposed Subcontractor hereby CERTIFIES:

PART A. Bidders and proposed Subcontractors with 50 or more year-round employees and a federal contract amounting to $50,000 or more are required to submit one federal Standard Report Form 100 during each year that the two conditions exist (50 employees and a $50,000 federal contract).

The company named below (Part C) is exempt from the requirements of submitting the Standard Report Form 100 this year.

[ ] NO (go to PART B) [ ] YES (go to PART C)

Instructions and blank Standard Report Form 100's may be obtained from a local U.S. Department of Labor office, or by writing to:

The Joint Reporting Committee
P.O. Box 779
Norfolk, Virginia 23501

Telephone number: (757) 461-1213

PART B. The company named below has submitted the Standard Report Form 100 this year.

[ ] NO [ ] YES

Note: Bidders and proposed Subcontractors who have not filed the required Standard Report Form 100 and are not exempt from filing requirements will not be awarded this contract or subcontract until Form 100 has been filed for the current year ending June 30.

PART C.

Signature of Authorized Company Representative	**Title**
Company Name	**Company Address (Street or PO Box, City, State, Zip)**
Date	( ) **Phone Number**

ALASKA ENERGY AUTHORITY

PROPOSAL

for

Akiachak DERA-RPSU Project - Project No. 23084

Project Name and Number

by

Company Name

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

To the CONTRACTING OFFICER, ALASKA ENERGY AUTHORITY:

In compliance with your Invitation To Bid dated **March 28, 2023**, the Undersigned proposes to furnish and deliver all the materials and do all the work and labor required in the construction of Project: **Akiachak DERA-RPSU Project**, located at **Akiachak, Alaska**, according to the plans and specifications and for the amount and prices named herein as indicated on the **Bid Schedule** consisting of 2 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 proposal, and it is hereby mutually understood and agreed that in case the Undersigned does not, the accompanying bid guarantee shall be forfeited to the Alaska Energy Authority, 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 of the effective date of Notice to Proceed and to Substantially Complete the work by the **date indicated in Section 01 11 13 - Summary of Work** unless extended in writing by the Contracting Officer.

The Undersigned proposes to furnish Payment Bond in the amount of **100%** (of the contract) and Performance Bond in the amount of **100%** (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).

Addendum Number	Date Issued	Addendum Number	Date Issued	Addendum 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

_____
Name and Title of Person Signing

_____
Telephone Number

_____
Fax Number

_____
Email

BID SCHEDULE

Akiachak DERA-RPSU Project
Project No. 23084

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

The Bidder shall insert a fixed price in figures opposite each pay item that appears on 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. In case of error in the extension of prices in the bid, the unit prices will govern.

Contract award shall be made based on the Total Base Bid. AEA reserves the right to award none or any number of alternates in any order in the best interest of the State.

Bidders are required to bid on all bid items. Conditioned or qualified bids will be considered non-responsive.

Bid Item	Description	Lump Sum Price
1	Base Bid	$
2	Additive Alternate #1	$
3	Additive Alternate #2	$
4	Additive Alternate #3	$
5	Additive Alternate #4	$
6	Additive Alternate #5	$

See Specification Section 01 11 13 Summary of Work and Drawings for detailed descriptions of each bid item.

2. Acknowledge all addenda

Addendum No	Date Issued	Addendum No	Date Issued	Addendum No	Date Issued

3. BIDDER'S NOTICE: By signature on this form, the Bidder certifies that:

a. The price(s) submitted are independent and without collusion.

b. The Bidder will comply with the laws of the State of Alaska;

c. The Bidder will comply with applicable portions of the Federal Civil Rights Act of 1964;

d. The Bidder will comply with the Equal Employment Opportunity Act and the regulations issued there under by the State and Federal Government; and

e. The Bidder has reviewed all terms and conditions in this Invitation to Bid.

If any Bidder fails to comply with any of these requirements, the Authority may reject its bid, terminate the contract, or consider the Vendor in default.

Company Submitting Bid	**Telephone Number**
Address	**Fax Number**
Authorized Signature	**E-mail Address**
Print Name	**Alaska Business License number:** **_____ EXPRES DATE:_____**
	Alaska Contractor's Registration # **_____ EXPRES DATE:_____**

End of Bid Schedule.

ALASKA ENERGY AUTHORITY

BID BOND

For

Akiachak DERA-RPSU Project

Project No. 23084

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 the above-referenced Project in accordance with contract documents filed in the office of the Contracting Officer, and under the Invitation To Bid 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.**

Corporate Seal

See Instructions on Reverse

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.

ALASKA ENERGY AUTHORITY

BID MODIFICATION

Akiachak DERA-RPSU Project

Project No. 23084

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 Authority.

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

TOTAL REVISION: $_____

_____

Name of Bidding Firm

_____

Responsible Party Signature **Date**

This form may be duplicated if additional pages are needed.

ALASKA ENERGY AUTHORITY

SUBCONTRACTOR LIST

Akiachak DERA-RPSU Project
Project No. 23084

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 Authority.

Failure to submit this form with all required information by the due date will result in the bidder being declared nonresponsive 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 above-referenced project will be accomplished without subcontracts greater than ½ of 1% of the contract amount.

Or

[ ] Subcontractor List is as follows:

LIST FIRST TIER SUBCONTRACTORS ONLY

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

CONTINUE SUBCONTRACTOR INFORMATION ON REVERSE

For projects with federal-aid funding, I hereby certify Alaska Business Licenses and Contractor's Registrations will be valid for all subcontractors prior to award of the subcontract. For projects without federal-aid funding (State funding only), 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

ALASKA ENERGY AUTHORITY

CONSTRUCTION CONTRACT

Akiachak DERA-RPSU Project
Project No. 23084

This CONTRACT, between the ALASKA ENERGY AUTHORITY, herein called the Authority, 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 Authority, 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 Authority. In no event shall the Authority 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 Authority. 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 Authority, on or before,

Substantially Completed by**: Date indicated in Section 01 11 13 - Summary of Work**
Final Completion**: Date indicated in Section 01 11 13 - Summary of Work**

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 Authority, to complete the furnishing and delivery of materials and the doing and performance of the work before the aforesaid date, the Authority 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 Authority shall have the right to recover **Two Hundred Fifty** Dollars (**$250.00**) per day for each calendar day elapsing between the time stipulated for the completion and the actual date of completion up to a maximum of **$5,000** (**20 days**) 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 Name and Title

Date

(Corporate Seal)

ALASKA ENERGY AUTHORITY

Signature of Contracting Officer

Typed Name

Date

ALASKA ENERGY AUTHORITY

PERFORMANCE BOND

Bond No. _____

For

Akiachak DERA-RPSU Project
Project No. 23084

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 Alaska Energy Authority 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 Energy Authority Authorized Representative **Date**

See Instructions on Reverse

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.

ALASKA ENERGY AUTHORITY

PAYMENT BOND

Bond No. _____

For

Akiachak DERA-RPSU Project
Project No. 23084

NOW 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 Energy Authority Authorized Representative **Date**

See Instructions on Reverse

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.

ALASKA ENERGY AUTHORITY

CONTRACTOR'S QUESTIONNAIRE

Akiachak DERA-RPSU Project
Project No. 23084

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 Authority?
[ ] 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**

ALASKA ENERGY AUTHORITY
SECTION 00 70 00
GENERAL CONDITIONS

.

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.

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 to be interpreted as defined.

Addenda - All clarifications, corrections, or changes issued graphically or in writing by the AUTHORITY 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 AUTHORITY 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. 'Approved' or 'Approval' as used in this contract document shall mean that the Authority has received a document, form or submittal from the Contractor and that the Authority has taken "No exceptions" to the item submitted. Unless the context clearly indicates otherwise, approved or approval shall not mean that the Authority 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.

A.S - Initials which stand for Alaska Statute.

Authority - The Alaska Energy Authority (AEA). References to "Contracting Agency" means the AUTHORITY. The AUTHORITY is acting as an agent for Owner.

Award - The acceptance, by the AUTHORITY, 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 AUTHORITY directing changes to the Contract Documents, within their general scope.

Consultant - The person, firm, or corporation retained directly by the AUTHORITY to prepare Contract Documents, perform construction administration services, or other Project related services. References to Authority's Consultants shall include Engineer.

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 AUTHORITY 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 AUTHORITY 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 Executive Director to enter into and administer the Contract on behalf of the AUTHORITY; who 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, contracts with the AUTHORITY for performance of the Work.

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

CONTRACTOR's Release – CONTRACTOR's written notification to the AUTHORITY specifying final payment due and releasing the AUTHORITY of any and all claims.

Contract Time - 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.

Controlling Item - Any feature of the Work on the critical path of a network schedule.

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

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 AUTHORITY and are by reference made a part of the Contract Documents.

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

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.

Final Completion - The Project has progressed to the point that all required Work is complete..

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

General Requirements - Sections of Division l of the Specifications which contain administrative and procedural requirements as well as requirements for temporary facilities which apply to Specification Divisions 2 through l6.

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

1. New Years Day - January l
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 (l2) 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.

Interim Work Authorization - A written order by the Project Manager initiating changes to the Contract within its general scope, until a subsequent Change Order is executed.

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

Materials - Any substances specified for use in the construction of the project.

Notice of Intent to Award - The written notice by the AUTHORITY to all Bidders identifying the apparent successful Bidder and establishing the AUTHORITY'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.

Onsite Project Representative - The Engineer's authorized representative assigned to make detailed observations relating to contract performance.

Owner – Means Grantee for whom the ALASKA ENERGY AUTHORITY is acting as an agent of.

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.

Pre-construction Conference - A meeting between the CONTRACTOR, Project Manager and the Engineer, and other parties affected by the construction, to discuss the project before the CONTRACTOR begins work.

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

Procurement Manager/Officer - The person authorized by the Contracting Officer to administer the Contract on behalf of the AUTHORITY; who has authority to make findings, determinations and decisions with respect to the Contract and, when necessary present such to the Contracting Officer, to modify or terminate 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.

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 AUTHORITY.

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.

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

Schedule of Values - 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. Where used in the Contract Documents, “Shop Drawings” shall also mean “Submittals”.

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 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 AUTHORITY 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, material man, 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.

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."

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 AUTHORITY 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 AUTHORITY 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.

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 The performance or nonperformance of the Contracting Officer or his authorized representative, shall not give rise to any contractual obligation or duty to the CONTRACTOR, any Subcontractor, any Supplier, or any other organization performing any of the Work or any Surety representing them.

2.2 Evaluations by Contracting Officer:

2.2.1 The Contracting Officer or his authorized representative 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 AUTHORITY 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 AUTHORITY 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 AUTHORITY shall furnish to the CONTRACTOR up to six 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 AUTHORITY 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 AUTHORITY 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 AUTHORITY or any of the AUTHORITY'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.

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 AUTHORITY 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 AUTHORITY shall have or acquire any title to or ownership rights in any of the Contract Documents (or copies thereof) prepared by or for the AUTHORITY 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 AUTHORITY.

ARTICLE 4 - LANDS AND PHYSICAL CONDITIONS

4.l Availability of Lands:

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

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:

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 AUTHORITY 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.

4.4 Utilities:

4.4.1 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 AUTHORITY 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 Project Manager. 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 AUTHORITY, 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 Project Manager. The Project Manager 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.l7. 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 AUTHORITY 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 shall be provided to the AUTHORITY 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. Survey notes are to be in a format acceptable to the AUTHORITY.

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 AUTHORITY (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.

5.3 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 AUTHORITY, or if any such Surety fails to furnish reports as to his financial condition as requested by the AUTHORITY, the CONTRACTOR shall within five days thereafter substitute another bond and Surety, both of which must be acceptable to AUTHORITY.

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 AUTHORITY 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 AUTHORITY covering injury to persons and/or property suffered by the Alaska Energy Authority 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 and minimum limits of liability. 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. 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 Authority 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.

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. 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
$2,000,000 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

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

$2,000,000 general aggregate

The Authority and the Owner shall be named as "Additional Insured" under all liability coverages listed above.

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 AUTHORITY, 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 Authority and Owner as an additional named indemnitees. CONTRACTOR shall further require that the Authority and the Owner be named as 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 Authority be obtained with respect to all other insurance policies.

e. Other Coverages: As specified in the Supplementary Conditions, if required.

5.4.3 a. 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 AUTHORITY and the Owner and to add the ALASKA ENERGY AUTHORITY and the Owner as additional named indemnitees and as additional insured.

b. Evidence of insurance shall be furnished to the AUTHORITY prior to the award of the contract. Such evidence, executed by the carrier's representative and issued to the AUTHORITY, 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 AUTHORITY of deficient evidence does not constitute a waiver of contract requirements.

c. 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)."

5.5 Indemnification:

The CONTRACTOR shall indemnify, save harmless, and defend the AUTHORITY, the

OWNER 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 AUTHORITY's negligence.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.l 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 Project Manager 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 AUTHORITY. 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 Project Manager 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 Project Manager may, in writing, require the CONTRACTOR to remove from the Work any employee the Project Manager deems incompetent, careless, or otherwise detrimental to the progress of the Work, but the Project Manager 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 Project Manager, 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 AUTHORITY or any of the AUTHORITY'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 paragraph 2.3.

6.6 Anticipated Schedules:

6.6.1 Prior to submitting the CONTRACTOR's first Application for Payment the CONTRACTOR shall submit to the Project Manager for review an anticipated progress schedule indicating the starting and completion dates of the various stages of the Work.

6.6.2 Prior to submitting the CONTRACTOR's first Application for Payment, the CONTRACTOR shall submit to the Project Manager 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 Project Manager and the CONTRACTOR will finalize schedules required by paragraph 6.6. The finalized progress schedule will be acceptable to the AUTHORITY 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 AUTHORITY 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 acknowledgment by the AUTHORITY as providing a workable arrangement for processing the submissions. If accepted, the finalized Schedule of Values will be acknowledgment by the AUTHORITY 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 AUTHORITY 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 Project Manager 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 Project Manager 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 Project Manager only if sufficient information is submitted by the CONTRACTOR which clearly demonstrates to the Project Manager that the material or equipment proposed is equivalent or equal in all aspects to that named. The procedure for review by the Project Manager 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 Project Manager 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 Project Manager 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 AUTHORITY 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 AUTHORITY in evaluating the proposed substitute. The AUTHORITY may require the CONTRACTOR to furnish at the CONTRACTOR's expense additional data about the proposed substitute. The Project Manager may reject any substitution request which the Project Manager determines is not in the best interest of the OWNER.

6.9.5 Substitutions shall be permitted during or after the bid period as allowed and in accordance with Document 00 02 00 - Invitation for Bids, Document 00 70 00 – General Conditions, and Document 01 60 00 – Materials and Equipment.

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 Project Manager, if the CONTRACTOR submits sufficient information to allow the Project Manager to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by the Project Manager will be similar to that provided in paragraph 6.9 as applied by the Project Manager and as may be supplemented in the General Requirements.

6.11 Evaluation of Substitution:

The Project Manager will be allowed a reasonable time within which to evaluate each proposed substitute. The Project Manager 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 shall contain provisions for prompt payment, release of retainage, and interest on late payment amounts and retainage as specified in AS 36.90.210. Contracts between subcontractors, regardless of tier, must also contain these provisions.

6.13.2 The CONTRACTOR shall be fully responsible to the AUTHORITY 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 AUTHORITY 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 AUTHORITY and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of the AUTHORITY 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 AUTHORITY 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 AUTHORITY by any such owner or occupant because of the performance of the Work, the CONTRACTOR shall hold the AUTHORITY 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 Project Manager for reference and copying. Upon completion of the Work, the annotated record documents, samples and Shop Drawings will be delivered to the Project Manager. 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 Project Manager.

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 AUTHORITY, is obligated to act to prevent threatened damage, injury or loss. The CONTRACTOR shall give the Project Manager 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 AUTHORITY 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 Project Manager.

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 Project Manager 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 Project Manager 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 Project Manager to review the information as required.

6.20.2 The CONTRACTOR shall also submit to the Project Manager 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 Project Manager 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 Project Manager 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 AUTHORITY 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 AUTHORITY of his intent. The AUTHORITY may require the CONTRACTOR to furnish at the CONTRACTOR's expense additional data about the proposed variation. The Project Manager may reject any variation request which the Project Manager determines is not in the best interest of the AUTHORITY.

6.21 Shop Drawing and Sample Review:

6.21.1 The Project Manager will review with reasonable promptness Shop Drawings and samples, but the Project Manager'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 Project Manager 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 Project Manager on previous submittals.

6.21.2 The Project Manager'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 Project Manager 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 AUTHORITY shall be responsible for all AUTHORITY review costs resulting from the initial submission and the resubmittal. The CONTRACTOR shall, at the discretion of the AUTHORITY, pay all review costs incurred by the AUTHORITY 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 Project Manager'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 AUTHORITY. 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.l 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 AUTHORITY 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 AUTHORITY or its assigned representative may perform an audit of these records during normal work hours after written notice to the CONTRACTOR.

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.

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 AUTHORITY 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 AUTHORITY 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 AUTHORITY 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 AUTHORITY, 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 AUTHORITY 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 AUTHORITY are at variance with any Regulatory Requirements, CONTRACTOR shall give the Project Manager 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 Project Manager. 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 Project Manager, the CONTRACTOR shall bear all costs arising there from; however, it shall not be the CONTRACTOR’s primary responsibility to make certain that the Specifications and Drawings supplied by the AUTHORITY are in accordance with such Regulatory Requirements.

7.5 Accident Prevention:

The CONTRACTOR shall comply with AS l8.60.075 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 AUTHORITY 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 ventures 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.l0.025 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 Project Manager. 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: Not Applicable.

7.13 Preferential Employment: Not Applicable.

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 to the Work 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. 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.

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 AUTHORITY 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.

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

7.l5 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 AUTHORITY 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 $l0.00 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 AUTHORITY 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 AUTHORITY employees authorized as his representatives, either personally or as officials of the AUTHORITY, it being always understood that in such matters they act as agents and representatives of the AUTHORITY.

ARTICLE 8 - OTHER WORK

8.l Related Work at Site:

8.1.1 The AUTHORITY 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 AUTHORITY 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 Project Manager of such required increase within fifteen (15) calendar days following receipt of the Contracting Officer's notice. Should the Project Manager 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 AUTHORITY (or the AUTHORITY, if the AUTHORITY is performing the additional work with the AUTHORITY'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 Project Manager. 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 AUTHORITY 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 AUTHORITY, the CONTRACTOR shall inspect and promptly report to the Project Manager 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 non-apparent defects and deficiencies in the other work.

8.4 Coordination:

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

ARTICLE 9 - CHANGES

9.1 AUTHORITY's Right to Change

Without invalidating the Contract and without notice to any Surety, the AUTHORITY 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 Authority-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 AUTHORITY'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 Project Manager 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 Project Manager may order the Contractor to correct Defective Work or methods which are not in conformance with the Contract Documents.

9.3.4 The Project Manager 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 Project Manager, 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 Project Manager depicting such increases before proceeding with the Directive, except in the case of an emergency. If the Project Manager finds the increase in Contract Price or the extension of Contract Time justified, a Change Order will be issued. If however, the Project Manager does not find that a Change Order is justified, the Project Manager may direct the CONTRACTOR to proceed with the Work. The CONTRACTOR shall cooperate with the Project Manager 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 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. A Change Order shall be considered executed when it is signed by the AUTHORITY.

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 Project Manager, must be authorized by a Supplemental Agreement signed by the appropriate representatives of the AUTHORITY 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 Project Manager 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 Project Manager shall promptly investigate the conditions, and if the Project Manager 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 Project Manager shall be given the opportunity to supervise and check the keeping of such records.

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.

ARTICLE l0 - 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 l5, 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.l 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.l through 10.9.3, inclusive).

10.3.2 By mutual acceptance of a lump sum price that 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%.

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.

l0.4 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 AUTHORITY, 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 l0.5:

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

10.4.2 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. All cash discounts shall accrue to the CONTRACTOR unless the AUTHORITY deposits funds with the CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to the AUTHORITY. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to the AUTHORITY, 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 AUTHORITY, CONTRACTOR shall obtain competitive quotes from Subcontractors or Suppliers acceptable to the CONTRACTOR and shall deliver such quotes to the AUTHORITY 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' "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 AUTHORITY 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.

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 AUTHORITY 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 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.

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 AUTHORITY. 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 AUTHORITY 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 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 l0.4.l or specifically covered by paragraph l0.4.4 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 l0.4.5.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 l0.4.

10.6 CONTRACTOR's Fee:

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

10.6.l 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.l 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 l0.4.4, 10.4.5 and 10.5;

d. The amount of credit to be allowed by the CONTRACTOR to the AUTHORITY 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 AUTHORITY 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 AUTHORITY 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 Project Manager will determine the actual quantities and classifications of Unit Price Work performed by the CONTRACTOR. The Project Manager will review with the CONTRACTOR preliminary determinations on such matters before finalizing the costs and quantities on the Schedule of Values. The Project Manager'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 Project Manager written notice of intention to appeal from such a decision.

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 Project Manager 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 Substantial 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.

11.3.3 The Contract Time shall be as stated is 00800, Supplementary Conditions.

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 AUTHORITY in its contractual capacity, acts of another contractor in the performance of a contract with the AUTHORITY, 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 Project Manager 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 AUTHORITY that the date of beginning and the time for Substantial 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 AUTHORITY 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 AUTHORITY 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 AUTHORITY will sustain by reason of delayed completion. These liquidated and actual damages are intended as compensation for losses anticipated arising, and including 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 AUTHORITY 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.

For each calendar day that the work remains incomplete after the expiration of the Contract Time, liquidated damages in the amount as stated in 00800, Supplemental Conditions shall be assessed to the CONTRACTOR. If no money is due the CONTRACTOR, the AUTHORITY shall have the right to recover said sum from the CONTRACTOR, the surety or both. The amount of these deductions is to reimburse the AUTHORITY 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 way operate as a waiver on the part of the AUTHORITY of any of its rights under the Contract.

ARTICLE l2 - QUALITY ASSURANCE

12.1 Warranty and Guaranty:

The CONTRACTOR warrants and guarantees to the AUTHORITY 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 AUTHORITY and the AUTHORITY's consultants, 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.l The CONTRACTOR shall give the Project Manager 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 therefore, pay all costs in connection therewith and furnish the Project Manager 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 AUTHORITY'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 AUTHORITY 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 Project Manager, it must, if requested by the Project Manager, be uncovered for observation. Such uncovering shall be at the CONTRACTOR's expense unless the CONTRACTOR has given the Project Manager timely notice of CONTRACTOR's intention to cover the same and the Project Manager has not acted with reasonable promptness in response to such notice.

12.3.5 Neither observations nor inspections, tests or Approvals by the AUTHORITY 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 Project Manager, it must, if requested by the Project Manager, be uncovered for the Project Manager's observation and replaced at the CONTRACTOR's expense.

12.4.2 If the Project Manager considers it necessary or advisable that covered Work be observed inspected or tested, the CONTRACTOR, at the Project Manager's request, shall uncover, expose or otherwise make available for observation, inspection or testing as the Project Manager 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 AUTHORITY 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 AUTHORITY 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 Project Manager, 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 Project Manager, 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 Substantial Completion of the relevant portion of the Work 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 AUTHORITY and in accordance with the Project Manager's written instructions, either correct such Defective Work, or, if it has been rejected by the Project Manager, 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 AUTHORITY 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

AUTHORITY 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 Project Manager may accept Defective Work, the CONTRACTOR shall bear all direct, indirect and consequential costs attributable to the Project Manager'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 AUTHORITY shall be entitled to an appropriate decrease in the Contract Price. If the AUTHORITY has already made final payment to the CONTRACTOR, an appropriate amount shall be paid by the CONTRACTOR or his Surety to the AUTHORITY.

12.9 AUTHORITY May Correct Defective Work:

If the CONTRACTOR fails within a reasonable time after written notice from the Project Manager to proceed to correct Defective Work or to remove and replace rejected Work as required by the Project Manager 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 AUTHORITY 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 AUTHORITY shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, the Project Manager 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 AUTHORITY has paid the CONTRACTOR but which are stored elsewhere. The CONTRACTOR shall allow the Project Manager and his authorized representatives such access to the site as may be necessary to enable the Project Manager to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of the AUTHORITY 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 AUTHORITY 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 Project Manager, of the AUTHORITY'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 Project Manager. 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 Project Manager 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.

13.4 Review of Applications for Progress Payment:

Project Manager will either indicate in writing a recommendation of payment or return the Application for Payment to the CONTRACTOR indicating in writing the Project Manager'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 AUTHORITY 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 AUTHORITY's interest therein, all of which will be satisfactory to the Project Manager. 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 AUTHORITY 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 AUTHORITY 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 AUTHORITY has been required to correct Defective Work or complete Work in accordance with paragraph l2.9.

13.7.4 The AUTHORITY's actual knowledge of the occurrence of any of the events enumerated in paragraphs l4.2.l.a through l4.2.1.k inclusive.

13.7.5 Claims have been made against the AUTHORITY or against the funds held by the AUTHORITY on account of the CONTRACTOR's actions or inactions in performing this Contract, or there are other items entitling the AUTHORITY 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.l 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 AUTHORITY 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 l0% of the total amount earned on all subsequent progress payments. This retainage may be released at such time as the Project Manager 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 AUTHORITY, 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 AUTHORITY 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 Project Manager 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 AUTHORITY issue a certificate of Substantial Completion. Within a reasonable time thereafter, the Project Manager, the CONTRACTOR and Engineer(s) shall make an inspection of the Work to determine the status of completion. If the Project Manager does not consider the Work substantially complete, the Project Manager will notify the CONTRACTOR in writing giving the reasons therefore. If the Project Manager considers the Work substantially complete, the Project Manager 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 Project Manager 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 AUTHORITY shall be responsible for all AUTHORITY costs resulting from the initial inspection and the first re-inspection, the CONTRACTOR shall pay all costs incurred by the AUTHORITY resulting from re-inspections, thereafter.

13.11 Access Following Substantial Completion:

The AUTHORITY shall have the right to exclude the CONTRACTOR from the Work after the date of Substantial Completion, but the AUTHORITY 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 Project Manager will make a final inspection with the CONTRACTOR and Engineer(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 AUTHORITY 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 Project Manager and delivered schedules, guarantees, bonds, certificates of payment to all laborers, Subcontractors and Suppliers, and other documents - all as required by the Contract Documents; and after the Project Manager 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 Project Manager's observation of the Work during construction and final inspection, and the Project Manager's review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents; and the Project Manager is satisfied that the Work has been completed and the CONTRACTOR's other obligations under the Contract Documents have been fulfilled, the AUTHORITY will process final Application for Payment. Otherwise, the Project Manager 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 Project Manager 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 AUTHORITY 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.l, 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 AUTHORITY 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 AUTHORITY will issue a letter of Final Acceptance, releasing the CONTRACTOR from further obligations under the Contract, except as provided in paragraph 13.17.

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) 01 77 00, such Work shall constitute a continuing obligation under the Contract.

13.l6 CONTRACTOR's Continuing Obligation:

The CONTRACTOR's obligation to perform and complete the Work and pay all laborers, Subcontractors, and material men in accordance with the Contract Documents shall be absolute. Neither any progress or final payment by the AUTHORITY, nor the issuance of a certificate of Substantial Completion, nor any use or occupancy of the Work or any part thereof by the AUTHORITY or Owner, nor any act of acceptance by the AUTHORITY 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 AUTHORITY 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.l7 Waiver of Claims by CONTRACTOR:

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

13.18 No Waiver of Legal Rights:

The AUTHORITY 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 therefore, 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 AUTHORITY 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 AUTHORITY, or any representative of the AUTHORITY, 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 AUTHORITY, 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 AUTHORITY of any breach of the Contract shall not be held to be a waiver of any other subsequent breach.

ARTICLE l4 - SUSPENSION OF WORK, DEFAULT AND TERMINATION

14.lAUTHORITY May Suspend Work:

14.1.1 The AUTHORITY 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 therefore 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 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

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 Authority 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 Authority. The Authority 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 AUTHORITY 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 AUTHORITY 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 AUTHORITY has paid the CONTRACTOR but which are stored elsewhere, and finish the Work as the AUTHORITY may deem expedient. The AUTHORITY 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 AUTHORITY 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 Authority 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 Authority 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 Authority 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 Authority will make subsequent Contract payments directly to the Surety for work performed under the terms of the Contract. CONTRACTOR forfeits any right to claim for the same work or any part thereof. CONTRACTOR is 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 therefore, 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 AUTHORITY 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 AUTHORITY and any amounts due to persons for whose benefit the AUTHORITY has withheld funds, such excess shall be paid by the AUTHORITY to the CONTRACTOR. If the damages, costs, and expenses due the AUTHORITY 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 AUTHORITY, the termination will not affect any rights or remedies of the AUTHORITY against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due the CONTRACTOR by the AUTHORITY will not release the CONTRACTOR from liability.

14.4 Convenience Termination:

14.4.1 The performance of the Work may be terminated by the AUTHORITY 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 OWNER. Any such termination shall be effected by delivery to the CONTRACTOR of a Notice of Termination, specifying termination is for the convenience of the AUTHORITY 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 AUTHORITY;

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 AUTHORITY has or may acquire any interest.

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

14.4.3 When the AUTHORITY 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 AUTHORITY - 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 AUTHORITY 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 AUTHORITY. 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 AUTHORITY'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 AUTHORITY 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 AUTHORITY; 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 AUTHORITY said termination shall not affect or terminate any of the rights of the AUTHORITY 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 AUTHORITY 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 AUTHORITY 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. Cost Principles. The Authority 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."

ARTICLE l5 - CLAIMS AND DISPUTES

15.1 Notification

15.1.1 The CONTRACTOR shall notify the AUTHORITY 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 AUTHORITY 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 AUTHORITY 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 AUTHORITY 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 AUTHORITY will not grant an extension of Contract Time if the CONTRACTOR does not timely submit revised schedules under **Section 01 32 00**.

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 AUTHORITY 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 AUTHORITY access to any such records and furnish the AUTHORITY 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 Authority 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 Authority.

15.1.5 If the claim or dispute is not resolved by the Project Manager, 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 AUTHORITY 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 AUTHORITY'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 AUTHORITY can make written request to the CONTRACTOR at any time for additional information relative to the Claim. The CONTRACTOR shall provide the AUTHORITY 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

15.4.1 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. 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 Executive Director of the Authority.

15.5 Appeals on a Contract Claim.

15.5.1 An appeal from a decision of the Contracting Officer on a contract claim may be filed by the CONTRACTOR with the Executive Director of the Authority. The appeal shall be filed within 14 days after the decision is received by the CONTRACTOR. An appeal by the CONTRACTOR may not raise any new factual issues or theories of recovery that were not presented to and decided by the Contracting Officer in the decision under Section 15.4, except that a CONTRACTOR may increase the contractor's calculation of damages if the increase arises out of the same operative facts on which the original claim was based. The CONTRACTOR shall file a copy of the appeal with the Contracting Officer.

a. An appeal must contain a copy of the decision being appealed and identification of the factual or legal errors in the decision that form the basis for the appeal.

b. The Executive Director shall handle the appeal of a claim under this section expeditiously.

15.6 Construction Contract Claim Appeals.

15.6.1 The appeal from a decision of the Contracting Officer of a claim involving a construction contract shall be resolved by:

a. binding and final arbitration under AS 09.43.010 - 09.43.180 (Uniform Arbitration Act) if the claim is:

1. less than $250,000 and the CONTRACTOR requests arbitration of the claim; or
2. $250,000 or more and both the agency and the CONTRACTOR agree to arbitration of the claim; or

b. a hearing under the Authority's established policy and procedures if the claim is not handled by arbitration under 15.6.1 of this subsection.

15.7 Fraud and Misrepresentation in Making Claims

Criminal and Civil penalties authorized under State or federal law (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 AUTHORITY at any stage of prosecuting a claim under this Contract."

This page is blank intentionally.

SECTION 00 80 00
SUPPLEMENTARY CONDITIONS

MODIFICATIONS TO THE GENERAL CONDITIONS 00 70 00

The following supplements modify, change, delete from, or add to Section 00 70 00 "General Conditions of the Construction Contract for Buildings", revised December, 2011. Where any article of the General Conditions is modified, or a Paragraph, Subparagraph, or Clause thereof is modified or deleted by these Supplementary Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph, or Clause shall remain in effect.

SC-1–DEFINITIONS

A. Add the following definitions:

1. **QUALITY ASSURANCE ACCEPTANCE TESTING –** This is all sampling and testing performed by the CONTRACTOR to determine at what level the product or service will be accepted for payment. Qualified personnel and laboratories will perform sampling and testing. The AUTHORITY pays for this testing.

2. **QUALITY CONTROL PROGRAM (QC PROGRAM) –** The CONTRACTOR'S, Subcontractor's or Supplier's operational techniques and activities that maintain control of the construction process to fulfill the Contract requirements. This may include materials handling, construction procedures, calibration and maintenance of equipment, production process control, material sampling, testing and inspection, and data analysis.

3. **RESIDENT ENGINEER -** The Engineer's authorized representative assigned to make detailed observations relating to contract performance.

SC-2.4–VISITS TO SITE/PLACE OF BUSINESS

At General Conditions Article 2.4, delete the first four words of the first sentence ("The Contracting Officer will …") and replace with the following words "The Contracting Officer has the right to, but is not obligated to…"

SC-4.3–EXPLORATIONS AND REPORTS

At General Conditions Article 4.3, add the following paragraph:

"All reports and other records (if available) are provided for informational purposes only to all plan holders listed with the AUTHORITY as General Contractors, and are available to other plan holders upon request. They are made available so Bidders have access to the same information available to the AUTHORITY. The reports and other records are not intended as a substitute for independent investigation, interpretation, or judgment of the Bidder. The AUTHORITY is not responsible for any interpretation or conclusion drawn from its records by the Bidder. 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 supersede or constitute conditions of the Contract Documents."

SC-4.7 – SURVEY CONTROL

At General Conditions Article 4.7, delete the section in its entirety.

SC-5.4.3 – INSURANCE REQUIREMENTS

At General Condition Article 5.4.3 add the following:

"d. The delivery to the AUTHORITY of a written notice in accordance with the policy provisions is required before cancellation of any coverage or reduction in any limits of liability."

SC-5.4.2a – WORKERS COMPENSATION INSURANCE

At General Condition Article 5.4.2a, delete paragraph "a" in its entirety and replace 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. Coverage shall include:

1. Waiver of subrogation against the Authority.

2. Employer's Liability Protection in the amount of $500,000 each accident / $500,000 each disease.

3. 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.

4. 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-5.4.2 b- COMMERCIAL GENERAL LIABILITY INSURANCE

At General Conditions Article 5.4.2.b, remove and replace the last sentence with the following:

"The following parties shall be named as "Additional Insured" under all liability coverages listed above:

The Authority

SC-5.4.2d- BUILDER'S RISK INSURANCE

At General Conditions Article 5.4.2.d, delete the subsection in its entirety.

SC – 6.13 – SUBCONTRACTORS

Add new general conditions Article 6.13.7 as follows:

6.13.7 The Contractor may, without penalty, replace a subcontractor who:

1. Fails to comply with the licensing and registration requirements as AS 08.18;
2. Fails to obtain or maintain a valid Alaska Business License;
3. Files for bankruptcy or becomes insolvent;
4. Fails to execute a subcontract or performance of the work for which the subcontractor was listed, and the Contractor has acted in good faith;
5. Fails to obtain bonding acceptable to the AUTHORITY;
6. Fails to obtain insurance acceptable to the AUTHORITY;
7. Fails to perform subcontract work for which the subcontractor was listed;
8. Must be replaced to meet the Contractor's required state or federal affirmative action requirements.
9. Refuses to agree to abide by the Contractor's labor agreement; or
10. Is determined by the AUTHORITY to be not responsible.

In addition to the circumstances described above, a Contractor may in writing request permission from the AUTHORITY to add a new subcontractor or replace a listed subcontractor. The AUTHORITY will approve the request if it determines in writing that allowing the addition or replacement is in the best interest of the AUTHORITY.

The Contractor shall submit a written request to add a new Subcontractor or replace a listed Subcontractor to the Contracting Officer a minimum of five working days prior to the date the new Subcontractor is scheduled to be work on the construction site. The request must state the basis for the request and include supporting documentation acceptable to the Contracting Officer.

If a Contractor violates this article, the Contracting Officer may;

1. Cancel the Contract after Award without any damages accruing to the AUTHORITY; or
2. After notice and hearing, assess a penalty on the bidder in an amount not exceeding 0 percent of the value of the subcontract at issue.

SC-7.14 – WAGES AND HOURS OF LABOR

General Condition Article 7.14.1 (Certified Payroll) and Article 7.14.3 (D.O.L. Notification) shall not apply to work in Akiachak. This is because the Akiachak Native Community Electric Company is not a political subdivision of the State of Alaska and therefore this work is not subject to AS 36.05. Refer to Supplementary Condition 90.4 Davis-Bacon Act.

General Condition Article 7.14.2 (Alaska Mini-Davis-Bacon Wage Rates) shall not apply to work in Akiachak. This is because the Akiachak Native Community Electric Company is not a political subdivision of the State of Alaska and therefore this work is not subject to AS 36.05. Refer to Supplementary Condition 90.4 Davis-Bacon Act.

SC-9.4–CHANGE ORDER

At General Conditions Article 9.4, add the following sentence:

> "The AUTHORITY will issue Change Orders for the CONTRACTOR to sign. A Change Order shall be considered executed when the AUTHORITY signs it. The CONTRACTOR'S signature indicates that they accept the Change Order or acknowledge it. Acknowledgement of a Change Order does not surrender the CONTRACTOR'S right to claim."

SC-11.3 – COMPUTATION OF CONTRACT TIME

At General Conditions Article 11.3.3, delete the subsection in its entirety.

SC – 11.5 – EXTENSION DUE TO DELAYS:

At General Conditions Article 11.5, delete paragraph in its entirety and replace with the following:

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 AUTHORITY in its contractual capacity, acts of another contractor in the performance of a contract with the AUTHORITY, floods, fires, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, acts or restraints of governmental authorities affecting the project or directly or indirectly prohibiting or restricting the furnishing or use of materials or labor required; inability to secure materials, machinery, equipment or labor because of priority, allocation or other regulations of any governmental authorities, 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 Project Manager 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.

SC-11.8–DELAY DAMAGES

At General Condition Article 11.8, add the following paragraphs:

11.8.1 For each calendar day that the Work is not Substantially Complete after the Substantial Completion date has passed, the AUTHORITY shall deduct $250 from progress payments up to a maximum of $5,000 (20 days).

11.8.2 If no money is due the CONTRACTOR, the AUTHORITY shall have the right to recover these sums from the CONTRACTOR, from the Surety, or from both. These are liquidated damages and not penalties. These charges shall reimburse the AUTHORITY for its additional administrative expenses incurred due to CONTRACTOR'S failure to complete the work within the time specified.

11.8.3 Permitting the CONTRACTOR to continue and finish the work or any part of it after the Contract time has elapsed or the completion date has passed does not waive the AUTHORITY'S rights to collect liquidated damages under this section.

SC-12.1–WARRANTY AND GUARANTEE

At General Condition Article 12.1, add the following sentence:

"The failure of the AUTHORITY to strictly enforce the Contract in one or more instances does not waive its right to do so in other or future instances."

SC – 13.5 – STORED MATERIALS AND EQUIPMENT

At General Conditions Article 13.5, add the following;

> "No payment will be made for an individual/unique item of material or equipment with a total value less than $25,000 per item or for any item of material or equipment scheduled for incorporation into the work in less than 60 days from its arrival on site."

MODIFICATIONS TO THE FEDERAL ASSURANCES 00 90 00

The following supplements modify, change, delete from, or add to Section 00 90 00 "Federal Assurances". Where any Paragraph, Subparagraph, or Clause of the Federal Assurances is modified or deleted by these Supplementary Conditions, the unaltered provisions of that Paragraph, Subparagraph, or Clause shall remain in effect.

SC-90.1–BREACHES AND DISPUTE RESOLUTION

At Federal Assurances Paragraph 90.1 delete the paragraph in its entirety. See General Conditions 00 70 00 Article 15 for Claims and Disputes

SC-90.2 – TERMINATION

At Federal Assurances Paragraph 90.2 delete the paragraph in its entirety. See General Conditions 00 70 00 Article 14 for Suspension of Work and Termination.

SC-90.4–DAVIS-BACON ACT, AS AMENDED

Davis Bacon wage requirements are described in 00 90 00, Federal Assurances, Paragraph 90.4. At Paragraph 90.4 add the following language:

One certified copy of all payrolls shall be submitted weekly to the Project Manager to assure compliance with 40 USC 3142-3148 and 29 CFR Part 5. 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 to the Work performed.

SC-90.13–DOMESTIC PREFERENCES FOR PROCUREMENTS

This project is funded by State funds and Federal EPA funds. State of Alaska funds are not subject to Buy America Act requirements. The EPA federal funds were granted prior to May 14, 2022 and are exempt from the Buy America Act. Therefore this project is not subject to the Buy America Act.

END OF SECTION

ALASKA ENERGY AUTHORITY
SECTION 00 90 00
FEDERAL ASSURANCES

Because this contract is funded with federal funds, the following contract provisions shall apply, where applicable, to all work performed on the contract by the contractor's own organization and by subcontractors. As provided in this Section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions and further require their inclusion in any lower tier subcontracts or purchase orders that may in turn be made. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with all applicable Required Contract Provisions.

90.1 BREACHES AND DISPUTE RESOLUTION.

Contracts in excess of $250,000. Any dispute arising under this Contract which is not disposed of by mutual agreement shall be resolved in accordance with 2 AAC 108.915.

90.2 TERMINATION.

Contracts in excess of $10,000. This Contract may be terminated by either party upon 10 days written notice if the other party fails substantially to perform in accordance with its terms through no fault of the party initiating the termination ("Default Termination"). If the Authority terminates this agreement, the Authority will pay the Contractor a sum equal to the percentage of Work completed that can be substantiated either by the Contractor to the satisfaction of the Authority, or by the Authority. If the Authority becomes aware of any non-conformance with the Work or this agreement by the Contractor, the Authority will promptly notify the Contractor in writing of the non-conformance. Should the Contractor's Work remain in non-conformance after having received written notification, the percentage of total compensation attributable to the non-conforming Work may be withheld. The Authority may at any time suspend or terminate ("Convenience Termination") this Agreement for its needs or convenience with or without cause upon written notice. In the event of a Convenience Termination, the Contractor will be compensated for all authorized Work and authorized expenditures performed to the date of receipt of written notice of termination plus reasonable expenses. No fee or other compensation will be due for any incomplete portion of the Work.

90.3 EQUAL EMPLOYMENT OPPORTUNITY.

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

90.4 DAVIS-BACON ACT, AS AMENDED (40 U.S.C. 3141-3148).

Construction contracts in excess of $2,000 are required to comply with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). Contractors are required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must

pay wages not less than once a week. **A copy of the current prevailing wage determination issued by the Department of Labor is included in this solicitation.** Contract and subcontract awards must be conditioned upon the acceptance of the wage determination. All suspected or reported violations must be reported to the Federal awarding agency.

90.5 COPELAND "ANTI-KICKBACK" ACT (40 U.S.C. 3145)

Construction contracts in excess of $2,000 are required to comply with the **Copeland "Anti-Kickback" Act** (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). Each contractor or subrecipient is prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. All suspected or reported violations must be reported to the Federal awarding agency.

90.6 CONTRACT WORK HOURS/SAFETY STANDARDS ACT (40 U.S.C. 3701-3708).

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

90.7 RIGHTS TO INVENTIONS MADE UNDER A CONTRACT OR AGREEMENT.

If the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

90.8 CLEAN AIR ACT (42 U.S.C. 7401-7671Q.) AND THE FEDERAL WATER POLLUTION CONTROL ACT (33 U.S.C. 1251-1387), AS AMENDED

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

90.9 DEBARMENT AND SUSPENSION (EXECUTIVE ORDERS 12549 & 12689)

A contract award **greater than or equal to $25,000** (see 2 CFR 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." **Contractors that**

apply or bid for an award exceeding $25,000 must sign and submit the attached "Debarment" certification with their bid.

90.10 BYRD ANTI-LOBBYING AMENDMENT (31 U.S.C. 1352)

Each contractor and subcontractor must certify that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Disclosures shall be forwarded from tier to tier up to the Authority. **Contractors that apply or bid for an award exceeding $100,000 must sign and submit the attached "Lobbying" certification with their bid**.

90.11 PROCUREMENT OF RECOVERED MATERIALS.

A state agency or agency of a political subdivision of a state and its contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, **where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000;** procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

90.12 PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT.

Contractors and subcontractors are prohibited from entering into a contract (or extending or renewing a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities). See § 200.216.

90.13 DOMESTIC PREFERENCES FOR PROCUREMENTS.

As appropriate and to the extent consistent with law, and to the greatest extent practicable, Contractor's are required to provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all contracts and purchase orders for work or products under this award. See § 200.322.

DEBARMENT, SUSPENSION, INELIGIBILITY & VOLUNTARY EXCLUSION – 2 CFR 200.214; Executive Orders 12549 and 12689 [Applicable to all federally assisted contracts which exceed $25,000]

Instructions for Certification:

1. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective contractor and lower tier participants knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the Authority may pursue available remedies, including suspension and/or debarment.

2. The prospective contractor and lower tier participants shall provide immediate written notice to the Authority if at any time the prospective contractor and lower tier participants learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

3. The terms "covered transaction," “debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "persons," "lower tier covered transaction," "principal," "proposal," and voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Orders 12549 and 12689. You may contact the Authority for assistance in obtaining a copy of those regulations.

4. The prospective contractor and lower tier participants agrees by submitting this bid or proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized in writing by the Authority.

5. The prospective contractor and lower tier participants further agrees by submitting this bid or proposal that it will require the language of this certification be included in all subcontracts and all lower tier participants shall certify compliance with this requirement**.**

6. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Non-procurement List issued by U.S. General Service Administration.

7. Nothing contained in the foregoing shall be construed to require establishment of system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

8. Except for transactions authorized under Paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to all remedies available to the Federal Government, the Authority may pursue available remedies including suspension and/or debarment.

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion Lower Tier Covered Transaction

(1) The prospective contractor and lower tier participants certifies, by submission of this bid or proposal, that neither it nor its "principals" is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

(2) When the prospective contractor and lower tier participants is unable to certify to the statements in this certification, such prospective participant shall attach an explanation to this proposal.

The Contractor, _____ certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 2 CFR §180 apply to this certification and disclosure, if any.

Signature of Contractor’s Authorized Official: _____

Name and Title of Contractor’s Authorized Official: _____

Date:

CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING - 31 USC §1352
[Applicable to all federally assisted contracts and to all related subcontracts which exceed $100,000]

A bidder must submit to the Authority the below certification with its bid response for any federally assisted contract that exceeds $100,000. Bids that are not accompanied by a completed certification may be rejected as nonresponsive.

1. The undersigned Contractor certifies, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and **submit Standard Form-LLL, "Disclosure Form to Report Lobbying**," in accordance with its instructions.

2. The undersigned also agrees that he or she shall require that the language of this certification be **included** in **all lower tier subcontracts, which exceed $100,000** and that all such recipients shall certify and disclose accordingly.

3. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 USC 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The Contractor, _____ certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 USC 3801, *et seq.*, apply to this certification and disclosure, if any.

Signature of Contractor's Authorized Official: _____

Name and Title of Contractor's Authorized Official: _____

Date: _____

End of Federal Assurances

"General Decision Number: AK20230001 01/27/2023

Superseded General Decision Number: AK20220001

State: Alaska

Construction Types: Building and Heavy

Counties: Alaska Statewide.

BUILDING AND HEAVY CONSTRUCTION PROJECTS (does not include residential construction consisting of single family homes and apartments up to and including 4 stories)

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.

|_____|_____|

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/06/2023
1	01/13/2023
2	01/27/2023

ASBE0097-001 06/01/2021

	Rates	Fringes
Asbestos Workers/Insulator (includes application of all insulating materials protective coverings, coatings and finishings to all types of mechanical systems)	$ 38.68	21.57
HAZARDOUS MATERIAL HANDLER (includes preparation, wetting, stripping, removal scrapping, vacuming, bagging, and disposing of all insulation materials, whether they contain asbestos or not, from mechanical systems)	$ 37.38	19.55

BOIL0502-002 01/01/2021

	Rates	Fringes
BOILERMAKER	$ 47.03	30.59

BRAK0001-002 07/01/2020

	Rates	Fringes

Bricklayer, Blocklayer,
Stonemason, Marble Mason,
Tile Setter, Terrazzo Worker.....$ 42.16 19.67
Tile & Terrazzo Finisher.....$ 35.99 19.67

CARP1281-001 09/01/2022

	Rates	Fringes
CARPENTER		
Including Lather and		
Drywall Hanging	$ 43.34	28.86

CARP1501-001 09/01/2019

	Rates	Fringes
MILLWRIGHT	$ 37.64	23.46

CARP2520-003 09/01/2022

	Rates	Fringes
Diver		
Stand-by	$ 47.65	28.32
Tender	$ 46.65	28.32
Working	$ 87.45	28.32
Piledriver		
Piledriver; Skiff Operator and Rigger	$ 38.34	26.51
Sheet Stabber	$ 38.34	26.51
Welder	$ 43.90	26.51

DEPTH PAY PREMIUM FOR DIVERS BELOW WATER SURFACE:
50-100 feet $1.00 per foot
101 feet and deeper $2.00 per foot

ENCLOSURE PAY PREMIUM WITH NO VERTICAL ASCENT:
5-50 FEET $1.00 PER FOOT/DAY
51-100 FEET $2.00 PER FOOT/DAY
101 FEET AND ABOVE $3.00 PER FOOT/DAY

SATURATION DIVING:
The standby rate applies until saturation starts. The saturation diving rate applies when divers are under pressure continuously until work task and decompression are complete. the diver rate shall be paid for all saturation

hours.

WORK IN COMBINATION OF CLASSIFICATIONS:
Employees working in any combination of classifications within the diving crew (except dive supervisor) in a shift are paid in the classification with the highest rate for that shift.

ELEC1547-004 04/01/2022

	Rates	Fringes
CABLE SPLICER	$ 42.77	3% + 27.97
ELECTRICIAN	$ 42.44	3% + 28.22

ELEC1547-005 04/01/2022

Line Construction

	Rates	Fringes
CABLE SPLICER	$ 62.29	3%+32.37
Linemen (Including Equipment Operators, Technician)	$ 61.29	3%+30.98
Powderman	$ 59.29	3%+32.37
TREE TRIMMER	$ 38.05	3%+27.01

ELEV0019-002 01/01/2023

	Rates	Fringes
ELEVATOR MECHANIC	$ 65.83	37.335+a+b

FOOTNOTE: a. Employer contributes 8% of the basic hourly rate for over 5 year's service and 6% of the basic hourly rate for 6 months to 5 years' of service as vacation paid credit. b. Eight paid holidays: New Year's Day; Memorial Day; Independence Day; Labor Day; Veteran's Day; Thanksgiving Day; Friday after Thanksgiving, and Christmas Day

---

ENGI0302-002 01/01/2022

	Rates	Fringes
POWER EQUIPMENT OPERATOR		

GROUP 1	$ 43.53	25.95
GROUP 1A	$ 45.29	25.95
GROUP 2	$ 42.76	25.95
GROUP 3	$ 42.76	25.95
GROUP 4	$ 35.83	25.95
TUNNEL WORK		
GROUP 1	$ 47.88	25.95
GROUP 1A	$ 49.82	25.95
GROUP 2	$ 47.04	25.95
GROUP 3	$ 46.24	25.95
GROUP 4	$ 39.41	25.95

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Asphalt Roller: Breakdown, Intermediate, and Finish; Back Filler; Barrier Machine (Zipper); Beltcrete with power pack and similar conveyors; Bending Machine; Boat Coxwains; Bulldozers; Cableways, Highlines and Cablecars; Cleaning Machine; Coating Machine; Concrete Hydro Blaster; Cranes-45 tons and under or 150 foot boom and under (including jib and attachments): (a) Hydralifts or Transporters, all track or truck type,(b) Derricks; Crushers; Deck Winches-Double Drum; Ditching or Trenching Machine (16 inch or over); Drilling Machines, core, cable, rotary and exploration; Finishing Machine Operator, Concrete Paving, Laser Screed, Sidewalk, Curb and Gutter Machine; Helicopters; Hover Craft, Flex Craft, Loadmaster, Air Cushion, All Terrain Vehicle, Rollagon, Bargecable, Nodwell, and Snow Cat; Hydro Ax: Feller Buncher and similar; Loaders (2 1/2 yards through 5 yards, including all attachments): Forklifts with telescopic boom and swing attachment, Overhead and front end, 2 1/2 yards through 5 yards, Loaders with forks or pipe clamps; Loaders, elevating belt type, Euclid and similar types; Mechanics, Bodyman; Micro Tunneling Machine; Mixers: Mobile type w/hoist combination; Motor Patrol Grader; Mucking Machines: Mole, Tunnel Drill, Horizontal/Directional Drill Operator, and/or Shield; Operator on Dredges; Piledriver Engineers, L. B. Foster, Puller or similar Paving Breaker; Power Plant, Turbine Operator, 200 k.w. and over (power plants or combination of power units over 300 k.w.); Scrapers-through 40 yards; Service Oiler/Service Engineer; Sidebooms-under 45 tons; Shot Blast Machine; Shovels, Backhoes, Excavators with all attachments, and Gradealls (3 yards and under), Spreaders, Blaw Knox, Cedarapids, Barber Greene, Slurry Machine; Sub-grader (Gurries, Reclaimer, and similar types); Tack tractor; Truck mounted Concrete Pumps, Conveyor, Creter; Water Kote Machine; Unlicensed off road

hauler

GROUP 1A: Camera/Tool/Video Operator (Slipline), Cranes-over 45 tons or 150 foot (including jib and attachments): (a) Clamshells and Draglines (over 3 yards), (b) Tower cranes; Licensed Water/Waste Water Treatment Operator; Loaders over 5 yds.; Certified Welder, Electrical Mechanic, Camp Maintenance Engineer, Mechanic (over 10,000 hours); Motor Patrol Grader, Dozer, Grade Tractor, Roto-mill/Profiler (finish: when finishing to final grade and/or to hubs, or for asphalt); Power Plants: 1000 k.w. and over; Quad; Screed; Shovels, Backhoes, Excavators with all attachments (over 3 yards), Sidebooms over 45 tons; Slip Form Paver, C.M.I. and similar types; Scrapers over 40 yards;

GROUP 2: Boiler-fireman; Cement Hog and Concrete Pump Operator; Conveyors (except as listed in group 1); Hoist on steel erection; Towermobiles and Air Tuggers; Horizontal/Directional Drill Locator;Licensed Grade Technician; Loaders, (i.e., Elevating Grader and Material Transfer Vehicle); Locomotives: rod and geared engines; Mixers; Screening, Washing Plant; Sideboom (cradling rock drill regardless of size); Skidder; Trencing Machine under 16 inches; Waste/ Waste Water Treatment Operator.

GROUP 3: ""A"" Frame Trucks, Deck Winches: single power drum; Bombardier (tack or tow rig); Boring Machine; Brooms-power; Bump Cutter; Compressor; Farm tractor; Forklift, industrial type; Gin Truck or Winch Truck with poles when used for hoisting; Grade Checker and Stake Hopper; Hoist, Air Tuggers, Elevators; Loaders: (a) Elevating-Athey, Barber Green and similar types (b) Forklifts or Lumber Carrier (on construction job site) (c) Forklifts with Tower (d) Overhead and Front-end, under 2 1/2 yds. Locomotives:Dinkey (air, steam, gas and electric) Speeders; Mechanics (light duty); Oil, Blower Distribution; Post Hole Diggers, mechanical; Pot Fireman (power agitated); Power Plant, Turbine Operator, under 200 k.w.; Pumps-water; Roller-other than Plantmix; Saws, concrete; Skid Steer with all attachments; Straightening Machine; Tow Tractor

GROUP 4: Rig Oiler/Crane Assistant Engineer;Parts and Equipment Coordinator; Swamper (on trenching machines or shovel type equipment); Spotter; Steam Cleaner; Drill Helper.

FOOTNOTE: Groups 1-4 receive 10% premium while performing

tunnel or underground work. Rig Oiler/Crane Assistant Engineer shall be required on cranes over 85 tons or over 100 feet of boom.

IRON0751-003 07/01/2022

	Rates	Fringes
IRONWORKER		
BENDER OPERATOR	$ 41.49	34.86
BRIDGE, STRUCTURAL, ORNAMENTAL, REINFORCING MACHINERY MOVER, RIGGER, SHEETER, STAGE RIGGER, BENDER OPERATOR	$ 38.75	32.63
FENCE, BARRIER INSTALLER	$ 37.99	34.86
GUARDRAIL INSTALLERS	$ 38.99	34.86
GUARDRAIL LAYOUT MAN	$ 38.72	34.86
HELICOPTER, TOWER	$ 42.49	34.86

LABO0341-001 04/01/2021

	Rates	Fringes
LABORER (South of the 63rd Parallel & West of Longitude 138 Degrees)		
GROUP 1	$ 32.00	31.11
GROUP 2	$ 33.00	31.11
GROUP 3	$ 33.90	31.11
GROUP 3A	$ 37.18	31.11
GROUP 3B	$ 40.97	28.40
GROUP 4	$ 21.57	31.11
TUNNELS, SHAFTS, AND RAISES		
GROUP 1	$ 35.20	31.11

GROUP 2	$ 36.30	31.11
GROUP 3	$ 37.29	31.11
GROUP 3A	$ 40.90	31.11
GROUP 3B	$ 45.07	28.40

LABORERS CLASSIFICATIONS

GROUP 1: Asphalt Workers (shovelman, plant crew); Brush Cutters; Camp Maintenance Laborer; Carpenter Tenders; Choke Setters, Hook Tender, Rigger, Signalman; Concrete Laborer(curb and gutter, chute handler, grouting, curing, screeding); Crusher Plant Laborer; Demolition Laborer; Ditch Diggers; Dump Man; Environmental Laborer (asbestos (limited to nonmechanical systems), hazardous and toxic waste, oil spill); Fence Installer; Fire Watch Laborer; Flagman; Form Strippers; General Laborer; Guardrail Laborer, Bridge Rail Installers; Hydro-Seeder Nozzleman; Laborers (building); Landscape or Planter; Laying of Decorative Block (retaining walls, flowered decorative block 4 feet and below); Material Handlers; Pneumatic or Power Tools; Portable or Chemical Toilet Serviceman; Pump Man or Mixer Man; Railroad Track Laborer; Sandblast, Pot Tender; Saw Tenders; Scaffold Building and Erecting; Slurry Work; Stake Hopper; Steam Point or Water Jet Operator; Steam Cleaner Operator; Tank Cleaning; Utiliwalk, Utilidor Laborer and Conduit Installer; Watchman (construction projects); Window Cleaner

GROUP 2: Burning and Cutting Torch; Cement or Lime Dumper or Handler (sack or bulk); Choker Splicer; Chucktender (wagon, airtrack and hydraulic drills); Concrete Laborers (power buggy, concrete saws, pumpcrete nozzleman, vibratorman); Culvert Pipe Laborer; Cured in place Pipelayer; Environmental Laborer (marine work, oil spill skimmer operator, small boat operator); Foam Gun or Foam Machine Operator; Green Cutter (dam work); Gunnite Operator; Hod Carriers; Jackhammer or Pavement Breakers (more than 45 pounds);Laying of Decorative Block (retaining walls, flowered decorative block above 4 feet); Mason Tender and Mud Mixer (sewer work); Pilot Car; Plasterer, Bricklayer and Cement Finisher Tenders; Power Saw Operator; Railroad Switch Layout Laborer; Sandblaster; Sewer Caulkers; Sewer Plant Maintenance Man; Thermal Plastic Applicator; Timber Faller, chain saw operator, filer; Timberman

GROUP 3: Alarm Installer; Bit Grinder; Guardrail Machine Operator; High Rigger and tree topper; High Scaler; Multiplate; Slurry Seal Squeegee Man

GROUP 3A: Asphalt Raker, Asphalt Belly dump lay down; Drill Doctor (in the field); Drillers (including, but not limited to, wagon drills, air track drills; hydraulic drills); Powderman; Pioneer Drilling and Drilling Off Tugger (all type drills); Pipelayers

GROUP 3B: Grade checker (setting or transfering of grade marks, line and grade)

GROUP 4: Final Building Cleanup

TUNNELS, SHAFTS, AND RAISES CLASSIFICATIONS

GROUP 1: Brakeman; Muckers; Nippers; Topman and Bull Gang; Tunnel Track Laborer

GROUP 2: Burning and Cutting Torch; Concrete Laborers; Jackhammers; Nozzleman, Pumpcrete or Shotcrete.

GROUP 3: Miner; Retimberman

GROUP 3A: Asphalt Raker, Asphalt Belly dump lay down; Drill Doctor (in the field); Drillers (including, but not limited to, wagon drills, air track drills; hydraulic drills); Powderman; Pioneer Drilling and Drilling Off Tugger (all type drills); Pipelayers.

GROUP 3B: Grade checker (setting or transfering of grade marks, line and grade)

Tunnel shaft and raise rates only apply to workers regularly employed inside a tunnel portal or shaft collar.

LABO0942-001 04/01/2022

	Rates	Fringes
Laborers: North of the 63rd Parallel & East of Longitude 138 Degrees		
GROUP 1	$ 33.00	31.37
GROUP 2	$ 34.00	31.37
GROUP 3	$ 34.90	31.37
GROUP 3A	$ 38.18	31.37
GROUP 3B	$ 41.97	29.00
GROUP 4	$ 22.57	31.37

TUNNELS, SHAFTS, AND RAISES		
GROUP 1	$ 36.20	31.37
GROUP 2	$ 37.40	31.37
GROUP 3	$ 38.39	31.37
GROUP 3A	$ 42.00	31.37
GROUP 3B	$ 46.17	29.00

LABORERS CLASSIFICATIONS

GROUP 1: Asphalt Workers (shovelman, plant crew); Brush Cutters; Camp Maintenance Laborer; Carpenter Tenders; Choke Setters, Hook Tender, Rigger, Signalman; Concrete Laborer(curb and gutter, chute handler, grouting, curing, screeding); Crusher Plant Laborer; Demolition Laborer; Ditch Diggers; Dump Man; Environmental Laborer (asbestos (limited to nonmechanical systems), hazardous and toxic waste, oil spill); Fence Installer; Fire Watch Laborer; Flagman; Form Strippers; General Laborer; Guardrail Laborer, Bridge Rail Installers; Hydro-Seeder Nozzleman; Laborers (building); Landscape or Planter; Laying of Decorative Block (retaining walls, flowered decorative block 4 feet and below); Material Handlers; Pneumatic or Power Tools; Portable or Chemical Toilet Serviceman; Pump Man or Mixer Man; Railroad Track Laborer; Sandblast, Pot Tender; Saw Tenders; Scaffold Building and Erecting; Slurry Work; Stake Hopper; Steam Point or Water Jet Operator; Steam Cleaner Operator; Tank Cleaning; Utiliwalk, Utilidor Laborer and Conduit Installer; Watchman (construction projects); Window Cleaner

GROUP 2: Burning and Cutting Torch; Cement or Lime Dumper or Handler (sack or bulk); Choker Splicer; Chucktender (wagon, airtrack and hydraulic drills); Concrete Laborers (power buggy, concrete saws, pumpcrete nozzleman, vibratorman); Culvert Pipe Laborer; Cured in place Pipelayer; Environmental Laborer (marine work, oil spill skimmer operator, small boat operator); Foam Gun or Foam Machine Operator; Green Cutter (dam work); Gunnite Operator; Hod Carriers; Jackhammer or Pavement Breakers (more than 45 pounds);Laying of Decorative Block (retaining walls, flowered decorative block above 4 feet); Mason Tender and Mud Mixer (sewer work); Pilot Car; Plasterer, Bricklayer and Cement Finisher Tenders; Power Saw Operator; Railroad Switch Layout Laborer; Sandblaster; Sewer Caulkers; Sewer Plant Maintenance Man; Thermal Plastic Applicator; Timber Faller, chain saw operator, filer; Timberman

GROUP 3: Alarm Installer; Bit Grinder; Guardrail Machine

Operator; High Rigger and tree topper; High Scaler; Multiplate; Slurry Seal Squeegee Man

GROUP 3A: Asphalt Raker, Asphalt Belly dump lay down; Drill Doctor (in the field); Drillers (including, but not limited to, wagon drills, air track drills; hydraulic drills); Powderman; Pioneer Drilling and Drilling Off Tugger (all type drills); Pipelayers

GROUP 3B: Grade checker (setting or transfering of grade marks, line and grade)

GROUP 4: Final Building Cleanup

TUNNELS, SHAFTS, AND RAISES CLASSIFICATIONS

GROUP 1: Brakeman; Muckers; Nippers; Topman and Bull Gang; Tunnel Track Laborer

GROUP 2: Burning and Cutting Torch; Concrete Laborers; Jackhammers; Nozzleman, Pumpcrete or Shotcrete.

GROUP 3: Miner; Retimberman

GROUP 3A: Asphalt Raker, Asphalt Belly dump lay down; Drill Doctor (in the field); Drillers (including, but not limited to, wagon drills, air track drills; hydraulic drills); Powderman; Pioneer Drilling and Drilling Off Tugger (all type drills); Pipelayers.

GROUP 3B: Grade checker (setting or transfering of grade marks, line and grade)

Tunnel shaft and raise rates only apply to workers regularly employed inside a tunnel portal or shaft collar.

PAIN1959-001 07/01/2022

NORTH OF THE 63RD PARALLEL

	Rates	Fringes
PAINTER		
BRUSH/ROLLER PAINT OR WALL COVERER	$ 36.08	25.45
TAPING, TEXTURING, STRUCTURAL PAINTING,		

SANDBLASTING, POT TENDER,
FINISH METAL, SPRAY,
BUFFER OPERATOR, RADON
MITIGATION, LEAD BASED
PAINT ABATEMENT, HAZARDOUS
MATERIAL HANDLER.....$ 36.60 25.45

PAIN1959-002 12/01/2021

SOUTH OF THE 63RD PARALLEL

	Rates	Fringes
PAINTER		
General Painter.....	$ 32.64	25.95
Industrial Painter.....	$ 32.74	25.95
Taper / Paper & Vinyl Hanger.....	$ 32.64	25.95

PAIN1959-003 12/01/2021

NORTH OF THE 63RD PARALLEL

	Rates	Fringes
GLAZIER.....	$ 41.16	28.16

PAIN1959-004 07/01/2019

	Rates	Fringes
FLOOR LAYER: Carpet.....	$ 28.75	14.44

PAIN1959-006 12/01/2021

SOUTH OF THE 63RD PARALLEL

	Rates	Fringes
GLAZIER.....	$ 41.37	27.25

---

* PLUM0262-002 01/01/2023

East of the 141st Meridian

	Rates	Fringes
Plumber; Steamfitter.....	$ 41.50	27.62

PLUM0367-002 07/01/2021

South of the 63rd Parallel

	Rates	Fringes
Plumber; Steamfitter	$ 41.00	27.95

PLUM0375-002 07/01/2021

North of the 63rd Parallel

	Rates	Fringes
Plumber; Steamfitter	$ 42.91	31.25

PLUM0669-002 01/01/2023

	Rates	Fringes
SPRINKLER FITTER	$ 51.51	30.22

ROOF0189-006 04/01/2021

	Rates	Fringes
ROOFER	$ 44.62	17.63

SHEE0023-003 08/01/2022

South of the 63rd Parallel

	Rates	Fringes
SHEET METAL WORKER	$ 45.35	29.19

SHEE0023-004 07/01/2022

North of the 63rd Parallel

	Rates	Fringes
SHEET METAL WORKER	$ 50.83	29.03

TEAM0959-003 04/01/2021

	Rates	Fringes

TRUCK DRIVER

GROUP 1	$ 41.94	26.12
GROUP 1A	$ 43.21	26.12
GROUP 2	$ 40.68	26.12
GROUP 3	$ 39.86	26.12
GROUP 4	$ 39.28	26.12
GROUP 5	$ 38.52	26.12

GROUP 1: Semi with Double Box Mixer; Dump Trucks (including rockbuggy and trucks with pups) over 40 yards up to and including 60 yards; Deltas, Commanders, Rollogans and similar equipment when pulling sleds, trailers or similar equipment; Boat Coxswain; Lowboys including attached trailers and jeeps, up to and including 12 axles; Ready-mix over 12 yards up to and including 15 yards); Water Wagon (250 Bbls and above); Tireman, Heavy Duty/Fueler

GROUP 1A: Dump Trucks (including Rockbuggy and Trucks with pups) over 60 yards up to and including 100 yards; Jeeps (driver under load)

GROUP 2: Turn-O-Wagon or DW-10 not self-loading; All Deltas, Commanders, Rollogans, and similar equipment; Mechanics; Dump Trucks (including Rockbuggy and Trucks with pups) over 20 yards up to and including 40 yards; Lowboys including attached trailers and jeeps up to and including 8 axles; Super vac truck/cacasco truck/heat stress truck; Ready-mix over 7 yards up to and including 12 yards; Partsman; Stringing Truck

GROUP 3: Dump Trucks (including Rockbuggy and Trucks with pups) over 10 yards up to and including 20 yards; batch trucks 8 yards and up; Oil distributor drivers; Oil Distributor Drivers; Trucks/Jeeps (push or pull); Traffic Control Technician

GROUP 4: Buggymobile; Semi or Truck and trailer; Dumpster; Tireman (light duty); Dump Trucks (including Rockbuggy and Truck with pups) up to and including 10 yards; Track Truck Equipment; Grease Truck; Flat Beds, dual rear axle; Hyster Operators (handling bulk aggregate); Lumber Carrier; Water Wagon, semi; Water Truck, dual axle; Gin Pole Truck, Winch Truck, Wrecker, Truck Mounted ""A"" Frame manufactured rating over 5 tons; Bull Lifts and Fork Lifts with Power Boom and Swing attachments, over 5 tons; Front End Loader with Forks; Bus Operator over 30 passengers; All Terrain Vehicles; Boom Truck/Knuckle Truck over 5 tons; Foam

Distributor Truck/dual axle; Hydro-seeders, dual axle; Vacuum Trucks, Truck Vacuum Sweepers; Loadmaster (air and water); Air Cushion or similar type vehicle; Fire Truck/Ambulance Driver; Combination Truck-fuel and grease; Compactor (when pulled by rubber tired equipment); Rigger (air/water/oilfield); Ready Mix, up to and including 7 yards;

GROUP 5: Gravel Spreader Box Operator on Truck; Flat Beds, single rear axle; Boom Truck/Knuckle Truck up to and including 5 tons; Pickups (Pilot Cars and all light duty vehicles); Water Wagon (Below 250 Bbls); Gin Pole Truck, Winch Truck, Wrecker, Truck Mounted ""A"" Frame, manufactured rating 5 tons and under; Bull Lifts and Fork Lifts (fork lifts with power broom and swing attachments up to and including 5 tons); Buffer Truck; Tack Truck; Farm type Rubber Tired Tractor (when material handling or pulling wagons on a construction project); Foam Distributor, single axle; Hydro-Seeders, single axle; Team Drivers (horses, mules and similar equipment); Fuel Handler (station/bulk attendant); Batch Truck, up to and including 7 yards; Gear/Supply Truck; Bus Operator, Up to 30 Passengers; Rigger/Swamper

---

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

==========

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

https://www.dol.gov/agencies/whd/government-contracts.

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

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

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

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

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and

non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

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

Union Average Rate Identifiers

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

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

WAGE DETERMINATION APPEALS PROCESS

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

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

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this

initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

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

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

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

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

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

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

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

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

==========

END OF GENERAL DECISIO"

SECTION 01 11 13
SUMMARY OF WORK

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

A. Contract Method.

B. Work by Others.

C. Coordination.

D. Work covered by Contract Documents.

1.2 RELATED REQUIREMENTS:

A. Section 00 70 00 – General Conditions.

B. Section 00 80 00 – Supplementary Conditions.

C. Division 1

D. Divisions 2 through 26

1.3 CONTRACT METHOD

A. This Contract is lump sum as shown on the Section 00 32 00 – Bid Schedule. This work shall be measured and paid for in accordance with Section 00 70 00 – General Conditions, Article 13 – Payment to Contractors and Completion and Section 01 29 73 - Schedule of Values.

1.4 WORK BY OTHERS

A. All work shall be included in this Contract except for tasks specifically indicated as being performed by others.

1.5 COORDINATION

A. Coordinate Work to assure efficient and orderly sequence of installation.

B. Prior to procurement, verify that characteristics of interrelated equipment are compatible.

C. Coordinate space requirements and installation of components. Utilize spaces efficiently to maximize accessibility for other installations, maintenance, and repairs.

1.6 LOCAL DATA AND COMMUNICATION

A. Work under this Contract requires telephone service for progress meetings and may require internet service for testing and reporting. Following is a summary of service.

a. Akiachak Telephone: Local cellular phone service is available in the community through GCI. The Contractor shall make arrangements as required to have active service throughout the duration of work on site.

b. Akiachak Internet: There is no internet service at the power plant but it may be available at nearby facilities. Rural broadband is available in the community through GCI.

1.7 WORK COVERED BY CONTRACT DOCUMENTS

A. The intent of the Contract is to provide for the construction and completion of every detail of work described in the Contract Documents. The Contractor shall furnish all labor, materials, supervision, equipment, tools, transportation, quality control, and supplies required to complete the work in accordance with the Contract Documents.

B. The following general requirements apply to the Base Bid and to all Additive Alternates.

1. Receive Owner Furnished Materials in accordance with Section 01 64 00. Materials include: three each engine-generators, two each glycol radiators, and two each charge air coolers.
2. Furnish all other required equipment and materials.
3. Mobilize all required materials (including Owner Furnished Materials), equipment, tools, supplies, etc. and all required personnel to the project site in Akiachak, Alaska.
4. Maintain prime power in the community with limited outages scheduled in advance with the local utility.
5. Provide advance written notice to the Authority in accordance with Section 01 77 00 - Contract Closeout Procedures to schedule substantial completion inspection. Prior to declaring the project substantially complete: perform all required tests of mechanical and electrical systems; submit test reports to the Authority; flush and charge all piping systems; and perform all other tasks required to prepare project for commissioning. Document completion by filling out the Pre-Commissioning Substantial Completion Inspection Checklist and submitting to the Authority. Note that a draft version of the checklist is included at the end of this section. A final checklist will be provided to the Contractor prior to the start of construction.
6. Provide access for the Authority and the Engineer to the site. Provide on-site transportation, ladders, lifts, etc. for inspection and testing of the work.
7. Correct all deficiencies noted in the Substantial Completion Inspection punchlist. Provide photographic documentation of corrections to the Authority.
8. Deliver all materials and equipment taken out of service as a result of demolition to the local storage area designated by the utility.
9. Upon completion remove all Contractor tools and equipment from the project site, thoroughly clean all work areas, remove all rubbish and debris, and dispose of all waste in accordance with the Contract Documents.

C. Work under this Contract is defined under Base Bid and Additive Alternates as described in the paragraphs that follow.

1.8 BASE BID DESCRIPTION OF WORK

Provide all work on the Akiachak Power Plant Upgrade project except for work specifically indicated on the Drawings as Additive Alternates. Work shall include but

not be limited to:

A. Remove three existing diesel engine-generator sets (gensets) and associated mechanical and electrical systems as indicated in the Drawings. Take care to avoid damage to existing systems not being demolished and to equipment being salvaged.

B. Render two existing engine blocks taken out of service unusable by cutting a minimum 3"x3" hole in engine crank case. Fill out a certificate of destruction for each engine and include photographic documentation of the hole and the associated engine nameplate. Note that one of the existing engine blocks taken out of service does not require a certificate of destruction.

C. Demolish two existing charge air coolers and other mechanical and electrical items in the plant as indicated in the Drawings.

D. Install three new Owner Furnished diesel engine powered gensets. Provide all ancillary equipment and mechanical and electrical connections as indicated in the Drawings.

E. Install two new Owner Furnished charge air coolers. Provide all ancillary equipment and mechanical and electrical connections as indicated in the Drawings.

F. Modify existing and install new mechanical and electrical systems in the plant as indicated in the Drawings.

G. Make limited changes to the existing switchgear as indicated in the Drawings.

H. Upon substantial completion acceptance, the Authority will functionally test and commission the system. The Contractor shall support the Authority during testing. Support shall include but not limited to:

1. Provide technicians on site who are familiar with the mechanical and electrical systems to assist with testing and to make corrections to any deficiencies found in the Work.

I. Tasks performed by the Authority will include but not be limited to:

1. A complete functional test of the new gensets and associated controls including manual start/stop and safety shut downs.
2. Functional test of all associated systems.
3. Demonstration of system functions and operations to local power plant operators.

J. Upon completion of commissioning clean up the jobsite, remove and dispose of all trash and debris, turn over all salvaged materials to the Owner as indicated in the Drawings, and remove all Contractor tools and equipment from the project site.

1.9 ADDITIVE ALTERNATE #1 (GEN #1 REPLACEMENT) DESCRIPTION OF WORK

A. Remove one existing diesel engine-generator set (genset) and associated mechanical and electrical systems as indicated in the Drawings. Take care to avoid damage to existing systems not being demolished and to equipment being salvaged. Note that this engine block does not require a certificate of destruction.

B. Demolish other mechanical and electrical items in the plant as indicated in the Drawings.

C. Install new Owner Furnished diesel engine powered genset. Provide all ancillary equipment and mechanical and electrical connections as indicated in the Drawings.

D. Modify existing and install new mechanical and electrical systems in the plant as indicated in the Drawings.

E. Make limited changes to the existing switchgear as indicated in the Drawings.

F. Support the Authority during testing.

1.10 ADDITIVE ALTERNATE #2 (RADIATOR REPLACEMENT) DESCRIPTION OF WORK

A. Demolish two existing glycol radiators and associated piping and electrical as indicated in the Drawings.

B. Install two new Owner Furnished glycol radiators. Provide all ancillary equipment as indicated in the Drawings.

C. Modify existing piping and electrical as indicated in the Drawings.

1.11 ADDITIVE ALTERNATE #3 (VFD REPLACEMENT) DESCRIPTION OF WORK

A. Demolish seven existing variable frequency drives (VFD) and associated controls and wiring as indicated in the Drawings.

B. Provide seven new variable frequency drives (VFD) and associated controls and wiring as indicated in the Drawings.

C. Program, test, and commission all variable frequency drives.

1.12 ADDITIVE ALTERNATE #4 (FIRE DETECTION & ALARM) DESCRIPTION OF WORK

A. Demolish existing fire alarm panel and devices as indicated in the Drawings.

B. Provide new fire alarm panel and devices as indicated in the Drawings.

C. Provide new wiring and raceways as required and indicated in the Drawings.

D. Program, test, and commission the fire detection and alarm system.

E. Train local power plant operators on system operation and maintenance.

1.13 ADDITIVE ALTERNATE #5 (FIRE SUPPRESSION) DESCRIPTION OF WORK

A. Provide new water mist fire suppression system as indicated in the Drawings.

B. Provide new wiring and raceways as required and indicated in the Drawings.

C. Program, test, and commission the fire suppression system.

D. Train local power plant operators on system operation and maintenance.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

PROJECT SCHEDULE CRITICAL DATES

Pre-Bid Meeting	See 001150a Special Notice to Bidders
Bid Opening	See 00 02 00 Invitation to Bid
Owner Furnished Engine-Generators Available for Pickup	August 1, 2023
Owner Furnished Radiators & Charge Air Coolers Available for Pickup	August 1, 2023
Substantial Completion	December 1, 2023
Final Completion	December 15, 2023

Note: All completion dates apply to Base Bid and any Additive Alternates awarded.

END OF SECTION

SECTION 01 12 19

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. Section 00 10 00 – Information to Bidders.

B. Section 00 43 00 – Subcontractor List.

C. Section 00 70 00 – General Conditions: Subcontractor Certification and Approval.

D. Section 00 80 00 – Supplementary Conditions: Subcontract Provisions.

E. Section 01 33 00 – Submittal Procedures.

1.3 PREPARATION OF CERTIFICATION

A. Certification Forms: Use forms provided by the Authority.

B. Contractor shall prepare certification form. Where required, attach additional information to the certification form.

C. Substitute certification forms will not be considered.

1.4 SUBMITTAL OF CERTIFICATION

A. The Contractor shall submit certification forms for all subcontractors for review and approval by the Authority.

1.5 CONSIDERATION OF CERTIFICATION

A. Following receipt of submitted subcontractor certification forms, the Authority will review for the following, at minimum:

1. Completeness of forms and attachments

2. Proper execution (signatures) of forms and attachments

B. Incomplete or improperly executed subcontractor certification forms will be returned to the Contractor for revision and resubmittal.

C. Contractor shall remove its subcontractor from the project site until its subcontractor certification form is submitted, reviewed, and approved.

D. The Authority will not process payments for work performed by a non-certified subcontractor.

1.6 ACKNOWLEDGMENT OF CERTIFICATION

A. Submittals which have been examined by the Authority and are determined to be complete and properly executed shall be acknowledged as such by the Project Manager's signature.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

ALASKA ENERGY AUTHORITY	SUBCONTRACTOR CERTIFICATION	ALASKA ENERGY AUTHORITY

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: Akiachak DERA-RPSU Project PROJ. #: 23084

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)?

   Contract Minimum Wage Schedule **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 Authority 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**☐

Subcontractor Name: _____

c. Does the evidence of insurance list the Authority 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.

Signature: _____

Printed Name: _____

Company: _____

Date: _____

AUTHORITY’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 Approval to reject defective work.

Signature: _____ Date: _____
Project Manager

The subject subcontract is **NOT APPROVED** for the following reasons:

_____

_____

Signature: _____ Date: _____
Project Manager

SECTION 01 26 63

CHANGE PROCEDURES

PART 1 – GENERAL

1.1 RELATED REQUIREMENTS

A. Section 00 32 00 – Bid Schedule.

B. Section 00 51 00 – Construction Contract.

C. Section 00 70 00 – General Conditions.

D. Section 00 80 00 – Supplementary Conditions.

E. Section 01 29 73 – Schedule of Values.

F. Section 01 29 76 – Application for Payment.

G. Section 01 32 16 – Construction Progress Schedule.

H. Section 01 73 00 – Execution Requirements.

1.2 SUBMITTALS

A. Submit the name of the individual authorized to accept changes, and to be responsible for informing others in the Contractor's employ of changes in the Work.

B. Submit with each price proposal a complete, detailed, itemized cost breakdown defining all impacts on Contract Price and Contract Time, in sufficient detail to fully explain the basis for the proposal.

C. All change forms shall be provided by the Authority.

1.3 CHANGE AUTHORIZATION

A. In accordance with Section 00 70 00 – General Conditions, Article 9 Changes, the Authority may authorize changes to the Work. The Authority may authorize changes in one of the following ways:

1. Directive (Section 00 70 00, Article 9.3).

2. Change Order (CO) (Section 00 70 00, Article 9.4).

3. Acceptance of Shop Drawing variations, which have been identified by the Contractor. (Section 00 70 00, Article 9.5).

4. Interim Work Authorization (IWA) (Section 00 70 00, Article 9.10).

1.4 CHANGE PROCEDURES

A. The Authority may initiate change to the contract by issuing to the Contractor a Request for Proposal (RFP) document. The RFP may include:

1. Change narrative.

2. Supplementary revised drawings, specifications, additional details, or sketches.

3. Other information as deemed appropriate.

B. The Contractor shall request a change to the contract by submitting to the Authority a written Change Order Request form provided by the Authority. The Authority may respond by rejecting it, or with an RFP to initiate contract change. The Contractor's Change Order Request shall include, at minimum:

1. A description of the proposed change with a statement of the justification of the change.

2. Statement of the effect of the change on Contract Price and Contract Time.

3. The information required in Section 00 70 00 – General Conditions, Article 15 Claims and Disputes.

C. Upon receipt of a Request for Proposal (RFP) from the Authority, the Contractor shall respond with a price proposal. The Contractor shall make every effort to return its price proposal in response to the RFP within the time frame requested by the Authority, but in no event later than 14 calendar days from date the RFP is issued. For work to be performed after the execution of a Change Order, the basis of pricing shall be estimated. For work performed prior to the execution of a Change Order, the pricing shall be based upon documentation of actual incurred costs. The price proposal shall include:

1. A complete, detailed, itemized price breakdown.

2. For the prime contractor and subcontractors, detailed documentation of costs for direct costs, labor, equipment, consultants, sub-contractor markups, overhead and profit, and other items set forth in General Conditions Section 00 70 00, Article 10.

3. Other information as required by the Authority.

D. Upon receipt of pricing response to an RFP, the Authority may execute a change to the contract. The issuance of an RFP or the receipt of pricing response to an RFP shall not obligate the Authority to execute a change to the contract.

1.5 DIRECTIVES

A. The Authority may issue Directives as per Section 00 70 00 – General Conditions, Article 9.3.

1.6 INTERIM WORK AUTHORIZATIONS (IWA)

A. The Authority may issue Interim Work Authorizations in accordance with Section 00 70 00 – General Conditions, Article 9.10.

1.7 CHANGE ORDER

A. Any change in Contract Time, Contract Price, or associated responsibility within the general scope of the Contract, shall be made by Change Order.

B. The Contractor shall use forms furnished by the Authority for Change Orders.

1.8 CHANGE PRICING AND TIME ANALYSIS

A. Unless specified elsewhere, Section 00 70 00 – General Conditions, Article 10 shall be applied to the negotiation of all changes to the scope of the contract.

1. Unit Price, when unit prices are contained in the Contract.
2. Mutually acceptable Lump Sum Price, including overhead and profit.
3. Cost of the Work.

B. UNIT PRICE CHANGE – For unit price CHANGE PROCEDURES, prices shall be determined by multiplying the contractual unit price(s) by the estimated quantities of Work associated with changed scope. Payment will be based on the actual installed quantities. Document actual installed quantities and submit information requested by the Authority on a daily basis for its approval and certification. Refer to Section 00 70 00 – General Conditions, Article 10 for additional requirements.

C. LUMP SUM PRICE CHANGE – The Contractor and the Authority shall negotiate an equitable price (and time adjustment if appropriate) in good faith. If negotiations do not result in a mutually acceptable lump sum price, the Authority may, at its discretion, direct the Contractor to perform the work under Cost of the Work Change Order.

D. COST OF THE WORK CHANGE – The Contractor shall document Cost of the Work on forms acceptable to the Authority, and shall submit documented costs to the Authority daily for verification and certification. Cost of the Work pricing proposals shall be supported by invoices for substantiation of purchase and rental costs and with additional data as may be requested by Authority.

E. Time Analysis: NOT USED.

F. The Authority shall have the right to audit all records in possession of the Contractor relating to activities covered by the Contractor's pricing of Contract CHANGE ORDER PROCEDURES, including Cost of the Work pricing, as set forth in Section 00 70 00 – General Conditions. If the Contractor is a joint venture, the right of Authority shall apply collaterally to the same extent to the records of joint venture sponsor, and of each individual joint venture member.

1.9 FORM EXECUTION

A. Contract forms issued under this section shall be effective the date the Authority's authorized person signs the form.

B. For Change Orders, Contractor signature will indicate acceptance of the terms or acknowledgment of order, depending on box checked. Acknowledgment of Change Order does not substitute for notification requirements of Section 00 70 00 – General Conditions, Article 15.1.

1.10 PAYMENT

A. The Contractor shall promptly revise its Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item. For Change Orders, adjust the Contract Price as shown on the Change Order.

B. The Contractor shall promptly revise and resubmit its progress schedules to reflect any change in Contract Time, including adjustments for other items of Work affected by the change.

C. Payment for contract changes shall be made only following the execution of Change Orders and the inclusion of the Change Order by reference on the Application for Payment form.

D. Payment shall not be made for Work authorized via Interim Work Authorization until such work is formalized in a Change Order.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

ALASKA ENERGY AUTHORITY

REQUEST FOR INFORMATION or INTERPRETATION

Project: Akiachak DERA-RPSU Project

R.F.I. Number: _____

From: _____

Date: _____

To: Alaska Energy Authority

A/E Project Number: _____

Contract For: _____

Re:

Specification Section: Paragraph: Drawing Reference: Detail:

Request:

Signed by: Date:

Response:

☐ Attachments:

Response From: To: Date Rec'd:

Signed by: Date:

Copies: ☐ Owner ☐ Consultants ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ File

ALASKA ENERGY AUTHORITY

CHANGE ORDER REQUEST (PROPOSAL)

Project: Akiachak DERA-RPSU Project

R.F.I. Number: _____

From: _____

Date: _____

To: Alaska Energy Authority

A/E Project Number: _____

Contract For: _____

Re:

This Change Order Request (C.O.R.) contains an itemized quotation for changes in the Contract Sum or Contract Time in response to proposed modifications to the Contract Documents based on Proposal Request No. _____ .

Description of Proposed Change:

Attached supporting information from: ☐ Subcontractor ☐ Supplier ☐ ____ ☐ _____ _____

Reason For Change:

Does Proposed Change involve a change in Contract Sum? ☐ No ☐ Yes [Increase] [Decrease] $ _____
Does Proposed Change involve a change in Contract Time? ☐ No ☐ Yes [Increase] [Decrease] days. _____

Attached pages: ☐ Proposal Worksheet Summary: _____
☐ Proposal Worksheet Detail(s): _____

Signed by: Date:

Copies: ☐ Owner ☐ Consultants ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ File

ALASKA ENERGY AUTHORITY

Directive

Project No.: 23084

Directive No.: 000

Project Name: Akiachak DERA-RPSU Project

Contractor: _____

Address: _____

_____

_____

Scope of this Directive
☐ Commencement of Work
☐ Suspension of Work
☐ Contract Non-Conformance
☐ Contract Clarification

Directive issued By: _____ Date: _____
Engineer or AEA Project Manager

Receipt Acknowledged By: _____ Date: _____
Contractor's Representative:

This Directive complements, and is used in accordance with the terms and provisions of the above referenced Contract, and shall not serve to authorize a change in Contractual responsibility. If the CONTRACTOR believes that any condition in this document may affect Contract Time, Price, or Requirement the CONTRACTOR shall immediately notify the DEPARTMENT of such condition. Contract Performance is required as follows:

DESCRIPTION

X

If the Contractor believes this Directive will adjust the Contract time or price the Contractor shall provide a Changer Order Request (COR) to the Authority, within 14 calendar days.

SECTION 01 29 73

SCHEDULE OF VALUES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Requirements for preparing and submitting the schedule of values.

1.2 RELATED REQUIREMENTS

A. Section 00 70 00 – General Conditions.

B. Section 01 11 13 – Summary of Work.

C. Section 01 26 63 – Change Procedures.

D. Section 01 29 76 – Application for Payment.

E. Section 01 32 16 – Construction Progress Schedule.

F. Section 01 33 00 – Submittal Procedures.

G. Section 01 77 00 – Contract Closeout Procedures.

1.3 FORMAT

A. Form and content must be acceptable to the Authority.

B. Form shall have a signature block for submission by Contractor and a signature block for approval by the Authority.

C. Content shall include the following column headings.

1. Pay Item Activity Number.
2. Pay Item Activity Description.
3. Pay Item Activity Dollar Value.
4. Current Percent Complete.
5. Current Dollar Complete.
6. Previous Percent Complete.
7. Previous Dollar Complete.
8. Percent Complete this Period.
9. Dollar Complete this Period.

1.4 CONTENT

A. List installed value of each activity shown on the submitted and approved Construction Project Schedule.

B. For items on which payments will be requested for stored products, list sub values for cost of stored products with taxes paid.

C. Limits for specific line item values shall be as specified below and shall be included on all approved Schedules of Values and Applications for Payment.

1. Mobilization and Demobilization: NOT APPLICABLE

2. Contract Closeout Procedures: Unless specified elsewhere, the assigned values for tasks specified under Contract Closeout Procedures shall be based upon the estimated value of each task. The breakdown shall include separate amounts for the requirements of Final Completion and Final Acceptance, as set forth below:

Contract Price	Value for Final Completion	Value for Final Acceptance
Less than $200,000	$2,000	$2,000
$200,000 - $500,000	$5,000	$5,000
$500,001 - $1,000,000	$10,000	$10,000
$1,000,001 - $5,000,000	$20,000	$20,000
Greater than $5,000,000	$30,000	$30,000

D. The sum of values listed on the Schedule of Values shall equal total Contract Price.

1.5 A Schedule of Values containing costs for early activities in excess of actual value ("front end loading") will be rejected by the Authority until the Contractor corrects the deficiency. The Authority shall not be obligated to pay the Contractor until front end loading is eliminated and the Schedule of Values is approved.

1.6 SUBMITTAL

A. Submit proposed Schedule of Values with updated Construction Project Schedule per specification sections for Summary of Work, Construction Progress Schedule, and Submittals.

B. Submit Schedule of Values with updated completion percentages sufficiently in advance of each Application for Payment to enable the Authority to resolve differences.

1.7 SUBSTANTIATING DATA

A. When the Authority requires substantiating information, submit data justifying line item amounts in question.

B. 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.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 29 76

APPLICATION FOR PAYMENT

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Procedures for preparation and submittal of Application for Payment.

1.2 RELATED REQUIREMENTS

A. Section 00 32 00 – Bid Schedule.

B. Section 00 70 00 – General Conditions.

C. Section 00 80 00 – Supplementary Conditions.

D. Section 01 11 13 – Summary of Work.

E. Section 01 26 63 – Change Procedures.

F. Section 01 29 73 – Schedule of Values.

G. Section 01 32 16 - Construction Progress Schedule

H. Section 01 77 00 – Contract Closeout Procedures.

1.3 FORMAT

A. Submit Application for Payment on form approved by the Authority.

1.4 PREPARATION OF APPLICATIONS

A. Type required information on Application for Payment form acceptable to the Authority.

B. Execute certification by original signature of authorized officer upon each copy of the Application for Payment.

C. Show breakdown of costs for each item of the Work on accepted Schedule of Values as specified in Section 01 29 73 – Schedule of Values.

D. 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.

E. Submit Stored Materials Worksheet with every Application for Payment requesting payment for stored materials. Show only direct costs of materials and freight. Submit documentation in accordance with Section 00 70 00 – General Conditions, Article 13.5 Stored Materials and Equipment, for materials shown in column titled "New Material This Pay Request Period."

1.5 SUBMITTAL PROCEDURES

A. Submit two originals of each Application for Payment at one-month intervals, or as otherwise agreed upon. Each document shall bear original signature of authorized executive.

B. Submit with Authority-approved transmittal letter bearing Authority's project number.

1.6 SUBSTANTIATING DATA

A. When Authority requires substantiating information, submit all requested data justifying line item amounts in question.

B. Provide one copy of data with cover letter for each copy of Application for Payment. Show Application for Payment number and date, and line item by number and description.

1.7 SUBMITTALS WITH APPLICATION FOR PAYMENT

A. Submit the following for review sufficiently in advance of Application for Payment to allow detailed review by Authority and resolution of differences.

1. Schedule of Values with updated percentages of completion as required by Section 01 29 73 – Schedule of Values.

B. Submit the following with each Application for Payment.

1. Updated construction schedule as required by Section 01 32 16 - Construction Progress Schedule.

2. Updated Project Record Documents as required by Section 01 78 39 – Project Record Documents.

3. Letter certifying that all Project Record Documents, including as-built drawings and submittals are current.

1.8 ADDITIONAL REQUIREMENTS FOR FIRST APPLICATION FOR PAYMENT

A. The first Application for Payment will be processed after the Project Manager has received all of the following:

1. Superintendent Data (Section 00 70 00 – General Conditions, Article 6.2).

2. Progress Schedule (Section 00 70 00 – General Conditions, Paragraph 6.6.1, and Section 01 32 16 - Construction Progress Schedule).

3. Schedule of Values (Section 00 70 00 – General Conditions, Paragraph 6.6.2, and Section 01 29 73 – Schedule of Values).

4. Submittal Schedule (Section 00 70 00 – General Conditions, Paragraph 6.6.2).

5. Safety Representative Designation (Section 00 70 00 – General Conditions, Article 6.18).

6. Building Permits (Section 00 70 00 – General Conditions, Article 7.2).

7. Name of Individual Authorized to Accept Changes (Section 01 26 63 – Change Procedures).

8. Contractor Quality Control Plan (Section 01 45 00 – Quality Control).

9. Freeze Protection Plan (Section 01 51 00 – Construction Facilities).

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 31 19

PROJECT MEETINGS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Requirements for various meetings during the construction project.

1.2 RELATED REQUIREMENTS

A. Section 01 11 13 – Summary of Work.

B. Section 01 32 16 - Construction Progress Schedule.

C. Section 01 33 23 – Shop Drawings, Product Data, and Samples.

D. Section 01 45 00 – Quality Control.

E. Section 01 73 00 – Execution Requirements.

1.3 GENERAL REQUIREMENTS

A. All project meetings will be conducted telephonically unless specifically arranged to be held in person.

1.4 PRECONSTRUCTION CONFERENCES

B. The Authority will administer preconstruction conference for execution of Contract and exchange of preliminary submittals. Attendance by all key Contractor and Subcontractor personnel is required.

C. The Authority will document the meeting and distribute minutes within 48-hours of adjournment. Minutes will be typed, reflecting date, list of attendees and in a format to facilitate correction of previous meeting minutes. Distribution will be to all attendees and those affected by discussions or decisions made at meeting.

1.5 PREINSTALLATION CONFERENCES

A. When required in an individual Specification section, and as shown in the Contractor's quality control plan, or as directed by the Authority, convene a pre-installation conference prior to commencing Work for a specific item.

B. Require attendance of entities directly affecting, or affected by, Work of the section.

C. Review conditions of installation, preparation and installation procedures, and coordination with related Work.

D. Record significant discussions and agreements and disagreements of each conference, and approved schedule. Distribute record of conference to all attendees within 24-hours of adjournment.

1.6 PROGRESS MEETINGS

A. The Contractor shall attend Progress Meetings when scheduled by the Project Manager or requested by the Contractor. Progress Meetings will be held on a day and time which is mutually convenient to both the Authority and the Contractor.

These meetings shall be documented by the Contractor as well as the Project Manager.

B. The minimum frequency will be typically two times per week during active construction.

C. Progress Meeting shall be attended by all key Contractor personnel and, as appropriate, key Subcontractor personnel.

D. The Contractor shall furnish copies of its updated schedule, per Section 01 32 16 - Construction Progress Schedule, to all attendees of the meeting. This schedule will be reviewed in detail during the meeting and will be used for the coordination of activities by others.

E. Progress Meetings will be used to review status, schedule, safety, quality, critical items, and other key aspects of the Work.

1.7 SAFETY MEETING

A. The Contractor shall conduct Safety Meetings as required by its project Safety Program. Safety Meetings shall be documented in the daily work report.

B. The Contractor shall invite the Authority to attend Safety Meetings.

1.8 OTHER MEETINGS

A. At various times throughout the duration of the Contract, the Contractor will be required to attend meetings as requested by the Authority. It is anticipated that such meetings will involve coordination with others, project schedule review, problem resolution, change order negotiations, and other topics of mutual importance.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 16

CONSTRUCTION PROGRESS SCHEDULE

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Preliminary schedule.

B. Construction progress schedule, bar chart type.

1.2 RELATED REQUIREMENTS

A. Section 00 70 00 – General Conditions.

B. Section 00 80 00 – Supplementary Conditions.

C. Section 01 11 13 – Summary of Work.

D. Section 01 26 63 – Change Procedures.

E. Section 01 29 73 – Schedule of Values.

F. Section 01 29 76 – Application for Payment.

G. Section 01 31 19 – Project Meetings.

H. Section 01 32 26 - Construction Progress Reporting.

I. Section 01 33 00 – Submittal Procedures.

1.3 SUBMITTALS

A. Within two (2) calendar weeks of the contract award the Contractor shall submit a preliminary schedule.

B. Within one (1) calendar week of receipt of review comments from the Authority the Contractor shall submit a revised schedule.

C. An updated schedule shall be submitted with each Application for Payment.

1.4 SCHEDULE FORMAT

A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.

B. Diagram Sheet Size: Maximum 22 x 17 inches.

C. Scale and Spacing: To allow for notations and revisions.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 PRELIMINARY SCHEDULE

A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.2 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and

completion of each element of construction.

B. Identify each item by Specification section number.

C. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

D. Provide legend for symbols and abbreviations used.

3.3 BAR CHARTS

A. Include a separate bar for each major portion of Work or operation.

B. Identify the first work day of each week.

3.4 REVIEW AND EVALUATION OF SCHEDULE

A. Participate in joint review and evaluation of schedule with Project Manager at each submittal.

B. Evaluate project status to determine work behind schedule and work ahead of schedule.

C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.5 UPDATING SCHEDULE

A. Maintain schedules to record actual start and finish dates of completed activities.

B. Indicate progress of each activity to date of revision, with projected completion date of each activity.

C. Indicate changes required to maintain Date of Substantial Completion.

3.6 DISTRIBUTION OF SCHEDULE

A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Engineer, Authority, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

END OF SECTION

SECTION 01 32 26

CONSTRUCTION PROGRESS REPORTING

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Requirements for submitting reports documenting construction progress.

1.2 RELATED REQUIREMENTS

A. Section 00 70 00 – General Conditions.

B. Section 00 80 00 – Supplementary Conditions.

C. Section 01 11 13 – Summary of Work.

D. Section 01 31 19 – Project Meetings.

E. Section 01 32 16 - Construction Progress Schedule.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 SCHEDULE

A. A daily work report shall be prepared and submitted by the site Superintendent recording progress, all pertinent daily events, and status of any ongoing issues.

B. Reports shall be submitted a minimum of one time per week. All daily reports for the week shall be consolidated and submitted no later than noon on the following Monday.

C. More frequent submission may be required during critical times with multiple time critical tasks.

D. Daily reports documenting work that will be concealed shall be submitted prior to covering work. Types of work requiring immediate reporting shall include but not be limited to underground installation, work that will be enclosed within building walls, floors, or roofs, and coating systems requiring multiple coats.

E. Daily reports documenting mandatory tests shall be submitted within 24 hours of test completion. Types of work requiring immediate reporting shall include but not be limited to piping pressure tests and electrical circuit tests.

3.2 CONTENT

Daily reports shall include the following as appropriate:

A. Summary of general tasks relative to construction progress.

B. Weather conditions.

C. A minimum of 4 project photos of the work performed that day unless no new work was performed.

D. Additional photos shall be submitted as required to document work that will be

covered or to document mandatory tests.

E. Additional photos shall be submitted if problematic site conditions are encountered that may result in delays or change of conditions.

F. Names and titles of all laborers onsite (daily basis).

G. Regular labor hours worked (daily basis).

H. Overtime hours worked (as encountered and cumulative).

I. Material quantities delivered (daily and cumulative).

J. General material management items (daily and cumulative).

K. Unsuitable quantities hauled offsite (daily and cumulative).

L. Quantities of pay items installed (daily and cumulative).

M. Any construction issues resulting in delays (reported day of, as encountered).

N. Any equipment issues causing delays (reported day of, as encountered).

O. Safety Meetings, topics covered.

P. Safety issues and concerns (reported day of, as encountered).

Q. Disputes (reported day of, as encountered).

R. Any information required or outstanding from the Authority.

S. Items that could require a change order (reported day of, as encountered).

T. Requests for information (reported day of, as encountered).

U. Site characteristics that may warrant a Change In Conditions (reported day of, as encountered).

V. Note of any onsite conversation, or communication, where direction is given to the contractor which could incur an added cost owed to the Contractor. Date, Time and name of individual must be reported (reported day of, as encountered).

3.3 DISTRIBUTION OF REPORTS

A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Engineer, Authority, and other concerned parties.

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Procedures for the preparation, tracking, and review of submittals for the project.

1.2 RELATED REQUIREMENTS

A. Section 00 70 00 – General Requirements.

B. Section 00 80 00 – Supplementary Conditions.

C. Section 01 11 13 – Summary of Work.

D. Section 01 12 19 – Contractor's Certification of Subcontracts.

E. Section 01 29 73 – Schedule of Values.

F. Section 01 29 76 – Application for Payment.

G. Section 01 32 16 - Construction Progress Schedule.

H. Section 01 33 23 – Shop Drawings, Product Data, and Samples.

I. Section 01 45 00 – Quality Control.

J. Section 01 60 00 – Material and Equipment.

K. Section 01 73 00 – Execution Requirements.

L. Section 01 77 00 – Contract Closeout Procedures.

M. Technical Specifications.

N. Operations and Maintenance Manuals.

O. Equipment Installation Data.

1.3 SUBMITTAL TIMELINE

A. The Preliminary Submittal Register shall be provided to the Authority within two (2) calendar weeks of the contract award.

B. All Submittals shall be provided to the Authority within six (6) calendar weeks of the contract award.

C. If Submittals for specific items cannot be provided with 6 weeks the Contractor shall notify the Authority in writing listing the specific item(s) and the proposed date for delivery.

1.4 SUBMITTAL REGISTER

A. Submit preliminary Submittal Register as required by Section 00 70 00 – General Conditions. In addition to manufacturer's data and shop drawing submissions, include all submittals required by the Contract Documents in the Submittal Register

B. Submittal Register shall portray an orderly sequence of submittals, early submittals for long lead-time items, and submittals which require extensive review.

C. Submittal Register shall be reviewed by the Authority and shall be revised and resubmitted until accepted by the Authority.

1.5 SUBMITTAL PREPARATION

A. The Contractor shall prepare all submittals as required by the provisions of Section 00 70 00 – General Conditions, Section 00 80 00 – Supplementary Conditions, the technical specifications, and the drawings.

B. The Contractor shall review submittals for accuracy and completeness prior to submitting.

1.6 SUBMITTAL REQUIREMENTS

A. Unless otherwise directed in these documents or by Authority, provide each submittal as an electronic portable document format (PDF) file, transmitted via email. If file is too large to be received by Authority via email, provide a download link, deliver in portable USB drive, or as otherwise instructed by Authority.

B. Submit each submittal with a Submittal Summary form as its face document. Use a Submittal Summary form provided by the Authority, or a substitute approved by the Authority.

C. Label submittals with a numbering system approved by the Authority. Identify the project by title and Authority's project number; identify Work and product by Specification section and Article number.

D. Submit items required by individual Specification sections together. Do not mix items specified in different sections in the same submittal. Sequence the submission of submittals to correspond with the approved Submittal Register.

E. Before the submission of each submittal, 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 submittal with other submittals and with the requirements of the Work and the Contract Documents, upon which the Contractor shall certify in writing on each submittal that it has made this determination. The failure to review and certify a submittal shall be cause for the Authority to return the submittal without review.

F. On the submittal, notify the Authority in writing of any deviations from requirements of the Contract Documents.

G. Organize the submittals into logical groupings to facilitate the processing of related submittals, such as:

1. By Specification Section number. Sequentially number each submittal. Resubmittals shall be identified with the original submittal number followed by a sequential alphabetic suffix.

2. Finishes which involve Authority selection of colors, textures, or patterns.

3. Items required by the individual Technical Product Specification Sections.

4. Associated items, which require correlation for efficient function or for installation.

H. Submit all required color and finish samples in order to receive approval for colors and finishes.

1.7 RESUBMITTALS

A. Provide complete copies of re-submittals. Do not re-submit partial copies of submittals for incorporation into the Authority's retained submittals from the prior submission.

B. If drawings, product submittals, samples, mockups, or other required submittals are incomplete or not properly submitted, the Authority will not review the submittal and will return it to the Contractor. The Authority will review a submittal no more than 2 times without additional charge to the Contractor. The Contractor shall pay all review costs associated with more than 2 reviews.

1.8 AUTHORITY REVIEW

A. The Authority will review submittals and re-submittals, and return submittal comments within **7** calendar days of receipt.

B. The Authority or authorized agent will receive, review and return submittals to the Contractor with one of the following dispositions noted:

"Approved" – denotes that the submittal is generally consistent with the requirements of the Contract Documents. A resubmittal is not required.

"Approved with Corrections Noted" – denotes that the submittal is generally consistent with the requirements of the Contract Documents but only as conditioned by notes and corrections made on the submittal. A resubmittal is not required provided the Contractor understands the review comments and desires no further clarification.

"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. The Authority will indicate on the returned submittal what revisions are necessary. A resubmittal is required.

"Rejected" – denotes that the submittal does not meet the requirements of the Contract Documents and shall not be used in the Work. The Authority will indicate on the returned submittal the reasons for its rejection. A resubmittal is required.

C. Review by the Authority of submittals 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 submittals shall not relieve the Contractor of the responsibility for compliance

with the requirements of the Contract Documents or for errors, dimensions, and quantities unless specific exception is requested and approved on the submittal.

D. The Authority's review shall not extend to the means, methods, techniques, sequences or procedures of construction or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

1.9 DISTRIBUTION

A. The Contractor shall be responsible for making and distributing any reproductions of approved submittals that it may require for its use.

B. The Contractor shall perform work in accordance with approved submittals.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 33 23

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 – GENERAL

1.1 RELATED REQUIREMENTS

A. Section 00 70 00 – General Conditions.

B. Section 01 11 13 – Summary of Work.

C. Section 01 31 19 – Project Meetings.

D. Section 01 33 00 – Submittal Procedures.

E. Section 01 45 00 – Quality Control.

F. Section 01 60 00 – Material and Equipment.

G. Section 01 73 00 – Execution Requirements.

H. Section 01 78 39 – Project Record Documents.

I. Technical Specifications: Identification of submittal requirements.

1.2 SHOP DRAWINGS

A. Present in a clear and thorough manner. Label each Shop Drawing with Authority's Project name, Project number and date of submittal. Identify each element of the Shop Drawings by reference to specification section, sheet number and detail, schedule, or Area of Work.

B. The data shown on the Shop Drawings shall be complete with respect to specified performance and design criteria, materials and similar data to show the Authority materials and equipment the Contractor proposes to provide.

C. Identify dimensions; show relation to adjacent or critical features or Work or products.

D. Designation of work “by others”, if shown in submittals, shall mean that work will be responsibility of Contractor rather than subcontractor or supplier who has prepared submittals.

E. Minimum Sheet Size: 11"x17".

1.3 PRODUCT DATA

A. 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, piping and control diagrams; component parts; finishes; dimensions; and required clearances.

B. 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. Submit manufacturer's instructions for storage, preparation, assembly, installation, start-up, adjusting, commissioning, and finishing.

1.4 SAMPLES

A. Submit full range of manufacturer's standard finishes except when more restrictive requirements are specified, indicating colors, textures and patterns for Authority selection as specified in technical product sections.

B. Submit samples to illustrate functional characteristics of products, including parts and attachments.

C. Approved samples which may be used in the Work are indicated in the Specification section.

D. Samples shall be identified clearly as to material, supplier, pertinent data such as catalog numbers and the use for which they are intended, and otherwise as the Authority may require, to enable the Authority to review the submittal.

E. Label each sample with identification required for transmittal letter.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 42 19
REFERENCE STANDARDS

PART 1 – GENERAL

1.1 RELATED SECTION

A. Section 00 70 00 – General Conditions.

1.2 QUALITY ASSURANCE

A. For Products or workmanship specified by association, trade, or other technical standards: comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date of bid advertisement, unless otherwise stated in the Contract Documents.

C. Provide copies of standards through the submittal process when required by the Contract Documents. Maintain a copy of each reference standard on site during construction.

D. Should specified reference standards conflict with Contract Documents, request clarification from the Authority before proceeding. Local code requirements, where more stringent than referenced standards, shall govern.

E. Neither the contractual relationship, duties, and responsibilities of the parties to the Contract, nor those of the Engineer, shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

1.3 CODES, STANDARDS, AND REGULATORY REQUIREMENTS

A. All work shall be in accordance with the latest edition of governing Codes, Standards and regulatory requirements, including but are not limited to:

1. International Fire Code (IFC).
2. International Building Code (IBC).
3. National Fire Protection Association (NFPA) NFPA 30 and NFPA 37.
4. National Electrical Code (NEC).
5. National Electrical Safety Code (NESC)
6. Alaska Department of Commerce, Community and Economic Development (DCCED) 12 AAC 32
7. Alaska Department of Commerce, Community and Economic Development (DCCED 12 AAC 39
8. Alaska Department of Environmental Conservation (ADEC) 18 AAC 75.
9. American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME).

10. American Petroleum Institute (API).
11. American Society of Testing and Materials (ASTM).
12. American Society of Mechanical Engineers (ASME).
13. American Welding Society (AWS).
14. American Institute of Steel Construction (AISC).
15. Manufacturers Standardization Society of the Valve and Fitting Industry (MSS).
16. Steel Structures Painting Council (SSPC).
17. Occupational Safety and Health Administration (OSHA) 29 CFR 1910.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 43 10

CONTRACTOR QUALIFICATIONS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Contractor's technical qualifications to be able to execute the Work in accordance with the Contract Documents.

1.2 RELATED REQUIREMENTS

A. Section 00 70 00 – General Conditions.

B. Section 01 33 00 – Submittal Procedures.

C. Section 01 45 00 - Quality Control.

D. Technical Specifications: Contractor and Fabricator Qualifications.

1.3 SUBMITTALS

A. As part of the Submittal process submit evidence of qualifications as required by this section and the Technical Specifications.

B. The subcontractor list shall designate the party responsible for the portion of Work requiring specific qualifications.

1.4 CONTRACTOR QUALIFICATIONS - GENERAL REQUIREMENTS

A. The Contractor shall meet all technical requirements of the Contract Documents. The Contractor may use sub-contractors as required to meet the requirements. The Authority may request documentation of all required qualifications after the bid opening and prior to award in order to verify Contractor qualifications.

1.5 CONTRACTOR QUALIFICATIONS - SPECIFIC REQUIREMENTS

A. In accordance with Alaska statues and regulations, all Electrical work falling under the scope of 12 AAC 32.165 shall be performed under the supervision of an Electrical Administrator with a current license in the State of Alaska in the Unlimited Commercial Wiring Category.

B. In accordance with Alaska statues and regulations, all Mechanical work falling under the scope of 12 AAC 39.212 shall be performed under the supervision of a Mechanical Administrator with a current license in the State of Alaska in the Unlimited Commercial and Industrial Plumbing Category.

C. Modification and testing of the switchgear shall be performed by an electrical contractor with prior experience installing and working on generation switchgear in accordance with Section 26 23 03.

D. Initial startup, test run, and final inspection of the engine-generators shall be performed the Fabricator that provided the engine-generators or their authorized representative in accordance with Section 26 32 13.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Contractor's quality assurance program and control procedures for executing the Work.

1.2 RELATED REQUIREMENTS

A. Section 00 70 00 – General Conditions.

B. Section 01 33 00 – Submittal Procedures.

C. Section 01 33 23 – Shop Drawings, Product Data, and Samples.

D. Section 01 42 19 – Reference Standards.

E. Section 01 43 10 - Contractor Qualifications.

F. Section 01 60 00 – Material and Equipment.

G. Technical Specifications: Testing and Reporting requirements.

1.3 TEST FORMS

A. The Contractor shall provide forms for all test required by the Technical Specifications. Tests forms shall include but not be limited to tank and piping pressure test, phase rotation, continuity and insulation, etc.

B. Upon request the Authority can provide the Contractor forms for common tests.

1.4 GENERAL

A. The Contractor shall provide and maintain an effective Quality Control Program related to testing and inspection. The Contractor shall perform Quality Control Testing as specified and shall provide copies of all results to the Authority for use in observing contract compliance.

B. The Contractor's Quality Control Program shall include, but is not limited to: administration, management, supervision, reports, record-keeping, submittals, services of independent testing agencies and labs, and other related services.

C. Quality Control is the sole responsibility of the Contractor.

D. Specific Quality Control requirements are included in the Technical Specifications. General Quality Control requirements entail ensuring that all aspects of the Work conform to the technical requirements of the Contract Documents.

E. The Contractor's Quality Control Program described herein is not intended to limit the Contractor's Quality Control activities, which may be necessary to achieve compliance with the Contract Documents.

1.5 JOB CONDITIONS

A. Where Specifications require work to be field-tested, timely notice of its readiness for inspection and testing shall be provided to the Authority. The Authority shall have the right to witness all tests. Photos shall be taken to document all tests. Work shall be concealed only upon approval by the Authority.

B. The results of tests are for use by the Authority to evaluate the acceptability of Work with respect to specified testing requirements. Regardless of the test results, Contractor is solely responsible for quality of workmanship and materials and for compliance with requirements of Contract Documents.

C. Maintain quality control over sub-contractors, suppliers, manufacturers, products, services, site conditions, and workmanship to produce work of specified quality. Verify applicability and follow all manufacturers' recommendations and instructions for assembly, installation and testing of materials and equipment. In any case where the Contractor believes that such recommendations or instructions are not applicable, the Contractor shall so notify the Authority and state the reasons for the Contractor's determination. The Contractor shall then follow the Authority's written direction on whether to follow manufacturer's recommendations and instructions.

D. Upon failure of Work which has been tested or inspected, previous acceptance may be withdrawn and Work be subject to removal and replacement with Work in accordance with the Contract Documents, at no cost to the Authority.

1.6 MANUFACTURER'S FIELD SERVICES

A. Required when technical specifications require the manufacturer or fabricator to provide qualified personnel to observe field conditions, installation, quality of workmanship, and to start, test, and adjust equipment as applicable.

B. Submit to the Authority the manufacturer or fabricator representative's written reports containing observations and recommendations within one (1) calendar week of manufacturer's field services.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 GENERAL

A. The Contractor shall provide full and complete documentation of Quality Control procedures and activities.

3.2 QUALITY CONTROL

A. The Contractor shall establish the methodology to perform the Contractor's inspection and tests of all items including that of its subcontractors. The Contractor shall ensure conformance to applicable technical specifications and drawings with respect to the materials, Codes, workmanship, storage, installation, construction, finishes, functional performance, and identification. The Contractor shall ensure quality for all construction work performed under this Contract,

including assigned subcontract work. The Contractor shall specifically include surveillance and tests required in the technical specifications.

B. The Contractor shall coordinate all work requiring Special Inspection, where specified, to ensure full access by Special Inspectors and Quality Assurance testing personnel.

C. The Contractor shall provide, as a minimum, the following components for all definable features of work:

1. Preparatory Inspection Meeting: Contractor shall schedule and attend a preparatory meeting to review testing procedures a minimum of a week prior to beginning work on any element of Work which has been identified in the Contract Documents to require testing and inspection by the Contractor and Code-required Special Inspection. Subsequent meetings shall be conducted as necessary to ensure continued accuracy of testing and inspection procedures.

2. Document Control: Contractor shall have and follow a procedure for ensuring that all Work is performed in accordance with the following:

   a. Conformed sets of Contract Drawings and Specifications.

   b. Contract Change Order documents.

   c. Approved Submittals.

   d. Applicable Requests for Information (RFI's) or Design Clarification Verifications (DCVR's).

   e. Manufacturer's Instruction.

3. In Progress Inspection: Contractor shall perform in-progress inspections as work progresses on the Work which shall include, but not be limited to:

   a. Examination of the quality of workmanship with respect to Contract Drawings, Technical Specifications and Approved Submittals.

   b. Review of control testing for compliance with Contract requirements.

   c. Inspection for use of defective or damaged materials, omissions and dimensional requirements.

   d. Review of timeliness and scheduling requirements for all tests, retests and eventual approvals.

4. Non-Conformance Procedure: Contractor shall have and follow a procedure for identifying, documenting, tracking, and resolving items in the Work which do not comply with Contract Documents, Specifications, Approved Submittals, or Manufacturer's Instructions. If a quality control test indicates that the tested material does not conform to the requirements of the Contract Documents, the Contractor shall take supplemental tests at the same location from which the non-conforming result was obtained,

after correction of the work, to document conformance with the Contract Documents. Otherwise, the Authority reserves the right to reject materials for which final Quality Control tests indicate non-conformance with the Contract Documents.

5. Code Required Inspection: Contractor shall coordinate and make timely requests for inspections, tests and other activities required by Codes and Regulations as specified.

3.3 RECORD KEEPING

A. The Contractor shall maintain current Quality Control records, on forms acceptable to the Authority, of all inspections and tests performed. The records shall include factual evidence that the required inspections or tests have been performed, including, but not limited to, the following information for each such test and inspection: Specification reference, date, type and number of inspections or test involved; results of the inspections, tests or retests; the nature of defect, causes for rejection, proposed remedial action, corrective action(s) taken, and similar information related to any re-inspection.

B. The Contractor shall maintain the following Quality Control records and reports and shall submit to the Authority as required:

1. The Contractor shall fill out test reports immediately upon completion of each test. Test reports shall be signed and dated and shall include adequate photographs to document test procedure and conditions. Test reports shall be submitted with the daily report for the day of testing.

2. Inspection Logs: The Contractor shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations. The Inspection Log shall include compliance with shop drawings submittals, identification by Specification section and schedule activity of inspections, tests, and retests conducted, results of inspections and tests, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed. The Inspection Log shall be available for review by the Authority upon request.

3. Immediate Notification of Deficiencies: Contractor shall provide immediate notification to the Authority whenever a failed or nonconforming test or inspection occurs. This immediate notification shall be followed up with a written report describing the deficiency and a correction plan.

3.4 ORGANIZATION

A. Staffing Levels: Provide sufficient qualified personnel to monitor the work quality at all times. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity.

1. In cases where multiple trades, disciplines or subcontractors are on site at the same time, each activity shall be inspected and tested by personnel skilled in that portion of the work.

2. In cases where multiple shifts are employed, the Quality Control staff shall be increased as required to monitor the work on each shift.

3.5 QUALITY SURVEILLANCE BY THE AUTHORITY

A. All items of materials and equipment shall be subject to surveillance testing and inspection by the Authority at the point of production, manufacture or shipment to determine if the producer, manufacturer or shipper maintains an adequate inspection system which ensures conformance to the applicable specifications and drawings with respect to materials, workmanship, construction, finish, functional performance and identification. In addition, all items or materials, equipment and work in place shall be subject to surveillance testing and inspection by the Authority at the site for the same purposes. Surveillance by the Authority does not relieve the Contractor of performing Quality Control inspections and testing of either onsite or offsite Contractor's or subcontractor's workplace or manufacturing assembly plant.

END OF SECTION

SECTION 01 51 00

CONSTRUCTION FACILITIES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Requirements for furnishing and maintaining construction facilities during the project.

1.2 RELATED REQUIREMENTS

A. Section 01 11 13 – Summary of Work.

B. Section 01 29 76 – Application for Payment.

C. Section 01 73 00 – Execution Requirements.

1.3 TEMPORARY ELECTRICITY

A. Provide and pay for temporary electrical service including required equipment.

B. Provide lighting for construction operations.

C. Provide additional lighting for inspections if requested by Authority or Engineer.

1.4 TEMPORARY HEAT

A. Provide and pay for heat devices, insulated enclosure, tenting, and heat as required to maintain specified conditions for construction operations; for freeze protection; and to protect equipment, materials, and finishes from damage due to temperature or humidity.

1.5 TEMPORARY VENTILATION

A. Provide and pay for ventilation of enclosed areas to cure materials, to disperse humidity, to prevent accumulations of dust, fumes, vapors, or gases, and to maintain a safe work environment.

1.6 TEMPORARY WATER SERVICE

A. Provide and pay for temporary water service as required.

1.7 TEMPORARY SANITARY FACILITIES

A. Provide and pay for required sanitary facilities and enclosures.

1.8 TEMPORARY TELEPHONE AND INTERNET SERVICE

A. Provide and pay for telephone and internet service to the project site and/or Contractor field offices. Note that in addition to Contractor's needs there may be additional telephone and internet service requirements for testing, commissioning, and operation of the power plant. See Section 01 11 13 Summary of Work.

1.9 FREEZE PROTECTION

A. Provide freeze protection for temporary water service piping, batteries, switchgear, control panels, and other components potentially subject to harm.

1.10 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection where required and where Work is installed in unsecure areas.

B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.

1.11 SECURITY

A. Provide security and facilities to protect Work from unauthorized entry, vandalism, or theft.

1.12 REMOVAL OF UTILITIES AND FACILITIES

A. Unless required for testing, remove Temporary Construction Facilities, Services, Utilities, and other related items prior to Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of Temporary Construction Facilities.

C. Restore permanent facilities used during construction to a ‘like new’ condition if it was provided by Contract, or the condition the facility was found prior to construction of this project for existing facilities.

1.13 COST RESPONSIBILITY

A. Unless specifically noted otherwise, the cost of Temporary Construction Facilities and utilities shall be the responsibility of Contractor.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 60 00

MATERIAL AND EQUIPMENT

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Requirements for transportation and handling, storage and protection, substitutions, and product options.

1.2 RELATED REQUIREMENTS

A. Section 00 70 00 – General Conditions.

B. Section 01 11 13 – Summary of Work.

C. Section 01 33 00 – Submittal Procedures.

D. Section 01 33 23 – Shop Drawings, Product Data, and Samples.

E. Section 01 42 19 – Reference Standards.

F. Section 01 45 00 – Quality Control.

G. Section 01 51 00 – Construction Facilities.

H. Section 01 73 00 – Execution Requirements.

1.3 TRANSPORTATION AND HANDLING

A. Transport products by methods to avoid product damage; deliver in dry, undamaged condition, in manufacturer's unopened containers or packaging.

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.

1.4 STORAGE AND PROTECTION

A. Handle and store materials for construction, products of demolition, and other items to avoid damage to existing buildings, and infrastructure.

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. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.

D. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter. Cover such material to prevent material from being blown or transported away from the stockpile.

E. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.

1.5 SUBSTITUTIONS

A. Prior to the bid opening, the Bidder shall make his own determination in selecting which specified or substitute equipment to base his proposal upon. Substituted items shall be equal to or better than that specified or indicated in regards to quality, workmanship, finish, space requirements, mechanical and electrical requirements, performance, and warranties.

B. After the bid opening, the Contractor shall submit sufficient data in accordance with this Section to establish equality. The Authority shall be the sole judge of equality and acceptability.

C. Acceptance of substitute materials will not relieve the Contractor of the responsibility for any changes in his own Work or in the Work of other crafts caused by the substitution. Any additional costs resulting from substitutions are the responsibility of the Contractor.

D. Only one request for substitution will be considered for each product. When substitution is not accepted, provide specified product.

E. The Authority will consider requests for Substitutions only within 28 days after date established by the Notice to Proceed.

F. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.

G. Document each request with complete data substantiating compatibility of proposed Substitution with Contract Documents.

H. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

1.6 SUBSTITUTION SUBMITTAL PROCEDURE:

A. Submit Request for Substitution for consideration on Substitution Request Form provided by the Authority (Section 01 60 00-A). Limit each request to one proposed Substitution.

B. Submit certification signed by the Contractor, that the Contractor:

1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product. List similar projects using proposed product, dates of installation and user telephone number.
2. Will provide an equivalent warranty for the Substitution as for the specified Product.
3. Will coordinate installation and make changes to other Work, which may be required for the Work to be complete with no additional cost to the Authority.
4. Waives claims for additional costs or time extension, which may subsequently become apparent from indirect costs.
5. Will reimburse the Authority for review or redesign services associated with re-approval by Authorities.

C. Submit shop drawings, manufacturers' product data, and certified test results attesting to the proposed Product equivalence and variations between substitute and specified product. The burden of proof is on proposer.

D. The Authority will notify the Contractor in writing of decision to accept or reject request.

PART 2 – PRODUCTS

2.1 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.

2.2 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers followed by the term "No Substitutions": use only specified manufacturers, no substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not specifically named that meets the description specifications of the named manufacturers, equal in substance, function, dimension, appearance, and quality.

PART 3 – EXECUTION (NOT USED)

END OF SECTION

ALASKA ENERGY AUTHORITY	SUBSTITUTION REQUEST FORM (AFTER AWARD)	ALASKA ENERGY AUTHORITY

Project: Akiachak DERA-RPSU Project Project No.: 23084

Contractor: _____

Specified item for which substitution is requested: _____
(reference specification section and paragraph)

The following product is submitted for substitution: _____
(describe proposed substitution and differences from specified item; attach complete technical, performance, and test data; state whether substitution affects dimensions and functional clearances shown on drawings or affects other trades, and include complete information for changes to drawings and/or specifications which proposed substitution will require for its proper installation.)

I certify the following:

Yes	No	
❑	❑	The substitute will perform adequately and achieve the results called for by the general design.
❑	❑	The substitute is similar, of equal substance, suited to the same use, and will provide the same warranty as the product specified.
❑	❑	An equivalent source of replacement parts is available.
❑	❑	The evaluation and approval of the proposed substitute will not delay the Substantial or Final Completion of the project.
❑	❑	Any change in the design necessitated by the proposed substitution will not delay the Substantial or Final Completion of the project.
❑	❑	The cost of any change in the design necessitated by the proposed substitution, including engineering and detailing costs, and construction costs caused by the substitution will be paid by the Contractor at no cost to the Authority.
❑	❑	The cost of any license fee or royalty necessitated by the proposed substitution will be paid by the Contractor at no cost to the Authority.

The undersigned states that the function, appearance and quality are equivalent or superior to the specified item.

Signed: _____ Date: _____
Authorized Contractor Signature

Architect/Engineer Recommendation:

❑ Accepted ❑ Accepted as Noted ❑ Not Accepted ❑ Received Too Late

Remarks:

Signed: _____ Date: _____
Architect/Engineer

❑ Accepted
❑ Rejected

_____ Date: _____
Project Manager

SECTION 01 64 00

RECEIPT OF OWNER FURNISHED MATERIALS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. This section describes receipt, unloading, transportation, storage, and handling of materials furnished by the Owner (Authority) for this project as described herein.

B. See Section 01 11 13 – Summary of Work for delivery dates for Owner Furnished materials.

1.2 RELATED REQUIREMENT

A. Section 01 11 13 – Summary of Work.

1.3 DESCRIPTION OF OWNER FURNISHED MATERIAL

A. Engine Generators: Four (4) each fabricated engine generator assemblies and associated loose ship accessories as detailed in the Engine Generator Specifications 26 32 13. The engine generators will be fully assembled, functionally tested, and approved by the Authority prior to transfer to the Contractor. The engine generators will be staged at the Alaska Energy Authority Warehouse, 2601 Commercial Drive, Anchorage Alaska 99501. The Contractor will make arrangements with the Authority to receive the items at this location and take possession.

B. Glycol Radiators: Two (2) each glycol radiators crated and secured to pallet type bases. The radiators will be staged at the Alaska Energy Authority Warehouse, 2601 Commercial Drive, Anchorage Alaska 99501. The Contractor will make arrangements with the Authority to receive the items at this location and take possession.

C. Charge Air Coolers: Two (2) each glycol charge air coolers crated and secured to pallet type bases. The radiators will be staged at the Alaska Energy Authority Warehouse, 2601 Commercial Drive, Anchorage Alaska 99501. The Contractor will make arrangements with the Authority to receive the items at this location and take possession.

1.4 ACCEPTANCE OF OWNER FURNISHED MATERIAL

A. The Contractor shall (1) receive and accept the materials at the staging location specified; (2) inspect all materials to confirm that the materials delivered are in good condition and the quantities are correct; and (3) execute a receipt for all materials accepted from the Authority. Delinquency in signing material receipts may result in delayed progress payments.

B. All material furnished by the Authority shall comply with the plans and specifications. All materials which do not meet specifications or are received broken or damaged shall be culled by the Contractor and a report made to the Authority within 5 days of receipt of material as to the number culled and reason for culling.

C. If the Authority fails to deliver the materials according to the dates set forth in Section 01 11 13 – Summary of Work, the Contractor's sole remedy and compensation shall be an extension of time not greater than the delay. Any such time extension shall be requested in writing by the Contractor.

1.5 RECEIPT, TRANSPORTING AND STORING OWNER FURNISHED MATERIAL

A. The Contractor shall receive, transport, and protect all material in accordance with accepted industry standards.

B. All handling charges required for receiving, loading, unloading, hauling, transporting or storing the material shall be provided by the Contractor.

C. Any demurrage charges or other fees incurred as a result of the Contractor not receiving, moving and storing the material shall be paid by the Contractor. If the Authority is required to pay these fees, the fees will be deducted from the first Contractor pay request.

D. The Contractor shall provide proper equipment as necessary to load, unload, and transport Owner furnished material. The equipment shall be rated as required to properly handle the material.

1.6 DAMAGE TO OWNER FURNISHED MATERIAL

A. Upon receipt of the materials as specified above, the Contractor shall become solely responsible for their care, transportation, storage, and protection. In the event materials are damaged, lost, stolen, or destroyed by any cause whatsoever after the Contractor has signed a receipt for them, their repair or replacement shall be entirely at the Contractor's expense.

B. All material replaced by the Contractor shall be equal to the material provided by the Authority and shall meet the material purchase specifications.

1.7 STORAGE OF OWNER FURNISHED MATERIAL

A. The Contractor shall provide secure storage for all Authority furnished material and shall be responsible for transporting the material to the jobsite as required to support the construction schedule.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 71 13

MOBILIZATION AND DEMOBILIZATION

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Requirements for mobilization and demobilization.

1.2 RELATED REQUIREMENTS

A. Section 01 11 13 – Summary of Work.

B. Section 01 29 73 – Schedule of Values.

C. Section 01 29 76 – Application for Payment.

D. Section 01 51 00 – Construction Facilities.

E. Section 01 77 00 – Contract Closeout Procedures.

1.3 DEFINITIONS

A. Mobilization and Demobilization includes:

1. Travel to the project site of all personnel, including sub-contractors, and return upon completion of the Work.

2. Delivery to the Site of all construction equipment, tools, supplies, temporary facilities, etc. ready for commencing and prosecuting the Work, and the subsequent removal from the site upon completion of the Work.

3. Delivery to the Site of all required project materials, including Owner Furnished Equipment. Removal of any leftover materials from the site upon completion of the Work. Note that with agreement of the Owner, leftover materials may be left on the project site if placed in a neat and orderly fashion at a location approved by the owner.

4. The preparation of the Contractor's work area; the complete assembly of equipment necessary to perform the required work; and all other preparatory work required to permit commencement of the actual Work.

1.4 REQUIREMENTS

A. Haul routes, staging areas, and equipment positioning at the project site will be subject to approval by Authority, who will coordinate with Contractor to determine requirements and locations.

B. Cooperate with Authority in allocation and use of Mobilization and Demobilization areas of Site, field offices and sheds, materials storage, traffic, and parking facilities.

C. During construction, coordinate use of Site and facilities through the Authority.

D. Comply with Authority's procedures of contract communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.

E. Comply with instructions of Authority for use of utilities and construction facilities.

F. Coordinate field engineering and layout Work under instructions of Authority.

G. Walk through Site with Authority prior to start of Work.

1.5 SUBMITTALS

A. Refer to Section 01 33 00 – Submittal Procedures, for submittal requirements.

B. If requested by Authority, submit a plan of the proposed layout of the construction site, including equipment, access ways, temporary facilities, staging, and storage areas, within four (4) calendar weeks after Notice to Proceed.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Delivery to the jobsite of construction tools, equipment, materials, and supplies shall be accomplished in conformance with applicable ordinances, regulations, and the requirements of the Contract Documents.

B. Upon completion of the Work, remove construction tools, apparatus, equipment, unused materials and supplies, and personnel from the jobsite.

END OF SECTION

SECTION 01 73 00

EXECUTION REQUIREMENTS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Requirements for addressing defects, cleaning, operating and maintenance manuals, spare parts, training, warranties and bonds, and maintenance service.

1.2 RELATED REQUIREMENTS

A. Section 00 70 00 – General Conditions: Fiscal provisions, legal submittals, and other administrative requirements.

B. Section 01 26 63 – Change Procedures.

C. Section 01 31 19 – Project Meetings.

D. Section 01 33 00 – Submittal Procedures.

E. Section 01 33 23 – Shop Drawings, Product Data, and Samples.

F. Section 01 60 00 – Material and Equipment.

G. Section 01 74 00 – Cleaning and Waste Management.

1.3 CLOSEOUT PROCEDURES

A. Comply with Section 01 77 00 - Contract Closeout Procedures.

1.4 DEFECTS

A. Product defects shall be all items that affect the visual appearance or function of the Products. Defects shall be as identified below unless more stringent requirements are specified within specific sections.

B. Products shall typically be viewed from a distance of 30.0 inches (760 mm).

C. Defects shall be solely determined by the Authority.

D. Defects, Product:

1. Cuts, Scrapes, Gouges Abrasions 0.250 inch (6 mm) long or longer, and 0.03125 inches (0.79375 mm) wide or wider that are visible at a distance of 30.0 inches (762 mm) shall be considered defects.

2. Abrasions less than the above shall be accepted.

3. Burns of any size that permanently discolor the surface material shall be considered defects.

4. Product color variation.

E. Defects, Joint:

1. Non-alignment of Products. Visual defects and non-alignment of joints shall be considered defective.

F. Defects, Structural:

1. Bent members or other structural damage shall be considered defective.
2. Incorrectly manufactured members shall be considered defective.

G. Defects, Corrosion:

1. Surface corrosion not exceeding one percent (1%) of the surface area shall be considered a visual defect.
2. Surface corrosion exceeding one percent (1%) and not exceeding five percent (5%) of the surface area shall be evaluated by the Authority to determine defect type.
3. Surface corrosion exceeding five percent (5%) of the surface area shall be considered a structural defect.

H. Defects shall be repaired or replaced at no additional cost to the Authority.

1. Structural defects shall be replaced, no exceptions.
2. Visual defects shall be repaired or replaced as solely determined by the Authority.

1.5 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain work and storage areas free of waste materials, debris, and rubbish. Maintain site in a neat and orderly condition to maintain safe passage and exits and to avoid fire and tripping hazards. Provide covered containers for deposit of waste materials.

B. Collect and remove waste materials, debris, and rubbish from site periodically and at least weekly, and dispose off-site. Have equipment and personnel available on-site daily to sweep and clean work sites and interior work areas.

C. Comply with Section 01 74 00 – Cleaning and Waste Management.

1.6 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.

C. Use materials which will not create hazards to health or property, and which will not damage surfaces. Follow manufacturer's recommendations.

D. Maintain cleaning until the Authority issues certificate of Substantial Completion.

E. Remove waste, debris and surplus materials from site. Clean work site and interior work areas; remove stains, spills, and foreign substances from all areas and sweep clean. Rake clean work site. Comply with Section 01 74 00 – Cleaning and Waste Management.

1.7 ADJUSTING

A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.8 OPERATION AND MAINTENANCE (O&M) DATA

A. Provide Operation and Maintenance Manuals for specific equipment as described in the Technical Specifications. For this project O&M Manuals are only required for the fire suppression system.

B. Unless otherwise directed in these documents or by the Authority, provide each submittal as an electronic portable document format (PDF) file, transmitted via email. If file is too large to be received by the Authority via email, provide a download link, deliver in portable USB drive, or as otherwise instructed by the Authority

1.9 TRAINING

A. Before Substantial Completion, instruct the local operator(s) and Authority's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times.

1.10 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Provide spare parts, maintenance, and extra products in quantities specified in the Technical Specifications. These shall be labeled and stored per manufacturer's recommendations and as specified.

B. Deliver to Project site and place in location as directed; obtain receipt prior to Substantial Completion payment.

1.11 WARRANTIES AND BONDS

A. Provide duplicate notarized copies.

B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.

C. Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.

D. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 74 00

CLEANING AND WASTE MANAGEMENT

PART 1 – GENERAL

1.1 GENERAL

A. During the term of this Contract, the Contractor shall remove as promptly as possible any materials and equipment which are not required for the completion of the Work. All debris shall be removed from the site and disposed of daily. The Contractor shall take particular care to eliminate any hazards created by these operations.

B. All cleaning shall be performed to the satisfaction of and at no additional cost to the Authority.

1.2 RELATED REQUIREMENTS

A. Section 01 73 00 – Execution Requirements.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 PROGRESS CLEANING

A. At the completion of the project, or prior thereto if so directed by the Authority, the Contractor shall be responsible for completely cleaning those portions of the project which his work affects.

B. Contractor shall remove from the facility all tools, equipment, surplus materials, temporary structures, and other material not incorporated in the permanent installation.

C. Restoration of Damaged Property: To the extent that any roads, vegetation, structures, utilities, or other items are damaged or displaced by the Contractor's operations, these shall be restored to their original or better condition prior to Substantial Completion inspection. This shall include both on-site and off-site items. Any damage which is severe enough to disrupt community travel or utilities shall be repaired by the Contractor immediately.

D. General cleaning and restoration must be accomplished prior to Substantial Completion.

E. Final cleaning and restoration must be accomplished prior to Final Completion.

F. Disposal of hazardous and construction materials shall be accomplished as specified in Section 00 70 00 – General Conditions and this Section.

3.2 WASTE DISPOSAL

A. Salvaged Material: All salvaged items not being reinstalled shall be turned over to the Owner or Utility as indicated in the Drawings.

B. General Construction Waste: Waste generated during the process of completing the

project scope of work shall be removed from the limits of the project site and disposed of. All general construction waste shall be disposed of as required by local, state and federal laws, rules, regulations and requirements.

END OF SECTION

SECTION 01 77 00

CONTRACT CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Requirements for Substantial Completion.

B. Requirements for Final Completion.

C. Requirements for Final Acceptance and Payment.

1.2 RELATED REQUIREMENTS

A. Section 00 70 00 – General Conditions: Substantial Completion, Final Completion, Final Payment, Final Acceptance.

B. Section 01 11 13 – Summary of Work.

C. Section 01 29 73 – Schedule of Values.

D. Section 01 29 76 – Application for Payment.

E. Section 01 33 00 – Submittal Procedures.

F. Section 01 73 00 – Execution Requirements

G. Section 01 78 39 – Project Record Documents.

1.3 SUBSTANTIAL COMPLETION SUBMITTALS

A. The following items must be submitted to the Authority prior to requesting the Substantial Completion Inspection:

1. All test reports including electrical and mechanical systems.
2. Project Record Documents.
3. Operation and Maintenance Data.
4. Warranties and Bonds.
5. Any required certificates of inspection.

B. The following items must be available at the project site prior to requesting the Substantial Completion Inspection:

1. Spare Parts and Maintenance Materials.
2. Keys.

C. No progress payments will be made for Substantial Completion until all required submittals have been submitted and accepted by the Authority.

1.4 SUBSTANTIAL COMPLETION

A. In accordance with Section 00 70 00 – General Conditions, Article 13.10 Substantial Completion, the Contractor shall notify the Authority in writing that the Work or a

portion of the Work which has been specifically identified in the Contract Documents (except for items specifically listed by the Contractor as incomplete) is substantially complete and request that the Authority issue a Certificate of Substantial Completion, see Section 01 11 13 - Certificate of Substantial Completion.. The Authority will consider the Contractor's request for Substantial Completion only when:

1. Written request for Substantial Completion is provided at least seven (7) calendar days in advance of the Substantial Completion inspection date.
2. Pre-Commissioning Substantial Completion Inspection Checklist is submitted, see Section 01 11 13 – Summary of Work. Note on the checklist any known items needing to be completed or corrected.
3. All equipment and systems have been tested, adjusted, are properly operating and fully functional.
4. All automated and manual controls are fully operational and the entire system is ready for commissioning.

B. When all of the preceding requirements for the consideration of Substantial Completion have been met, the Authority and/or their designee will conduct a scheduled Substantial Completion inspection. If upon the completion of the inspection, the Authority should find that the Work is not substantially complete, the Authority will promptly notify the Contractor in writing, listing observed deficiencies.

C. The Contractor shall remedy deficiencies and send a second written notice of Substantial Completion.

D. When the Authority finds the Work is substantially complete, it will issue a certificate of Substantial Completion with an attached punch list of deficiencies, all in accordance with the provisions of the General Conditions.

E. The Contractor shall be responsible for scheduling the activities required for Substantial Completion to enable completion within the Contract Time.

1.5 FINAL COMPLETION

A. In accordance with Section 00 70 00 – General Conditions, Article 13.13 Final Completion, when the Contractor considers that it has completed all the deficiencies listed on the Substantial Completion punch list, and that the Work is otherwise complete, it shall submit written certification that:

1. Contract Documents have been reviewed.
2. Work has been completed in accordance with Contract Documents, and deficiencies listed with certificate of Substantial Completion have been corrected.
3. Work is complete and ready for final inspection.

B. Upon the receipt of the preceding written notice, the Authority will conduct a Final Completion inspection. If the Authority should then find the Work to be incomplete, it will promptly notify the Contractor in writing with a list of observed deficiencies.

C. The Contractor shall remedy deficiencies and transmit to the Authority a second certification of Final Completion.

D. The Authority reserves the right to review photographic documentation in lieu of on-site inspection.

E. When the Authority determines the Work is complete, all in accordance with the General Conditions article, "Final Completion and Application for Payment", the Contractor may make application for Final Payment.

1.6 REINSPECTION FEES

A. In accordance with Section 00 70 00 – General Conditions, Articles 13.10 Substantial Completion and 13.12 Final Inspection, the Contractor shall pay for all costs incurred by the Authority for re-inspection.

B. The Authority may deduct the re-inspection costs from the application for final payment.

1.7 FINAL ACCEPTANCE AND PAYMENT

A. Following the issuance of Final Completion, and subject to the completion of requirements specified in Section 00 70 00 – General Conditions, Articles 13.14 Final Payment and 13.15 Final Acceptance, the Authority will review the project files for completeness. The Authority may require the Contractor to submit or re-submit any of the following documents, upon request:

1. Contractor's transmittal letter: O&M Manuals.
2. Contractor's transmittal letter: Warranty/Bonds.
3. Contractor's transmittal letter: Record Documents.
4. Spare parts, maintenance materials receipts.
5. Contractor's transmittal letter: Keys & keying schedule.
6. Contractor's certification of insurance.
7. EEO compliance certification (Federally funded projects only).
8. Submittals and miscellaneous registers.
9. Original final pay estimate.
10. Contractor's release.
11. Department of Labor Notice of Completion (NOC).
12. Other documentation as required by the Authority.

B. Statement of Adjustment of Accounts – The Authority may require the Contractor to submit a final statement reflecting adjustments to the Contract Price showing:

1. Original Contract Price.
2. Previous Change Orders.
3. Changes under Allowances.
4. Changes under Unit Prices.
5. Deductions for uncorrected Work.
6. Penalties and Bonuses.
7. Deductions for Liquidated Damages.
8. Deductions for Re-inspection Fees.
9. Other adjustments to Contract Price.
10. Total Contract Price as adjusted.
11. Previous payments.
12. Sum remaining due.

C. The Authority will issue a final Change Order reflecting all remaining adjustments to Contract Price not previously made by Change Orders.

D. See Section 01 29 73 – Schedule of Values for minimum value that shall be assigned for Final Acceptance.

E. The Contractor shall cooperate with the Authority and shall provide the requested documentation.

F. When the Authority determines its files are complete, it will make final payment and issue a letter of Final Acceptance.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

ALASKA ENERGY AUTHORITY

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project: Akiachak DERA-RPSU Project

A/E Project Number: 23084

To:

Community:

Contract Number:

From: Alaska Energy Authority

Contract Date:

The work performed under this contract has been reviewed and found to be substantially complete. The date of substantial completion of the project or portion thereof designated above is hereby established as _____ which is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

Definition of Date of Substantial Completion

The Date of Substantial Completion of the Work or designated portion thereof is the date certified by the Project Manager when construction is sufficiently complete in accordance with the Contract Documents, so the _____ can occupy or utilize the work or designated portion thereof for the use for which it is intended, as expressed in the Contract Documents.

A list of items to be completed or corrected, prepared by the Project Manager is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all work associated with the Contract Documents.

The date of commencement of warranties for items on the attached list will be the date of final payment unless otherwise agreed to in writing.

☐ Attachments:

Alaska Energy Authority: **Date**:

Project Manager

U.S. EPA Diesel Emission Reduction Program

Certificate of Engine/Chassis Destruction

EPA Grantee Name: _____ EPA Grant No.: _____

Subgrantee Name: _____

Vehicle Owner Name: _____

Vehicle Owner Address: _____

Old Vehicle/Chassis Information

Make:		Vehicle ID Number:	
Model:		Odometer Reading:	miles
Year:			

Old Engine Information

Make:		Horsepower:	
Model:		ID or Serial No.:	
Year:			

Name of Dismantler: _____

Address of Dismantler: _____

Date Vehicle Accepted by Dismantler: _____

Signature of Dismantler: _____

EPA Grantee/Subgrantee Authorized Representative:

Date engine/chassis disabled: _____

Statement: I certify that within 90 days of replacement, the old engine and chassis (where applicable) have been permanently disabled. Disabling the engine consists of cutting, drilling, or punching a three inch by three inch (3" x 3") hole in the engine block. Disabling the chassis consists of cutting completely through the frame/frame-rails on each side of the vehicle/equipment at a point located between the front and rear axles. If other, pre-approved scrappage methods were used, details and documentation are attached. Photos of the disabled engine/chassis that are required pursuant to the Terms and Conditions of the EPA award agreement are attached to this Certificate of Vehicle/Engine Destruction.

Authorized Name: _____

Print Name

Authorized Signature: _____ Date: _____

Note: Documentation must include JPEG images of the following, with corresponding file names:

1) Side profile of vehicle
2) VIN
3) Engine label
4) Chassis rail cut in half
5) Engine block, prior to hole
6) Engine block, after hole
7) Others, as needed

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Maintenance of Record Documents.

B. Submittal of Record Documents.

1.2 RELATED REQUIREMENTS

A. Section 00 70 00 - General Conditions: Record Documents.

B. Section 01 11 13 – Summary of Work.

C. Section 01 29 76 – Application for Payment.

D. Section 01 33 23 – Shop Drawings, Product Data.

E. Section 01 77 00 – Contract Closeout Procedures.

F. Technical Specifications: Manufacturer's certificates and certificates of inspection.

1.3 MAINTENANCE OF RECORD DOCUMENTS

A. In addition to requirements in General Conditions, maintain at the site for the Authority one accurate and up to date record copy of:

1. Contract Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed Shop Drawings and product data.
6. Field test records.
7. Inspection certificates.
8. Manufacturer's certificates.

B. Prior to Substantial Completion, provide original or legible copies of each item maintained by the Contractor.

C. Delegate responsibility for management of maintenance of Record Documents to one person on the Contractor's staff as approved in advance by the Authority.

D. Promptly following award of Contract, secure from the Authority, at no cost to the Contractor, one complete set of all Documents comprising the Contract.

E. Immediately upon receipt of job set described above, identify each Document with title "RECORD DOCUMENTS – JOB SET".

F. Store record documents and samples in field office apart from documents used for Construction. Provide files, racks, and secure storage for Record Documents and samples.

G. Label and file Record Documents and samples in accordance with Section number listings in table of contents of this Project manual. Label each document "PROJECT RECORD" in neat, large, printed letters.

H. Maintain Record Documents in a clean, dry and legible condition. Do not use record documents for construction purposes.

I. Use all means necessary to maintain job set of Record Documents completely protected from deterioration and from loss and damage until completion of Work and transfer of recorded data to the Authority.

J. Do not use job set for any purpose except entry of new data and for review and copying by the Authority.

K. Keep record documents and samples available for inspection by the Authority.

L. Upon request by the Authority, and at time of each Application for Payment, enable inspection of Record Documents by the Authority for review as to completeness.

M. Prior to submitting request for Final Payment, obtain the Authority's approval of final Record Documents.

1.4 RECORDING

A. Record information on a set of ‘black-line’ opaque Drawings, and in a copy of a Project manual, provided by the Authority.

B. Using felt tip marking pens or colored pencil, maintaining separate colors for each major system, clearly describe changes by note and by graphic line, as required. Date all entries. Call attention to entry by a "cloud" around area or areas affected.

C. Thoroughly coordinate all changes within Record Documents, making adequate and proper entries on each Specification Section and each sheet of Drawings and other Documents where such entry is required to properly show change or selection.

D. When a change within Record Documents is referenced to another document, such as a RFI’s, Shop Drawing or Change Order, attach a copy of the referenced document to the respective Record Drawing or Record Specification where the entry is made.

E. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction, including:

1. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.
2. Field changes of dimension and detail.
3. Changes made by modifications.
4. Details not on original Contract Drawings.
5. References to related Shop Drawings and modifications.

6. Clearly label all changes and show dimensions to establish size and location. All identifications shall be sufficiently descriptive to relate reliably to Specifications.

F. Other Documents: Maintain manufacturer's certifications, inspection certifications, and field test records required by individual Specifications sections.

1.5 SUBMITTAL OF RECORD DOCUMENTS

A. Upon submittal of the completed Record Documents, make changes in Record Documents as required by the Authority.

B. Transmit with cover letter in duplicate, listing:

1. Date.
2. The Authority's Project title and number.
3. Contractor's name, address, and telephone number.
4. Number and title of each record document.
5. Signature of the Contractor or authorized representative.

C. Final Record Documents shall include both hard copies and digitally scanned copies in *.PDF format (high quality grayscale scans, minimum 200 pixels/inch). Scans shall include front and back of drawings/documents where information occurs on both sides.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 02 41 00
DEMOLITION

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Selective demolition.

1.2 RELATED REQUIREMENT

1.3 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 SCOPE

A. Remove items intended for demolition as indicated on the Drawings.

3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.

1. Obtain required permits.
2. Provide, erect, and maintain temporary barriers and security devices.
3. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
5. Do not close or obstruct roadways or sidewalks without permit.
6. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
7. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. If hazardous materials are discovered during removal operations, stop work and notify the Authority. Hazardous materials include but are not limited to fuels, regulated asbestos containing materials, lead, PCB's, and mercury.

3.3 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits and locates.

B. Do not disrupt utilities without permit from authority having jurisdiction.

C. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

3.4 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Remove from site all materials not to be reused on site or returned to the local utility company.

C. Leave site in clean condition, ready for subsequent work.

D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 21 13 30

HIGH PRESSURE WATER MIST FIRE SUPPRESSION

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The work involves design, installation, testing, and certification of an automatic fire suppression system for an existing power generation plant. The power plant contains four diesel engine generators as indicated.

B. The power plant building is existing. The majority of power generation equipment will be installed new or refurbished under this project. All fire suppression system installation, testing, certification, and training will occur on site.

C. The system is designed to provide local application protection around generators using two MAU 150 racks in parallel as indicated on the Drawings. The Authority recognizes that Marioff does not have Factory Mutual approval for the MAU 150 in local application protection. The Authority has chosen this configuration to obtain more reliable fire suppression than other options.

D. The Work shall include but not be limited to:

1. Design system in accordance with the latest adopted editions of all applicable codes and standards, manufacturer's requirements, these specifications, and the Drawings.
2. Obtain a State of Alaska, Fire Marshal Plan Review Permit.
3. Furnish and install a complete system.
4. Program fire control panel.
5. Filling and charging system.
6. Acceptance testing, commissioning, and certification of completed system.
7. Minimum four hours operation training with local operators and Authority.
8. Operation and Maintenance Manuals including as-built drawings.

1.2 RELATED REQUIREMENTS

A. Division 1.

B. Division 23.

C. Division 26.

1.3 QUALITY ASSURANCE

A. All equipment shall be new and shall be listed for the intended application. The entire system shall be designed and fabricated in accordance with recognized and acceptable engineering and industry practices.

B. Design shall be prepared by a registered mechanical engineer or technician with minimum NICET Level 3 certification. Designer shall have an appropriate State

of Alaska design permit.

C. The Contractor shall be authorized by the fire suppression system manufacturer to furnish and install the specified system. Field installation shall be performed by technicians certified by the manufacturer to install the specified system.

1.4 REFERENCED STANDARDS:

A. National Fire Protection Association (NFPA) 750: Standard on Water Mist Fire Protection Systems.

B. Underwriters Laboratories (UL) UL 864 Control Units for Fire Protective Signaling Systems

C. National Fire Protection Association (NFPA) NFPA 72 National Fire Alarm Code

D. National Electrical Manufacturer's Association (NEMA).

1.5 SUBMITTALS

A. Provide submittals in the manner described herein and in Division 1.

B. Provide submittals for all products and systems described in Division 21 specifications and shown on the Drawings to demonstrate compliance with the requirements of the project. Submittal to include:

1. Manufacturer, model numbers and quantity of each device.
2. Manufacturer and model of control panel, including installed options.
3. Agent piping layout including size and quantity of nozzles.
4. Calculations.
5. Shop drawings shall indicate compliance with all requirements of the specifications and shall contain at a minimum:
6. Floor Plans and Isometrics for agent piping.
    a. Floor Plans and Diagrams for Wiring complete with circuit designation in accordance with Wire Schedule on the Drawings (A-B-C-D-E).
    b. Panel and device installation details.
    c. Bill of Materials
    d. Installation notes and system Sequence of Operation.

C. Based upon review comments by the Authority, issue final revised submittal including final construction drawings.

D. Obtain a State of Alaska, Fire Marshal Plan Review Permit and submit to the Authority.

E. Prior to testing, certification, and training, provide an Operation and Maintenance Manual. Manual to include system description, manufacturer's catalog information, programming, instructions, operations and maintenance literature, Material Safety Data Sheets (MSDS), and as-built drawings of completed system. Deliverables to

include one bound copy plus a PDF format electronic file of the entire manual.

1.6 SUBSTITUTIONS

A. All substitutions shall be noted on equipment submittals.

1.7 WARRANTY

A. Division 1 - Closeout Requirements: Warranties.

B. Provide a one-year manufacturer's warranty covering all materials and workmanship of all products supplied. Warranty shall commence from the date of system certification.

PART 2 - MATERIALS

2.1 FIRE SUPPRESSION AGENT

A. A high pressure water mist fire suppression system shall be furnished, Marioff Hi-Fog or approved equal. In order for a substitution of the suppression system to be approved it must have at a minimum the following salient features:

1. The system must use water mist as the sole extinguishing agent.
2. The system must use high pressure (2,000 PSI nominal) nitrogen as the sole driving agent without the aid of any pumps.
3. The system shall be a single pipe system utilizing stainless steel tubing not exceeding 1” outside diameter.
4. One complete agent rack including all water and nitrogen storage for one zone of coverage shall not exceed the following dimensions: 4’-6” Long x 1’-4” Wide x 7’-6” High.

2.2 AGENT RACK AND WATER TANK

A. Floor mounted racks shall be provided that contain the agent cylinders, nitrogen cylinder, and piping. Marioff Hi-Fog MAU 150 FS or approved equal.

B. The racks shall be designed for the appropriate seismic code and shall be adequately anchored to the building structure.

2.3 FIRE CONTROL PANEL

A. The Fire Control Panel shall be a Fike Cheetah XI-50 10-071-R1 or approved equal, and shall contain a microprocessor based Central Processing Unit (CPU). The CPU shall communicate with, supervise and control the following types of equipment used to make up the system: intelligent self-calibrating smoke and flame detectors, addressable modules, annunciators, and other system controlled devices.

B. Basic equipment to be included with Fire Control Panel shall be main board with display and keypad, door, hardware, and backbox for panel surface mount installation.

C. System Capacity and General Operation

1. The control panel shall be capable of 50 intelligent/addressable devices.

2. The system shall include two Class B (NFPA Style Y) programmable Notification Appliance Circuits. It shall also include three additional programmable Form-C alarm and trouble relays rated at a minimum of 2.0 amps @ 30 VDC.

3. The system shall support up to 99 programmable EIA-485 driven relays for an overall system capacity of 301 circuits.

4. The Fire Control Panel shall include a full featured operator interface control and annunciation panel that shall include a backlit Liquid Crystal Display, individual, color coded system status LEDs, and an alphanumeric keypad for the field programming and control of the fire system.

5. All programming or editing of the existing program in the system shall be achieved without special equipment, and without interrupting the alarm monitoring functions of the Fire Control Panel.

6. The Fire Control Panel shall provide the following features:

    a. Automatic detect test and drift compensation to extend detector accuracy over life (smoke and flame detectors monitored and automatically calibrated)

    b. Sensitivity Test, meeting requirements of NFPA 72, Chapter 5.

    c. Maintenance Alert to warn of excessive smoke detector dirt or dust accumulation.

    d. System Status Reports to display.

    e. Positive Alarm Sequence pre-signal, meeting NFPA 72 3-8.3 requirements.

    f. Periodic Detector Test, conducted automatically by software.

    g. Pre-alarm for advanced fire warning.

    h. Cross Zoning with the capability of: counting two detectors in alarm, two software zones in alarm, or one smoke detector and one thermal detector.

    i. Walk Test, with check for two detectors set to same address.

    j. Adjustable delay and discharge timers.

    k. The detector software shall meet NFPA 72, Chapter 7 requirements and be certified by UL as a calibrated sensitivity test instrument.

    l. The detector software shall allow manual or automatic sensitivity adjustment.

    m. Event history file in nonvolatile memory.

    n. Panel to have abort option to manually prevent release of extinguishing agent.

    o. Battery back-up in the event of normal AC power failure.

    p. Unit to be able to release extinguishing agent in at least two independent hazard zones.

2.4 SECONDARY POWER SOURCE BATTERIES

A. Secondary power shall be provided by 12 volt batteries. The batteries shall be sealed and shall be completely maintenance free.

B. Batteries shall have sufficient capacity to power the fire system for not less than twenty-four hours standby operation plus 30 minutes of alarm upon a normal AC power failure. Note that this is in excess of minimum NFPA requirements.

2.5 HEAT DETECTOR

A. UL Listed, adjustable temperature heat detector. Fike 60-1039 or approved equal. Set to activate at 135°F for normal temperature and 190°F for high temperature.

2.6 FLAME (OPTICAL) DETECTOR

A. UL Listed, flame detectors shall be multi-spectrum, UV/Dual IR/Vis electro-optical, automatic calibrating, digital fire detectors. Honeywell FS-20X or approved equal. Install on swivel mount.

2.7 SMOKE (PHOTOELECTRIC) DETECTOR

A. UL Listed, automatic calibrating type, photoelectric smoke detector. Detector to be addressable and provide analog signal to the control panel which may be used for maintenance of detector. Fike 63-1052 or approved equal.

2.8 ANNUNCIATORS

A. Interior Annunciator (Alarm and Discharge) - UL Listed, Horn/strobe combination, minimum 75 candela. Gentex GEC3-24WR or approved equal.

B. Exterior Annunciator (Alarm) - Weatherproof, UL Listed horn/strobe combination, minimum 75 candela. Gentex WGEC24-75WR or approved equal.

C. Exterior Strobe (Discharge) - Weatherproof, UL Listed strobe, minimum 75 candela. Gentex WGES24-75WR or approved equal.

2.9 MANUAL PULL STATION

A. Manual pull station(s) shall be UL Listed, addressable, double action, and provide visible indication that station has been operated.

1. FIRE SUPPRESSION RELEASE: Honeywell MS-2H or approved equal.

2.10 DEVICE MONITORING MODULES

A. UL Listed modules designed for use with intelligent and addressable equipment as required. Fike Series 55 or approved equal.

2.11 PLACARDS

A. Provide placards in compliance with NFPA as required. Provide additional warning placards as indicated on the plan in accordance with the Placard Schedule.

2.12 RACEWAYS AND CONDUCTORS

A. Route all wiring in separate dedicated raceways for all fire suppression system wiring at no cost to Contractor. All raceways shall be electrical metallic tubing

(EMT). All new junction boxes, pull boxes, and cover plates shall be painted red. On existing raceways being reused all cover plates shall be replaced with red.

B. All conductors shall be soft drawn copper, Type XHHW insulation; 600V and 75C rated; gauge and color as indicated by service in accordance with the following schedule:

1. 120V AC Power - 12 AWG, stranded, color per station service scheme.
2. 24V DC Power, Detection, and Alarm Circuits - 14 AWG, color in accordance with the Wire Schedule.

2.13 NOZZLES

A. In Total Flooding and Local Application zones nozzles shall be open spray head type, Marioff 4S 1MC 8MB 1100 or approved equal.

2.14 PIPING

A. Contractor shall furnish, install, and pressure test agent discharge tubing/piping in accordance with manufacturer's recommendations.

2.15 SUPPORT

A. Contractor shall furnish and install industry standard hangers for agent discharge piping, raceways, panel and all devices.

2.16 FITTINGS, VALVES, CONTROLS, AND DEVICES

A. Contractor shall furnish and install all required fittings, valves, control devices, and accessories as required to provide the types of coverage required for each zone as indicated on the Drawings.

PART 3 - EXECUTION

3.1 DESIGN

A. The system shall be designed and installed in accordance with the latest adopted editions of all applicable codes and standards and manufacturer's requirements.

B. The fire suppression system shall have two zones of coverage as shown on the Drawings. Zone 1 (Generation Room) shall contain agent rack, discharge piping and nozzles. Zone 2 (Control Room) shall contain the control panel.

C. Provide annunciators and other devices where specifically indicated on the Drawings.

D. Design the fire suppression system to perform the sequence of operation as specified herein.

3.2 INSTALLATION

A. The system shall be installed in accordance with the Drawings and Specifications, the approved submittal, and all manufacturer's requirements.

B. Contractor shall perform all work with skilled craftsmen specializing in said work with all required certifications. Install all materials in a neat, orderly, and secure

fashion, as required by these specifications, manufacturer's requirements, and commonly recognized standards of good workmanship.

3.3 TESTING AND TRAINING

A. Contractor shall provide a minimum of two weeks' notice to the Authority prior to system testing and operator training.

B. Upon completion of testing and certification the system shall be left with one fully charged nitrogen cylinder installed in each rack plus one fully charged spare nitrogen cylinder for each rack.

3.4 SEQUENCE OF OPERATION – DETECTION & ALARM ONLY (ADD. ALT. #4)

A. Zone 1 (Generation Room) shall contain two flame detectors and four high temperature heat detectors. Any detector will set off the alarm and shut-down the generators. The exit shall have a manual "FIRE ALARM" pull station which will set off the alarm and shut-down the generators when activated.

B. Zone 2 (Control Room) shall contain one smoke detector and one normal temperature heat detector. Either detector will set off alarm and will shut-down generators. The exit shall have a manual "FIRE ALARM" pull station which will set off the alarm and shut-down the generators when activated.

3.5 SEQUENCE OF OPERATION – SUPPRESSION (ADD. ALT. #5)

A. Zone 1 (Generation Room) shall contain two flame detectors and four high temperature heat detectors. The two flame detectors shall be cross-zoned so that any one detector will set off the alarm and shut-down the generators. Any second detector will begin a 30 second countdown to agent release. The heat detectors shall be cross-zoned in the same sequence as the flame detectors such that any two will begin a 30 second countdown to agent release. The exit shall have a manual "FIRE SUPPRESSION RELEASE" pull station which will set off the alarm, shut-down the generators, and begin a 30 second countdown to agent release when activated.

B. Zone 2 (Control Room) shall contain one smoke detector and one normal temperature heat detector. Either detector will set off alarm and will shut-down generators. The exit shall have a manual "FIRE SUPPRESSION RELEASE" pull station which will set off the alarm, shut-down the generators, and begin a 30 second countdown to agent release when activated.

END OF SECTION

SECTION 23 05 00

COMMON WORK RESULTS FOR MECHANICAL

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The work to be included in these and all other mechanical subsections shall consist of providing, installing, adjusting and setting into proper operation complete and workable systems for all items shown on the Drawings, described in the specifications or reasonably implied. This shall include the planning and supervision to coordinate the work with other crafts and to maintain a proper time schedule for delivery of materials and installation of the work.

B. Local Conditions: The Contractor shall thoroughly familiarize himself with the work as well as the local conditions under which the work is to be performed. Schedule work with regard to seasons, weather, climate conditions, and all other local conditions which may affect the progress and quality of work.

C. In addition to general mechanical requirements this Section includes specific requirements for:

1. Painting.
2. Caulking and sealing.

1.2 RELATED REQUIREMENTS

A. Division 1

B. Division 21.

C. All other Division 23 Specifications.

D. Division 26.

1.3 CODES AND STANDARDS

A. Codes: Perform all work in strict accordance with all applicable national, state, and local codes; including, but not limited to the latest legally enacted editions of the following specifically noted requirements:

1. International Fire Code - IFC.
2. International Building Code - IBC .
3. National Fire Protection Association (NFPA) NFPA 30 and NFPA 37.

B. Standards: Reference to the following standards infers that installation, equipment, and materials shall be within the limits for which it was designed, tested, and approved, in conformance with the current publications and standards of the following organizations:

1. American National Standards Institute – ANSI.
2. American Society for Testing and Materials – ASTM.
3. American Petroleum Institute (API).

4. American Society of Testing and Materials (ASTM).
5. American Society of Mechanical Engineers (ASME).
6. American Welding Society (AWS).
7. Underwriters Laboratory - UL.

1.4 QUALITY ASSURANCE

A. Division 1 – Quality Control.

B. Perform all work in accordance with above referenced codes and standards which are referenced to establish minimum requirements.

1. If the Contractor observes that the Drawings and/or Specifications are at variance with such codes and regulations, he shall promptly notify the Authority in writing.
2. Should the Contractor perform any work in non-compliance with the above-mentioned codes and regulations without such notice to the Authority, the Contractor shall bear all costs arising therefrom.

C. In addition, perform all work in accordance with the specific requirements of all Division 23 sections which follow. Wherever the specifications require higher grades of material or workmanship than required by the codes the specifications shall prevail.

D. Perform all work in a neat and workmanlike manner using skilled craftsmen who are qualified and experienced in the specific type of work.

E. Test all work as required by the specifications. Document all testing and submit results in accordance with specifications.

F. Perform pipe welding with experienced welder with current API or equivalent certification for pipe welding in all positions.

1.5 SPECIAL CONDITIONS AND REQUIREMENTS

A. Ensure that the appropriate safety measures are implemented and that all workers are aware of the potential hazards from electrical shock, burn, noise, rotating fans, pulleys, belts, hot piping, etc. associated with working near power generation and related equipment.

1.6 DRAWINGS, SPECIFICATIONS & SYMBOLS

A. The Drawings and Specifications are complementary; what is shown on one is as binding as if called for in both. Do not scale the Drawings. Locations of devices, fixtures, and equipment are approximate unless dimensioned.

B. Drawing symbols used for basic materials, equipment and methods are commonly used by the industry and should be universally understood. Special items are identified by a supplementary list of graphical illustrations, or called for on the Drawings or in the specifications.

1.7 SPECIFIC 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 material as shown and specified, and cart the material to an approved location at the site or elsewhere as noted or agreed to be installed by supporting crafts.

C. "Install" means to set in place and connect, ready for use and in complete and properly operating finished condition, material that has been furnished.

D. "Provide" means furnish all products, labor, sub-contracts, and appurtenances required and install to a complete and properly operating, finished condition.

E. "Product" is a generic term which includes materials, equipment, fixtures, and any physical item used on the project.

F. "Accessible" means arranged so that an appropriately dressed man 6-foot 2 inches tall, weighing 250 pounds, may approach the area in question with the tools and products necessary for the work intended, and may then position himself to properly perform the task to be accomplished, without disassembly or damage to the surrounding installation.

G. "Serviceable" means arranged so that the component or product in question may be properly removed and replaced without disassembly, destruction, or damage to the surrounding installation.

1.8 SUBMITTALS – GENERAL REQUIREMENTS

A. Provide submittals for all products and systems described in Division 23 specifications and shown on the Drawings to demonstrate compliance with the requirements of the project. Provide submittals in the manner described herein and in Division 1 with an index following specification format and with item by item identification.

B. Submittal review is for general design and arrangement only and does not relieve the Contractor from any of the requirements of the Contract Documents. Submittals will not be checked for quantity, dimension, fit or proper technical design of manufactured equipment. Where deviations of substitute product or system performance have not been specifically noted in the submittal by the Contractor, provision of a complete and satisfactory working installation of equal quality to system specified is the sole responsibility of the Contractor.

C. Submittals shall demonstrate compliance with the requirements of the project. Furnish all relevant data as appropriate including but not limited to:

1. Manufacturer's name and address, and supplier's name, address, and phone number.

2. Catalog designation or model number with rough-in data and dimensions.

3. Operation characteristics.
4. Complete customized listing of characteristics required. Indicate whether item is "As Specified" or "Proposed Substitution." Indicate any deviations on submittal. Mark out all non- applicable items. The terminology "As Specified" used without this customized listing is not acceptable.
5. Wiring diagrams for the specific system.
6. Coordination data to check protective devices.
7. Shop Drawings.

D. Provide submittals for all materials and equipment in the Division 23 specification sections which follow and submit under that specification section.

E. Equipment: Submit manufacturers catalog literature for each item indicated on the Mechanical Schedules on Sheet M1.1 under the Division 23 Sections that follow. See specific requirements under each section.

1.9 SUBMITTALS UNDER THIS SECTION

A. Product Data: Submit manufacturers catalog literature for paint, caulking, and all other items specified under this Section.

B. Qualifications: Submit a copy of current certification for the party or parties who will perform pipe welding.

1.10 RECEIVING AND HANDLING MATERIAL

A. See General Conditions and Division 1 regarding material handling.

B. Deliver packaged materials to the jobsite in unbroken packaging with manufacturer's label, and store to facilitate inspection and installation sequence.

C. Protect all materials and equipment during the duration of construction work against contamination and damage. Replace or repair to original manufactured condition any items damaged during construction. Immediately report any items found damaged to the Authority prior to commencing construction.

1.11 TIMELY EXECUTION OF WORK

A. The work must be expedited and close coordination will be required in executing the work. The various trades shall perform their portion of the work at such times as directed so as to meet scheduled completion dates, and to avoid delaying any other trade.

B. The Authority will set up completion dates. Each Contractor shall cooperate in establishing these times and locations and shall process his work so as to ensure the proper execution of it.

1.12 LAYOUT AND COORDINATION OF WORK

A. Drawings are partly diagrammatic and it is not the intent to show in detail all features of work or exact physical arrangement of equipment. The locations of piping and equipment are approximate unless dimensioned. The exact locations and routing of piping shall be governed by structural conditions and physical interferences and by the location of

mechanical terminations on equipment. Equipment shall be located and installed so that it will be readily accessible for operation and maintenance.

B. If piping is placed incorrectly with respect to equipment connections or if equipment connections are relocated without appropriate changes in the mechanical work and the resulting work is not coordinated, the work affected shall be removed and re-installed at the Contractor's expense, even if removal and replacement of portions of work by other trades is necessary.

1.13 COOPERATION AND CLEANING UP

A. The Contractor for the work under each section of the specifications shall coordinate his work with the work described in all other sections of the specifications, and shall carry on his work in such a manner that none of the work under any section of these specifications shall be compromised, hindered, or delayed at any time.

B. At all times during the progress of the work, the Contractor shall keep the premises clean and free of unnecessary materials and debris. The Contractor shall, on direction at any time from the Authority, clear any designated area or areas of materials and debris. On completion of any portion of the work, the Contractor shall remove from the premises all tools and machinery and all debris occasioned by the work, leaving the premises free of all obstructions and hindrances.

1.14 PROJECT RECORD DRAWINGS

A. In accordance with the requirements of Division 1 maintain record documents at the project site and make available for review by the Authority upon request.

B. Mark up a clean set of drawings as the work progresses to show the dimensioned location and routing of all mechanical work which will become permanently concealed. Show routing of work in concealed below grade or in blind spaces within the building.

C. At completion of project, deliver record documents in accordance with Division 1.

1.15 MECHANICAL SYSTEMS TESTING AND REPORTING REQUIREMENTS

A. Division 1 – Quality Control

B. Provide pressure tests of piping and tanks as indicated on the Drawings and in the Division 23 sections that follow.

C. Notify the Authority in writing seven (7) days in advance of pressure tests. The Authority shall have the option to be present at all testing.

D. Provide written documentation of all pressure tests. The Contractor may use their own test forms or upon request the Authority can provide forms for common tests. Test reports shall include at a minimum the following information: item or system identification, gauge pressure, air temperature, time, date, signature of person performing test, and photographs of testing in progress.

E. Cut out or disassemble all leaking joints. Repair and re-test until system proves leak-free. Retesting after the repair of defects shall be performed at no cost to the Authority.

F. Submit completed results of final successful tests along with photographs to the Authority for approval prior to Substantial Completion.

1.16 MECHANICAL INSTRUMENTATION CALIBRATION REQUIREMENTS

A. Division 1 – Quality Control

B. Calibrate all mechanical and electronic measuring devices as indicated in the Division 23 sections that follow.

C. Devices requiring calibration shall include but not be limited to: float switches, thermometers, and temperature sensors.

1.17 SUBSTANTIAL COMPLETION

A. In accordance with Section 01 77 00 - Contract Closeout Procedures, provide advance written notice to the Authority to schedule substantial completion inspection. Submit all required documents and ensure all conditions have been met.

B. Provide Authority access to the site. Provide on-site transportation, ladders, lifts, etc. for inspection and testing of the work.

C. Cooperate with the Authority and provide assistance at all times for the inspection of the mechanical work performed under this Contract. Remove covers, operate machinery, or perform any reasonable work which, in the opinion of the Authority, will be necessary to determine the completeness, quality, or adequacy of the work.

D. Conduct operating tests and demonstrate that all systems operate satisfactorily in accordance with requirements of Contract Documents. Should a portion of installation fail to meet requirements of Contract Documents, repair or replace items failing to meet requirements until items can be demonstrated to comply.

E. Have instruments available for measuring pressure and temperature. Provide services of qualified technicians familiar with equipment and systems to assist in taking measurements and making tests.

F. Assist the Authority in instruction of operators on the proper operation and maintenance of all systems and equipment under this contract. Provide services of qualified technicians familiar with each item or system.

1.18 FINAL COMPLETION

A. In accordance with Section 01 77 00 - Contract Closeout Procedures, provide notification of completion. Submit all required documents and ensure all conditions have been met.

1.19 WARRANTY

A. In accordance with Section 01 73 00 – Execution Requirements, provide warranties for all systems and equipment.

B. See Division 23 sections that follow for specific equipment warranty requirements. Wherever the Division 23 specifications have more stringent warranty requirements than Division 1, the Division 23 requirements shall prevail.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Provide all equipment and materials required for a complete system.

B. All equipment and materials supplied under this Contract shall be new unless specifically indicated as existing. Where additional or replacement items are required, provide like items by the same manufacturer to the maximum extent practical.

C. Install all material and equipment in accordance with manufacturer's installation instructions and recommendations unless specifically indicated otherwise.

2.2 PAINTING

A. Charge Air Tubing - Cold Galvanizing Compound, ZRC or approved equal.

B. Structural Steel Supports - Cold Galvanizing Compound, ZRC or approved equal.

C. Touch-up – Cold Galvanizing Compound, ZRC or approved equal.

2.3 CAULKING AND SEALING

A. Caulking - Polyurethane-based sealant, Sika Sikaflex 1A, or approved equal. Color gray.

PART 3 - EXECUTION

3.1 DRAWINGS

A. The mechanical Drawings are generally diagrammatic and do not necessarily show all features of the required work. Provide all equipment and materials required for a complete system. Complete details of the building which affect the mechanical installation may not be shown. For additional details, see other Drawings which may include electrical, architectural, structural, and civil. Coordinate work under this section with that of all related trades.

B. Contractor shall field verify all dimensions and conditions prior to start of construction. Immediately contact the Authority for clarification of questionable items or apparent conflicts.

3.2 EXAMINATION

A. Check materials for damage that may have occurred during shipment. Repair damaged materials as required or replace with new materials.

3.3 CUTTING, REPAIRING, PATCHING, AND FINISHING

A. Where previously completed building surfaces or other features must be cut, penetrated, or otherwise altered, such work shall be carefully laid out and patched to the original condition. Perform work only with craftsmen skilled in their respective trades.

B. Do not cut, drill, or notch structural members unless specifically approved by the Authority. Minimize penetrations and disruption of building features.

3.4 PAINTING

A. Charge Air Tubing - Paint all exposed carbon steel tube and fittings that is not insulated including existing tubing. Wire brush and wipe down with solvent. Prime and finish with two coats of cold galvanizing compound.

B. Structural Steel Supports - Paint all exposed carbon steel supports. Wire brush and wipe down with solvent. Prime and finish with three coats of cold galvanizing compound.

C. Touch-up – Touch up paint on fabricated items to match original. Finish all cut ends and damaged surfaces of galvanized and zinc plated supports and fasteners with spray on cold galvanizing compound.

3.5 CAULKING AND SEALING

A. For all wall penetrations, seal pipe to wall surface with polyurethane caulking all around on both sides of wall.

3.6 INSTALLATION OF EQUIPMENT

A. Unless otherwise indicated, support all equipment and install in accordance with manufacturer's recommendations and approved submittals.

B. Maintain manufacturer's recommended minimum clearances for access and maintenance.

C. Where equipment is to be anchored to structure, provide necessary anchoring and vibration isolation devices.

D. Provide all structural steel, such as angles, channels, beams, etc. required to support all piping, ductwork, equipment and accessories installed under this Division. Use structural supports suitable for equipment specified or as indicated. In all cases, support design will be based upon data contained in manufacturer's catalog.

E. Openings: Arrange for necessary openings in buildings to allow for admittance and reasonable maintenance or replacement of all apparatus furnished.

3.7 VIBRATION ISOLATION

A. All vibrating equipment and the interconnecting pipe and ductwork shall be isolated to eliminate the transmission of objectionable noise and vibration to the structure.

B. Mechanical equipment shall be carefully checked upon delivery for proper mechanical performance, which shall include proper noise and vibration operation.

C. All installed rotating equipment with excessive noise and/or vibration, which cannot be corrected in place, shall be replaced at no cost to the Authority.

END OF SECTION

SECTION 23 05 29

HANGERS AND SUPPORTS FOR PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Pipe hangers and supports.
2. Hanger rods.
3. Formed steel channel.

1.2 RELATED REQUIREMENTS

A. Section 23 05 00 – Common Work Requirements for Mechanical

B. Section 23 21 13 - Hydronic Piping

C. Section 23 12 13 - Power Plant Fuel-Oil Equipment and Specialties

D. Section 23 35 16.10 - Engine Exhaust and Crank Vent Piping

E. Section 26 05 29 - Hangers and Supports for Electrical Systems

1.3 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME B31.1 - Power Piping.
2. ASME B31.9 - Building Services Piping.

B. ASTM International:

1. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.

C. American Welding Society:

1. AWS D1.1 - Structural Welding Code - Steel.

D. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP 58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.
2. MSS SP 69 - Pipe Hangers and Supports - Selection and Application.
3. MSS SP 89 - Pipe Hangers and Supports - Fabrication and Installation Practices.

1.4 SUBMITTALS

A. Provide submittals for all products and systems under this Section in accordance with Section 23 05 00 - Common Work Results for Mechanical and Division 1.

B. Product Data:

1. Hangers, Supports, and Accessories: Submit manufacturers catalog data including load capacity. Indicate finish for interior and exterior applications.

2. Concrete Anchor: Submit manufacturers catalog data for epoxy.

1.5 QUALITY ASSURANCE

A. Division 1 – Quality Control

B. Conform to applicable code for support of piping and equipment.

1.6 QUALIFICATIONS

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

B. Installer: Company specializing in performing Work of this section.

1.7 DELIVERY, STORAGE, AND HANDLING

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

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

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 - PRODUCTS

2.1 STRUCTURAL STEEL

A. Miscellaneous shapes and plate: ASTM A-36.

B. Paint as indicated.

2.2 PIPE HANGERS AND SUPPORTS

A. Support equipment and raceways on strut, brackets, trapeze hangers, or as detailed. Anvil, B-Line, Grinnell, Unistrut, or approved equal.

2.3 FORMED STEEL CHANNEL

A. Strut: Cold formed mild steel channel strut, pre-galvanized finish and slotted back unless specifically indicated otherwise.

B. Standard Strut: 12 gauge thick steel, 1-5/8” x 1-5/8”, B-line B22-SH-Galv or equal.

C. Double Strut: 12 gauge thick steel, 1-5/8” x 3-1/4”, B-line B22A-SH-Galv or equal.

D. Shallow Strut: 14 gauge thick steel, 1-5/8” x 13/16”, B-line B54-SH-Galv or equal.

E. Where strut is welded to tanks or structures provided plain (unfinished black) solid back strut: 12 gauge thick steel, 1-5/8” x 1-5/8”, B-line B22-PLN or approved equal.

F. On all exterior installations provide hot dip galvanized strut and fittings.

2.4 FITTINGS AND ACCESSORIES

A. Provide fittings, brackets, channel nuts, and accessories designed specifically for use with specified channel strut. Zinc plated carbon steel except for exterior installations provide hot dip galvanized.

B. Pipe Clamps: Two piece pipe clamp designed to support pipe tight to strut, B-line as indicated on the Pipe/Tubing Strut Clamp Schedule on Sheet M1.1 or approved equal. On copper tubing provide copper plated carbon steel clamps with dielectric cushion insert. On interior steel piping provide zinc plated carbon steel clamps. On exterior steel piping provide hot dip galvanized clamps.

C. Pipe Straps: Two-hole steel pipe strap. Zinc plated carbon steel except for exterior installations provide hot dip galvanized.

D. Cushion Strip: Elastomer strip to provide vibration and dielectric isolation between pipe and hangers. B-Line B1999 Vibra Cushion or approved equal.

2.5 FASTENERS

A. All bolts, nuts, and washers to be zinc plated carbon steel except as specifically noted otherwise.

B. On exterior installations provide hot dip galvanized steel bolts, nuts, and washers.

C. Exhaust Flange Bolts: Plain carbon plain carbon steel (black) or stainless steel bolts, nuts, and washers. Coat with high temperature anti-seize prior to assembly.

D. Hanger Rods: Continuous threaded rod. Zinc plated carbon steel except for exterior installations provide hot dip galvanized.

E. Provide stainless wood screws and sheet metal screws where specifically indicated on the Drawings.

2.6 CONCRETE ANCHORS

A. Provide two-part high strength epoxy for setting threaded rods in concrete where indicated. Epoxy shall be specifically intended for masonry anchoring and shall have a minimum bod strength of 500 PSI in cracked concrete. Epcon C6Plus, Epcon C7, or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Check materials for damage that may have occurred during shipment. Repair damaged materials as required or replace with new materials.

3.2 PREPARATION

A. Obtain permission from the Authority before drilling or cutting structural members.

3.3 INSTALLATION - EQUIPMENT

A. Support equipment as shown on Drawings using specified supports and fasteners.

B. On all bolted connections install flat washers and lock washers. Double nut connections where indicated.

C. Anchor equipment weighing more than 100 pounds to the building structure to resist lateral earthquake forces.

D. Total lateral (earthquake) force shall be 1.00 times the equipment weight acting laterally in any direction through the equipment center of gravity. Provide adequate backing at structural attachment points to accept the forces involved.

E. Provide equipment supported by flexible isolation mounts with earthquake restraining supports positioned as close to equipment as possible without contact in normal operation (earthquake bumpers). The maximum lateral displacement due to the computed earthquake force from above shall not exceed 1.5 inches.

3.4 INSTALLATION - CONCRETE ANCHORS

A. Perform installation in accordance with epoxy manufacturer's recommendations including weather conditions, hole placement, installation technique, and cure time prior to loading.

B. Drill holes to depth indicated, diameter in accordance with manufacturer's recommendations. Thoroughly clean hole prior to placing epoxy. Work threaded rod into hole to ensure complete adhesion full depth. Clean off excess epoxy prior to curing.

3.5 INSTALLATION - PIPE HANGERS AND SUPPORTS

A. Support piping as shown on Drawings using specified supports and fasteners. If not detailed on Drawings, support from structural members with pipe hangers, clamps or pipe straps specifically intended for the application.

B. Pipe clamps and hangers for steel pipe shall be zinc plated carbon steel except on exterior installations hot dip galvanized.

C. Copper tube shall be isolated from clamps, hangers, and strut with two layers of 10 mil vinyl pipe wrap or elastomer cushion strip.

D. Wrap pipe or hose with elastomer cushion strip where specifically indicated and where required to provide vibration or dielectric isolation.

E. Independently support pumps and equipment. Do not support piping from connections to equipment.

F. Support horizontal piping as scheduled.

G. Install hangers with minimum 1/2 inch space between finished covering and adjacent work.

H. Place hangers within 12 inches of each horizontal elbow or as indicated.

I. Use hangers with 1-1/2 inch minimum vertical adjustment.

J. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.

K. Support riser piping independently of connected horizontal piping.

L. Design hangers for pipe movement without disengagement of supported pipe.

M. Provide clearance in hangers and from structure and other equipment for installation of insulation. Refer to Section 23 07 19.

3.6 SCHEDULES - PIPE HANGERS AND SUPPORTS

A. Copper Tube and Steel Pipe Hanger Spacing:

PIPE SIZE Inches	Copper Tube Maximum Hanger Spacing (Ft)	Steel Pipe Maximum Hanger Spacing (Ft)	Copper Tube Hanger Rod Diameter (In)	Steel Pipe Hanger Rod Diameter (In)
1/2 & 3/4	5	7	3/8	3/8
1 & 1-1/4”	6	7	3/8	3/8
1-1/2	8	9	3/8	3/8
2	8	10	3/8	3/8
3	10	10	1/2	½
4	12	10	1/2	5/8

END OF SECTION

SECTION 23 07 19

PIPING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Piping and equipment insulation, jackets, and accessories.

1.2 RELATED REQUIREMENTS

A. Section 23 05 00 – Common Work Requirements for Mechanical.

B. Section 23 05 29 - Hangers and Supports for Piping and Equipment.

C. Section 23 21 13 – Hydronic Piping.

D. Section 23 35 16.10 - Engine Exhaust and Crank Vent Piping.

1.3 REFERENCES

A. ASTM International:

1. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
2. ASTM C450 - Standard Practice for Fabrication of Thermal Insulating Fitting Covers for NPS Piping, and Vessel Lagging.
3. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation.
4. ASTM C585 - Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System).
5. ASTM C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.

1.4 SUBMITTALS

A. Provide submittals for all products and systems under this Section in accordance with Section 23 05 00 - Common Work Results for Mechanical and Division 1.

B. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service, and location.

1.5 QUALITY ASSURANCE

A. Division 1 – Quality Control

B. Pipe insulation maximum flame spread index of 25 and maximum smoke developed index of 50 in accordance with ASTM E84.

C. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.

D. Factory fabricated fitting covers manufactured in accordance with ASTM C450.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section.

B. Applicator: Company specializing in performing work specified in this section.

1.7 DELIVERY, STORAGE, AND HANDLING

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 damage, by storing in original wrapping.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.

1.9 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 - PRODUCTS

2.1 HYDRONIC (COOLANT/HEAT RECOVERY) PIPE INSULATION

A. TYPE P-1: ASTM C547, 1" preformed rigid fiberglass pipe insulation. Thermal Conductivity: 0.23 at 75 degrees F. Operating Temperature Range: 0 to 850 degrees F. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied reinforced foil kraft with self-sealing adhesive joints. Jacket Temperature Limit: minus 20 to 150 degrees F. Johns-Manville "Micro-Lok" or approved equal.

2.2 EXHAUST PIPE INSULATION

A. Pipe: TYPE P-2: ASTM C547, 1-1/2" preformed rigid mineral wool fiber insulation made with basalt rock and slag. Thermal Conductivity: 0.25 at 100 degrees F. Maximum Operating Temperature: 1200 degrees F. ROXUL Techton 1200 or approved equal.

2.3 PIPE INSULATION JACKETS

A. ASTM B209 exterior grade aluminum, 0.016 inch thick sheet, embossed finish roll stock for straight pipe. Pre-formed aluminum covers for elbows and tees. Provide wing seal band closures.

2.4 EXHAUST FLEX BLANKET INSULATION

A. Insulate engine exhaust flex connectors from turbo outlet up to and including flanged ends with custom fit high temperature thermal insulation blanket. Provide four layer system with inner stainless steel mesh, 2000°F ceramic blanket, 1000°F fiberglass blanket, and plain weave carmelized fiberglass fabric outer cover. Provide all stainless steel closure system including lacing anchors, washers, and wire. Distribution International or approved equal.

2.5 CHARGE AIR TUBING INSULATION

A. Pad Tape – Woven fiberglass tape, minimum 1000F service, 1/8" thick, 3" wide. Integrated Marketing Group 180 or approved equal.

B. Clamps - Stainless steel T-bolt clamps, Ideal-Tridon 30051 or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Check materials for damage that may have occurred during shipment. Repair damaged materials as required or replace with new materials.

B. Verify piping has been tested before applying insulation materials.

C. Verify surfaces are clean and dry, with foreign material removed.

D. Verify piping has been painted up to areas to be insulated.

3.2 INSTALLATION – HYDRONIC AND EXHAUST PIPE

A. Reinstall existing pipe insulation and jacket to the maximum extent possible. Where existing insulation is not adequate or is damaged, provide new insulation and jacket.

B. Install aluminum jackets with longitudinal slip joints with minimum 2 inch laps and overlap circumferential joints 2" minimum. Secure with wing seal bands at each circumferential joint and between joints at 12" on center maximum.

3.3 INSTALLATION – CHARGE AIR TUBING

A. Install insulation where indicated on Drawings.

B. Spiral wrap yarn tape with 50% overlap continuous over sections of tubing indicated to be insulated.

C. Secure ends of yarn tape with hose clamps.

END OF SECTION

SECTION 23 09 00

INSTRUMENTATION AND CONTROL DEVICES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Instrumentation Equipment
2. Pressure gauges.
3. Thermometers and Thermowells.

1.2 RELATED REQUIREMENTS

A. Section 23 05 00 – Common Work Requirements for Mechanical.

B. Section 23 21 16 - Hydronic Equipment and Specialties.

C. Division 26 - Electrical

1.3 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME B40.1 - Gauges - Pressure Indicating Dial Type - Elastic Element.

B. ASTM International:

1. ASTM E1 - Standard Specification for ASTM Thermometers.
2. ASTM E77 - Standard Test Method for Inspection and Verification of Thermometers.

1.4 SUBMITTALS

A. Provide submittals for all products and systems under this Section in accordance with Section 23 05 00 - Common Work Results for Mechanical and Division 1.

B. Product Data:

1. Submit manufacturers catalog literature for all instrumentation items specified herein.
2. Submit manufacturers catalog literature for each item indicated on the New Instrumentation Equipment Schedule on Sheet M1.1.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section.

B. Installer: Company specializing in performing Work of this section.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Accept controls on site in original factory packaging. Inspect for damage.

1.7 COORDINATION

A. Coordinate installation of control components with work of Division 26.

PART 2 PRODUCTS

2.1 PRESSURE GAUGES

A. Dry type stainless steel case, tube, and socket, 1/4" NPT bottom connection, 2-1/2" dial size. Range as indicated on Drawings.

B. Range 0-30 psi: Trerice Model 700SS-25-02-L-A-090 or approved equal.

2.2 THERMOMETERS

A. Digital thermometer, solar powered, LCD display, -50 to +300 F range or dual F/C range, 1% of reading accuracy, variable angle display, 3-1/2" stem length.

B. Weiss DVU35 or approved equal.

C. Provide all thermometers with a 3/4" NPT brass thermowell.

2.3 ELECTRICAL/ELECTRONIC INSTRUMENTATION

A. Provide instrumentation devices as indicated in the New Instrumentation Schedule on Sheet M1.1.

2.4 OWNER FURNISHED ENGINE TEMPERATURE INSTRUMENTATION

A. The engine temperature sensors listed below will be Owner Furnished with the engine-generators.

1. Exhaust Gas Temperature. High temperature (650°C) 2 wire 100 ohm RTD with 2' high temperature lead wire, spring strain relief, Deutz DT06-2S-E008 male connector, Deutz DT04-2P-E008 female connector, and compression fitting with 1/4" MPT adapter. Eustis RGB7B203B02X0 with NS44 adapter or approved equal.

2. Intake Air Temperature Sensor. 4-20mA, 20-240°F, 1/2" MPT. Noshok 800-20/240-1-1-8-8-025-6 or approved equal.

PART 3 EXECUTION

3.1 EXAMINATION

A. Check equipment for damage that may have occurred during shipment. Repair damaged equipment as required or replace with new equipment.

B. Verify systems to be controlled are ready to operate.

3.2 INSTALLATION

A. Install instrumentation where indicated on the Drawings in accordance with details and manufacturer's installation instructions.

B. Install gauges and thermometers in locations where they are clear of valve handles or other obstructions and where they can be easily read from normal operating level. Install with face within 45 degrees of vertical.

C. Adjust gauges and thermometers to final angle, and clean faces.

D. Isolate hydronic pressure gauges during pressure testing.

E. Install conduit and electrical wiring in accordance with Division 26.

3.3 TESTING AND CALIBRATION – TEMPERATURE DEVICES

A. Provide a precision temperature measurement device that has been shop calibrated for use in field calibration of all thermometers and temperature sensors.

B. All thermometers and temperature sensors shall be calibrated within +/- 0.2°F of actual temperature using the precision temperature measurement device. Verify calibration by comparing readings of adjacent thermometers and temperature sensors.

C. Calibrate digital thermometers using the internal control potentiometer.

D. Calibrate coolant piping temperature sensor (RTD) using scaling and offset on the switchgear PLC.

E. Calibrate intake air temperature transmitters (4-20mA transmitter) using scaling and offset on the switchgear Easygens.

F. Calibrate engine exhaust temperature RTD’s using scaling and offset on the switchgear Easygens.

END OF SECTION

SECTION 23 12 13

POWER PLANT FUEL-OIL EQUIPMENT AND SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Scope: This section applies to all fuel and lube oil piping systems.

B. Section Includes:

1. Fuel System Equipment.
2. Hoses.

1.2 RELATED REQUIREMENTS

A. A. Section 23 05 00 – Common Work Requirements for Mechanical.

B. B. Section 23 05 29 - Hangers and Supports for Piping and Equipment.

1.3 SUBMITTALS

A. Provide submittals for all products and systems under this Section in accordance with Section 23 05 00 - Common Work Results for Mechanical and Division 1.

B. Product Data:

1. Submit manufacturers catalog literature for all items specified herein.
2. Submit manufacturers catalog literature for each item indicated on the New Fuel System Equipment Schedule on Sheet M1.1.

PART 2 - PRODUCTS

2.1 DIESEL FUEL SYSTEM EQUIPMENT

A. Filter: Provide complete filter assembly, including spare filter elements, as indicated in the Fuel System Equipment Schedule on Sheet M1.1.

B. Screen: Provide screen, bowl, and gasket for installation on existing filter head as indicated in the Fuel System Equipment Schedule on Sheet M1.1.

2.2 HOSES

A. Fuel rated hose, Eaton Weatherhead H569, Aeroquip FC300, or approved equal. Sized as indicated on Drawings. Provide re-useable plated steel straight JIC swivel ends with NPT adapters.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Check equipment for damage that may have occurred during shipment. Repair damaged equipment as required or replace with new equipment.

3.2 PREPARATION

A. Protect bright finished shafts, bearing housings, and similar items until in service. No rust will be permitted.

3.3 PREPARATION

A. Thoroughly coat male pipe ends with Teflon tape and Teflon pipe joint compound prior to assembling.

B. Prepare hose and install fittings in strict accordance with manufacturer's instructions.

3.4 SYSTEM STARTUP

A. Prime equipment and fill filter bowls with diesel fuel prior to running electric pumps and engines.

END OF SECTION

SECTION 23 21 13
HYDRONIC PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Scope: This section applies to all hydronic (glycol) piping systems.

B. Section includes:

1. Coolant (engine cooling) piping.
2. Pipe fittings.
3. Valves.

1.2 RELATED REQUIREMENTS

A. Section 23 05 00 - Common Work Requirements for Mechanical.

B. Section 23 05 29 - Hangers and Supports for Piping and Equipment.

C. Section 23 07 19 - Piping Insulation

D. Section 23 21 16 - Hydronic Specialties.

1.3 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.
2. ASME B31.1 - Power Piping.
3. ASME B31.9 - Building Services Piping.
4. ASME Section IX - Boiler and Pressure Vessel Code - Welding and Brazing Qualifications.

B. ASTM International:

1. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

C. American Welding Society:

1. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding.
2. AWS D1.1 - Structural Welding Code - Steel.

1.4 SYSTEM DESCRIPTION

A. Provide piping system types as indicated on the Drawings.

B. Where copper tubing connects to steel piping or equipment provide connections as detailed on Drawings using bronze or brass fittings or valves for transition.

C. Provide flanges, unions, and couplings at locations requiring servicing. Install unions, flanges, and couplings downstream of valves and at equipment connections.

D. Provide pipe hangers and supports in accordance with Drawings and specifications.

E. Use ball valves or butterfly valves for shut-off and to isolate equipment where indicated.

F. Use gauge cock isolation valves to isolate instrumentation and small devices where indicated.

1.5 SUBMITTALS

A. Provide submittals for all products and systems under this Section in accordance with Section 23 05 00 - Common Work Results for Mechanical and Division 1.

B. Product Data:

1. Piping: Submit data on pipe materials, fittings, and accessories.

2. Valves: Submit manufacturers catalog information with valve data and ratings for each service.

1.6 QUALITY ASSURANCE

A. Division 1 – Quality Control

B. Perform Work in accordance with ASME B31.1 and ASME B31.9 code for installation of piping systems.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section.

B. Fabricator or Installer: Company specializing in performing Work of this section with current certification.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary end caps and closures on piping and leave in place until installation.

C. Store glycol solution in clean containers clearly marked by product type.

1.9 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 - PRODUCTS

2.1 COOLANT PIPING

A. Copper Piping: Provide ASTM B88, Type L drawn copper tubing with solder or threaded joints for engine cooling piping as specifically indicated on the Drawings.

1. Fittings: ASME B16.22 solder wrought copper.

2. Joints: soldered with 95-5 tin-antimony solder or silver solder except on tee drill connections use copper brazing rod.

3. Flanges: Provide ANSI 150# companion flanges for transition to steel piping or flanged valves and equipment. Flanges to be two-piece with powder coated steel flange and solder copper tube adapter, Nibco 672 or approved equal.

4. Flange Gaskets: Spiral wound metallic gaskets, Flexitallic or approved equal.

5. Flange Bolts: On all exterior piping provide galvanized bolts, nuts, and washers. Bolts, nuts, and washers on interior piping may be zinc plated.

6. Unions: Bronze unions with solder ends except where specifically indicated as threaded.

2.2 BALL VALVES

A. Threaded or soldered end as indicated and required, bronze body, chrome plated bronze or brass ball, full port, TFE or Viton packing and seat ring, minimum 200 psig WOG rating. Domestic only. Apollo, Hammond, Milwaukee, Nibco, or approved equal.

2.3 CHECK VALVES

A. Threaded or soldered end as indicated and required, bronze body, swing check style, minimum 200 psig WOG rating. Domestic only. Hammond, Milwaukee, Nibco, or approved equal.

2.4 DRAIN VALVES

A. Bronze body, 1/2” or 3/4” size and solder cup or MPT connection to match associated pipe connection, 3/4" male hose end with cap and jack chain. FNW 426D, 426F, 427D, or 427F or approved equal.

2.5 GAUGE COCK ISOLATION VALVE

A. Brass body, MPT by FPT ends, T-handle, Legend Valve item 101-531 (1/4”) or Item 101-532 (3/8”), or approved equal.

B. Install on all pressure gauges, small hose connections, and where indicated on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Check materials for damage that may have occurred during shipment. Repair damaged materials as required or replace with new materials.

3.2 PREPARATION

A. Drain system prior to beginning modification. Store all glycol in clean drums and save for re-filling system.

B. Ream pipe ends and remove burrs. Remove scale and dirt, on inside and outside, before assembly.

C. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

D. On copper tube and solder fittings mechanically clean to bright metal and flux prior to assembling.

E. On threaded pipe and fittings thoroughly coat male threads with Teflon tape and Teflon based pipe joint compound prior to assembling.

F. Coat flange gaskets and bolts with anti-seize compound prior to assembling joints.

3.3 INSTALLATION

A. Route piping in orderly manner and slope to drain at low points and vent at high points.

B. Install pipe hangers and supports in accordance with Section 23 05 29.

C. Install piping to conserve building space and not interfere with use of space. Group piping whenever practical at common elevations.

D. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

E. Install valves with stems upright or horizontal, not inverted. Provide access where valves are not exposed.

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

G. Re-insulate piping in accordance with Section 23 07 19.

3.4 HYDRONIC PIPING TESTING AND REPORTING - GENERAL

A. Division 1 – Quality Control

B. Provide notification and reporting in accordance with Section 23 05 00 – Common Work Requirements for Mechanical.

3.5 COOLANT PIPING TESTING

A. Isolate engines, radiators, and pressure gauges prior to pressure testing.

B. Hydrostatically test all piping at 100 psig minimum for one hour with no noticeable water leaks or pressure drops except as caused by temperature change. Alternately, piping may be tested with 100 psig air with each joint soaked in a foaming soapy water solution, and visually inspected for leaks.

3.6 COOLANT SYSTEM FILLING

A. After pressure testing, refill entire system with salvaged ethylene glycol solution. Perform all functional testing of the power plant required by the Contract Documents. Ensure that engines are operated long enough with adequate load to get thermostats fully open and to circulate glycol through all piping and accessories.

B. Operate heat recovery system to ensure it is fully charged with glycol.

C. After the system is up to normal operating temperature verify the glycol level in expansion tank is between 1/2 and 2/3 and the pressure at the hand glycol fill pump is between 8 and 10 PSIG.

D. Verify proper function of all instrumentation and calibrate all devices.

END OF SECTION

SECTION 23 21 16
HYDRONIC EQUIPMENT AND SPECIALTIES

PART 1 – GENERAL

1.1 SUMMARY

A. Scope: This section applies to all hydronic (glycol) piping systems.

B. Section includes:

1. Engine Cooling System Equipment.
2. Expansion tank sight gauge and cap.
3. Hoses.

1.2 RELATED REQUIREMENTS

A. Section 23 05 00 – Common Work Requirements for Mechanical.

B. Section 23 05 29 - Hangers and Supports for Piping and Equipment.

C. Section 23 21 13 - Hydronic Piping.

D. Division 26 - Electrical.

1.3 SUBMITTALS

A. Provide submittals for all products and systems under this Section in accordance with Section 23 05 00 - Common Work Results for Mechanical and Division 1.

B. Product Data:

1. Submit manufacturers catalog literature including manufacturer's installation instructions for each item indicated on the New Engine Cooling System Equipment Schedule on Sheet M1.1 except for items specifically indicated as Owner Furnished.
2. Submit manufacturer’s catalog information for appurtenances, hoses, hose clamps, and all other items specified herein.

C. Shop Drawings: Submit shop drawings for glycol storage tank fabrication. Note that if the tank will be fabricated exactly as indicated on the Drawings, the design Drawings can be submitted in lieu of shop drawings.

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. Accept material on site in shipping containers with labeling in place. Inspect for damage.

B. Protect systems from entry of foreign materials by temporary covers, caps and closures, completing sections of the work, and isolating parts of completed system until installation.

1.6 FIELD MEASUREMENTS

A. Verify field measurements before fabrication.

PART 2 - PRODUCTS

2.1 COOLING SYSTEM EQUIPMENT

A. Provide all equipment and accessories as indicated in the New Cooling System Equipment Schedule on Sheet M1.1 except for items specifically indicated as Owner Furnished.

2.2 LIQUID LEVEL SIGHT GAUGE

A. Borosilicate glass tube, aluminum body, Buna n seals, 1/2" MPT connections, 9” centers. Lube Devices G607-09-A-1-4 or approved equal.

2.3 EXPANSION TANK CAP

A. Fabricated 2" MPT adapter fitting for standard radiator cap with 3/8" hose barb vent. Filler Neck Supply FTA-RN-2, Alaska Rubber Part# IV8017SS3231308, or approved equal. Furnish with 12 PSI pressure cap.

2.4 HOSES

A. Engine Coolant Connections: Wire reinforced corrugated silicone hose. Tusil Radflex, CRP Industries 9200, or approved equal. Size as indicated on the Drawings.

B. Expansion Tank Vent Discharge: Nylon reinforced silicone heater hose, Flexfab 5526 or approved equal. Size as indicated on the Drawings.

C. Terminations: Provide barbed hose (king) nipples, brass for connection to copper or bronze fittings, carbon steel for connection to steel piping.

D. Hose Clamps: On hoses larger than 1” size install stainless steel T-bolt clamps, Ideal-Tridon 30051 or approved equal. On hoses 1” and smaller install lined stainless steel constant torque clamps, Ideal-Tridon 47 or approved equal.

2.5 FABRICATED TANK

Glycol Expansion Tank - Provide fabricated steel tank manufactured as shown on Drawings. Furnish and install all accessories as indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Check equipment for damage that may have occurred during shipment. Repair damaged equipment as required or replace with new equipment.

3.2 INSTALLATION

A. Install equipment and accessories in strict compliance with manufacturer’s instructions.

B. Install piping system and appurtenances as indicated on Drawings.

C. Terminate hoses on barbed (king) nipples with specified clamps.

3.3 SYSTEM STARTUP

A. Drain and re-fill system with glycol solution. See Section 23 21 13 - Hydronic Piping.

B. Once systems are in operation and up to normal operating temperatures, calibrate thermometers and temperature sensors. See Section 23 09 00 - Instrumentation.

END OF SECTION

SECTION 23 31 13

METAL DUCTS AND VENTILATION EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Actuators.

1.2 RELATED REQUIREMENTS

A. Section 23 05 00 – Common Work Requirements for Mechanical.

B. Section 23 05 29 - Hangers and Supports for Piping and Equipment.

C. Division 26 – Electrical.

1.3 SUBMITTALS

A. Provide submittals for all products and systems under this Section in accordance with Section 23 05 00 - Common Work Results for Mechanical and Division 1.

B. Product Data: Submit manufacturers catalog literature for damper actuator.

PART 2 - PRODUCTS

2.1 ACTUATORS

A. On duct dampers install multi-voltage spring return actuator, Belimo AFBUP or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Check equipment for damage that may have occurred during shipment. Repair damaged equipment as required or replace with new equipment.

B. Verify sizes of equipment connections before fabricating transitions.

3.2 INSTALLATION

A. Adjust actuators to achieve damper full open to full close operation.

END OF SECTION

SECTION 23 35 17

ENGINE EXHAUST, CRANK VENT, AND CHARGE AIR SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Engine Exhaust Piping and Accessories.
2. Crank Vent Piping and Accessories.
3. Charge Air Tubing and Accessories.

1.2 RELATED REQUIREMENTS

A. Section 23 05 00 – Common Work Requirements for Mechanical.

B. Section 23 05 29 - Hangers and Supports for Piping and Equipment.

C. Section 23 07 19 - Piping Insulation.

1.3 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME B31.1 –
2. Power Piping.
3. ASME B31.9 - Building Services Piping.
4. ASME Section IX - Boiler and Pressure Vessel Code - Welding and Brazing Qualifications.

B. ASTM International:

1. ASTM A53B - Standard Specification for Pipe, Steel, Black and Hot-Dipped.

1.4 SYSTEM DESCRIPTION

A. Provide piping of material as specified in PART 2.

B. Where more than one piping system material is specified, provide compatible system components and joints.

C. Provide flanges or couplings at locations requiring servicing and where indicated. Do not use direct welded connections to equipment.

D. Provide pipe hangers and supports per Drawings and specifications.

E. Flexible Connector: Install where indicated in Drawings.

1.5 SUBMITTALS

A. Provide submittals for all products and systems under this Section in accordance with Section 23 05 00 - Common Work Results for Mechanical and Division 1.

B. Product Data. Submit manufacturer’s catalog information for pipe, tubing, fittings, gaskets, appurtenances, hoses, hose clamps, and all other items specified herein.

C. Welder's Certificate: Provide welder's certificate in accordance with Section 23 05 00 – Common Work Requirements for Mechanical.

1.6 QUALITY ASSURANCE

A. Division 1 – Quality Control

B. Perform Work in accordance with ASME B31.9 code for installation of piping systems and ASME Section IX for welding materials and procedures.

C. Perform pipe welding with experienced welder with current API or equivalent certification for pipe welding in all positions.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section.

B. Fabricator or Installer: Company specializing in performing Work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary end caps and closures on piping and leave in place until installation.

1.9 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 - PRODUCTS

2.1 EXHAUST PIPING

A. Exhaust Pipe: ASTM A53 welded black steel pipe, Schedule 40, with ASTM A235 seamless carbon steel butt weld fittings and ASTM A105 weld flanges.

2.2 CRANK VENT PIPING

A. Crank Vent Pipe: ASTM A106B black steel pipe, Schedule 40, with ASTM A105 socket weld fittings except where specifically indicated as butt weld fittings.

2.3 CHARGE AIR TUBING

A. Light wall carbon steel O.D. tubing with butt weld joints and fittings. IAC Acoustics or approved equal.

2.4 FLANGED JOINTS

A. Exhaust Flanges: ANSI 150#, flat faced, slip-on weld flanges.

B. Exhaust Flange Bolts: Plain carbon plain carbon steel (black) or stainless steel bolts, nuts, and washers. Coat with high temperature anti-seize prior to assembly.

C. Charge Air Flanges: 1/2" thick steel plate, ANSI 125/150# pattern for O.D. and bolting, I.D. sized for tubing insert connection.

D. Charge Air Flange Bolts: Hot dip galvanized bolts, nuts, and washers. Coat with high temperature anti-seize prior to assembly.

E. Flange Gaskets: Full face, rated for minimum 1000F continuous. Garlock 4122-FC, Metal Tech HT-195, or approved equal.

2.5 FLEXIBLE CONNECTORS

A. Exhaust Pipe Flexible Connectors: Furnished with Engine Generator, see Section 26 32 13 – Engine Generators.

B. Charge Air Tubing Flex Connectors: High temperature, double hump, silicone turbo sleeves with rings, 6 inch long, inside diameters as indicated on the Drawings. Flexfab or approved equal. Fasten with stainless steel T-bolt clamps, Ideal-Tridon 30051 or approved equal.

2.6 CRANK VENT HOSE

A. Crank Vent Hose: Heavy duty oil resistant PVC suction hose. Tigerflex ORV or approved equal. See Drawings for size.

B. Install on barbed hose (king) nipples with lined stainless steel constant torque clamps, Ideal-Tridon 47 or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Check materials for damage that may have occurred during shipment. Repair damaged materials as required or replace with new materials.

3.2 PREPARATION

A. Remove scale and dirt, on inside and outside, before assembly.

3.3 INSTALLATION - PIPE HANGERS AND SUPPORTS

A. Install pipe hangers and supports in accordance with Drawings and specifications. Refer to Section 23 05 29.

B. Support muffler from structure as indicated on the Drawings.

3.4 INSTALLATION - PIPING

A. Route piping in orderly manner and maintain gradient. Provide weep holes and open ends for condensate drainage as indicated.

B. Install piping to conserve building space and not interfere with use of space.

C. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

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

E. Terminate crank vent hose on barbed (king) nipples and fasten with lined stainless steel constant torque clamps.

F. Insulate interior exhaust piping and flex connector as indicated on the Drawings in accordance with Section 23 07 19.

3.5 INSTALLATION - CHARGE AIR TUBING

A. Roll bead in end of Charge Air tubing at Flex to ensure positive connection. Fasten with stainless steel T-bolt clamps.

B. Insulate interior charge air tubing as indicated on the Drawings in accordance with Section 23 07 19.

3.6 CHARGE AIR TUBING TESTING AND REPORTING

A. Division 1 – Quality Control

B. Provide notification and reporting in accordance with Section 23 05 00 – Common Work Requirements for Mechanical.

C. Isolate engines and coolers prior to pressure testing.

D. Test all Charge Air Tubing with minimum 50 psig air. Test 100% of welds visually for leaks with each joint soaked in a foaming soapy water solution, and visually inspect each joint for leaks. Isolate and pressure test each run of piping. Provide blind flanges, threaded caps, or plugs as needed. Do not conceal pipe joints before pressure testing is complete.

END OF SECTION

SECTION 26 05 00

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. The work to be included in these and all other electrical subsections shall consist of providing, installing, adjusting and setting into proper operation complete and workable systems for all items shown on the Drawings, described in the specifications or reasonably implied. This shall include the planning and supervision to coordinate the work with other crafts and to maintain a proper time schedule for delivery of materials and installation of the work.

B. Provide the labor, materials, equipment and test equipment necessary to furnish, install, and place into operation the power, motor, lighting, control, alarm, and associated electrical systems of this Contract. Connect motors, meters, panels, sensors, switches, and outlets or any other electrical device installed or provided as part of the project. Mark and identify circuits, terminal boards, equipment, enclosures, etc. with identification numbers, wire numbers, nameplates, and warning signs. Test, adjust and calibrate equipment and start-up all electrical equipment and its associated mechanical attachments as necessary to place the project into operation.

C. Local Conditions: The Contractor shall thoroughly familiarize himself with the work as well as the local conditions under which the work is to be performed. Schedule work with regard to seasons, weather, climate conditions, and all other local conditions which may affect the progress and quality of work.

1.2 RELATED REQUIREMENTS

A. Division 1.

B. All other Division 26 Specifications.

C. See Divisions 21 and 23 which contain information and requirements that apply to work specified herein.

1.3 CODES AND STANDARDS

A. Codes: Perform all work in strict accordance with all applicable national, state, and local codes; including, but not limited to the latest legally enacted editions of the following specifically noted requirements:

1. NFPA 70, National Electric Code – NEC.
2. National Fire Protection Association (NFPA) NFPA 37.
3. ANSI-C2, National Electrical Safety Code – NESC.
4. International Building Code – IBC.
5. International Fire Code – IFC.

B. Standards: Reference to the following standards infers that installation, equipment, and materials shall be within the limits for which it was designed, tested, and approved, in conformance with the current publications and standards of the following organizations:

1. American National Standards Institute - ANSI;
2. American Society for Testing and Materials - ASTM;
3. American Society of Heating, Refrigerating and Air Conditioning Consultants - ASHRAE (Standard 90-75);
4. Factory Mutual – FM;
5. Institute of Electrical and Electronics Consultants - IEEE;
6. National Electrical Contractors Association - NECA;
7. National Electrical Manufacturers' Association - NEMA;
8. National Fire Protection Association - NFPA, and
9. Underwriters Laboratory - UL

1.4 QUALITY ASSURANCE

A. Division 1 – Quality Control.

B. Perform all work in accordance with above referenced codes and standards which are referenced to establish minimum requirements.

1. If the Contractor observes that the Drawings and/or Specifications are at variance with such codes and regulations, he shall promptly notify the Authority in writing.
2. Should the Contractor perform any work in non-compliance with the above-mentioned codes and regulations without such notice to the Authority, the Contractor shall bear all costs arising therefrom.

C. In addition, perform all work in accordance with the specific requirements of all Division 26 sections which follow. Wherever the specifications require higher grades of material or workmanship than required by the codes the specifications shall prevail.

D. All electrical work shall be performed by Alaska licensed Journeyman Electricians or by licensed Apprentice Electricians under the direct supervision of a licensed Journeyman Electrician. Journeyman and Apprentice Electricians' current cards shall be available on the job site for review upon request.

E. Perform all work in a neat and workmanlike manner using skilled craftsmen who are qualified and experienced in the specific type of work.

F. Test all work as required by the specifications. Document all testing and submit results in accordance with specifications.

1.5 SPECIAL CONDITIONS AND REQUIREMENTS

A. Ensure that the appropriate safety measures are implemented and that all workers are aware of the potential hazards from electrical shock, burn, noise, rotating fans, pulleys, belts, hot piping, etc. associated with working near power generation and related equipment.

A. The Contractor is responsible for maintaining required clearspace. Should the Contractor become aware of a clearspace violation or if the installation of electrical equipment as shown produces a clearspace violation, notify the Authority in writing before proceeding with the installation.

B. If hazardous location boundaries exist, they will be shown on the drawings. Locations for seal-off fittings shall be field determined by the Contractor.

C. Wet Locations: Wet locations shall include all areas underground (below grade), in direct contact with the earth, areas subject to saturation with water or other liquids from splashing, surface water, exposed to the weather and unprotected.

1.6 DRAWINGS, SPECIFICATIONS & SYMBOLS

A. The Drawings and Specifications are complementary; what is shown on one is as binding as if called for in both. Do not scale the Drawings. Locations of devices, fixtures, and equipment are approximate unless dimensioned.

B. Drawing symbols used for basic materials, equipment and methods are commonly used by the industry and should be universally understood. Special items are identified by a supplementary list of graphical illustrations, or called for on the Drawings or in the specifications.

1.7 SPECIFIC 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 material as shown and specified, and cart the material to an approved location at the site or elsewhere as noted or agreed to be installed by supporting crafts.

C. "Install" means to set in place and connect, ready for use and in complete and properly operating finished condition, material that has been furnished.

D. "Provide" means furnish all products, labor, sub-contracts, and appurtenances required and install to a complete and properly operating, finished condition.

E. "Product" is a generic term which includes materials, equipment, fixtures, and any physical item used on the project.

F. "Accessible" means arranged so that an appropriately dressed man 6-foot 2 inches tall, weighing 250 pounds, may approach the area in question with the tools and products necessary for the work intended, and may then position himself to properly

performs the task to be accomplished, without disassembly or damage to the surrounding installation.

G. "Serviceable" means arranged so that the component or product in question may be properly removed and replaced without disassembly, destruction, or damage to the surrounding installation.

H. "Rough-in and Connect" means provide an appropriate system connection such as conduit with "J" boxes, wiring, switches, disconnects, etc., and all wiring connections. Equipment furnished is received, uncrated, assembled and set in place under the Division in which it is specified.

1.8 SUBMITTALS – GENERAL REQUIREMENTS

A. Provide submittals for all products and systems described in Division 26 specifications and shown on the Drawings to demonstrate compliance with the requirements of the project. Provide submittals in the manner described herein and in Division 1 with an index following specification format and with item by item identification.

B. Submittal review is for general design and arrangement only and does not relieve the Contractor from any of the requirements of the Contract Documents. Submittals will not be checked for quantity, dimension, fit or proper technical design of manufactured equipment. Where deviations of substitute product or system performance have not been specifically noted in the submittal by the Contractor, provision of a complete and satisfactory working installation of equal quality to system specified is the sole responsibility of the Contractor.

C. Submittals shall demonstrate compliance with the requirements of the project. Furnish all relevant data as appropriate including but not limited to:

1. Manufacturer's name and address, and supplier's name, address, and phone number.
2. Catalog designation or model number with rough-in data and dimensions.
3. Operation characteristics.
4. Complete customized listing of characteristics required. Indicate whether item is "As Specified" or "Proposed Substitution." Indicate any deviations on submittal. Mark out all non- applicable items. The terminology "As Specified" used without this customized listing is not acceptable.
5. Wiring diagrams for the specific system.
6. Coordination data to check protective devices.
7. Shop Drawings.

D. Provide submittals for all materials and equipment in the Division 26 specification sections which follow and submit under that specification section.

1.9 SUBMITTALS UNDER THIS SECTION

A. All materials in the New Electrical Equipment Schedule on the Drawings.

B. All materials in the Electrical Conductor Schedule on the Drawings.

1.10 RECEIVING AND HANDLING MATERIAL

A. See General Conditions and Division 1 regarding material handling.

B. Deliver packaged materials to the jobsite in unbroken packaging with manufacturer's label, and store to facilitate inspection and installation sequence.

C. Protect all materials and equipment during the duration of construction work against contamination and damage. Replace or repair to original manufactured condition any items damaged during construction. Immediately report any items found damaged to the Authority prior to commencing construction.

1.11 TIMELY EXECUTION OF WORK

A. The work must be expedited and close coordination will be required in executing the work. The various trades shall perform their portion of the work at such times as directed so as to meet scheduled completion dates, and to avoid delaying any other trade.

B. The Authority will set up completion dates. Each Contractor shall cooperate in establishing these times and locations and shall process his work so as to ensure the proper execution of it.

1.12 LAYOUT AND COORDINATION OF WORK

A. Drawings are partly diagrammatic and it is not the intent to show in detail all features of work or exact physical arrangement of equipment. The locations of outlets and equipment are approximate unless dimensioned. The exact locations and routing of conduits shall be governed by structural conditions and physical interferences and by the location of electrical terminations on equipment. Equipment shall be located and installed so that it will be readily accessible for operation and maintenance.

B. If conduit is placed incorrectly with respect to equipment connections or if equipment connections are relocated without appropriate changes in the electrical work and the resulting work is not coordinated, the work affected shall be removed and re-installed at the Contractor's expense, even if removal and replacement of portions of work by other trades is necessary.

C. The Contractor shall schedule his work to coordinate through the General Contractor and with all other subcontractors, power and telephone utilities in order to maintain job progress and to avoid conflicts with equipment installation or work done by the various trades.

1.13 COOPERATION AND CLEANING UP

D. The Contractor for the work under each section of the specifications shall coordinate his work with the work described in all other sections of the specifications, and shall carry on his work in such a manner that none of the work under any section of these specifications shall be compromised, hindered, or delayed at any time.

E. At all times during the progress of the work, the Contractor shall keep the premises clean and free of unnecessary materials and debris. The Contractor shall, on direction at any time from the Authority, clear any designated area or areas of materials and debris. On completion of any portion of the work, the Contractor shall remove from the premises all tools and machinery and all debris occasioned by the work, leaving the premises free of all obstructions and hindrances.

1.14 PROJECT RECORD DRAWINGS

A. In accordance with the requirements of Division 1 maintain record documents at the project site and make available for review by the Authority upon request.

B. Mark up a clean set of drawings as the work progresses to show the dimensioned location and routing of all mechanical work which will become permanently concealed. Show routing of work in concealed below grade or in blind spaces within the building.

C. At completion of project, deliver record documents in accordance with Division 1.

1.15 ELECTRICAL SYSTEMS TESTING AND REPORTING REQUIREMENTS

A. Division 1 - Closeout Requirements.

B. In addition to field testing, the Contractor shall perform all shop tests for fabricated items such as switchgear and engine-generators as required by the Division 26 specification sections which follow.

C. Field testing shall include but not be limited to:

1. Continuity of all circuits.
2. Correct phase rotation.
3. Megger test of all conductors size #2AWG and larger.
4. Proper function of all switches and devices.
5. Proper function of all control systems.

D. Note that final field testing and commissioning of the switchgear and engine-generators will be performed by the Authority after substantial completion.

E. Notify the Authority in writing seven (7) days in advance of tests. The Authority shall have the option to be present at all testing.

F. Provide written documentation of all tests. The Contractor may use their own test forms or upon request the Authority can provide forms for common tests. Test reports shall include at a minimum the following information: item or system identification, air temperature, time, date, signature of person performing test, and photographs of testing in progress.

G. Where tests disclose problem areas, retest after the defect has been corrected. Retesting after the repair of defects shall be performed at no cost to the Authority.

H. Submit completed results of final successful tests along with photographs to the Authority for approval prior to Substantial Completion.

1.16 ELECTRICAL DEVICE CALIBRATION REQUIREMENTS

A. Division 1 – Quality Control.

B. Division 23.

C. Calibrate all electrical and electronic measuring devices as indicated on the Drawings and in the Division 26 sections that follow.

D. Support other trades as required with calibration of electronic devices furnished under Division 23.

1.17 SUBSTANTIAL COMPLETION

A. In accordance with Section 01 77 00 - Contract Closeout Procedures, provide advance written notice to the Authority to schedule substantial completion inspection. Submit all required documents and ensure all conditions have been met.

B. Provide Authority access to the site. Provide on-site transportation, ladders, lifts, etc. for inspection and testing of the work.

C. Cooperate with the Authority and provide assistance at all times for the inspection of the electrical work performed under this Contract. Remove covers, operate machinery, or perform any reasonable work which, in the opinion of the Authority, will be necessary to determine the completeness, quality, or adequacy of the work.

D. Conduct operating tests and demonstrate that all systems operate satisfactorily in accordance with requirements of Contract Documents. Should a portion of installation fail to meet requirements of Contract Documents, repair or replace items failing to meet requirements until items can be demonstrated to comply.

E. Have instruments available for measuring voltage and current values and for demonstration of continuity, ground, or open circuit conditions. Provide services of qualified technicians familiar with equipment and systems to assist in taking measurements and making tests.

F. Assist the Authority in instruction of operators on the proper operation and maintenance of all systems and equipment under this contract. Provide services of qualified technicians familiar with each item or system.

1.18 FINAL COMPLETION

A. In accordance with Section 01 77 00 - Contract Closeout Procedures, provide notification of completion. Submit all required documents and ensure all conditions have been met.

1.19 WARRANTY

A. In accordance with Section 01 73 00 – Execution Requirements, provide warranties for all systems and equipment.

B. See Division 26 sections that follow for specific equipment warranty requirements. Wherever the Division 26 specifications have more stringent warranty requirements than Division 1, the Division 26 requirements shall prevail.

PART 2 – PRODUCTS

2.1 ELECTRICAL EQUIPMENT

A. Provide all materials in the Electrical Equipment Schedule on the Drawings.

2.2 ELECTRICAL CONDUCTORS

A. Provide all materials in the Electrical Conductor Schedule on the Drawings.

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 26 05 02

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. This Section describes specific requirements, products, and methods of execution which are typical throughout the Electrical Work of this Project. Additional requirements for the specific systems will be found in the Division specifying those systems.

1.2 RELATED REQUIREMENTS

A. This section applies to all Division 26 work.

B. See Divisions 21 and 23 which contain information and requirements that apply to work specified herein.

1.3 COORDINATION

A. Layout all the work in advance and avoid conflict with other Work in progress. Physical dimensions shall be determined from Drawings and field measurements. Verify locations for junction boxes, disconnect switches, stub-ups, etc., for connection to equipment furnished by others, or in other Divisions of this Work.

1.4 SERVICEABILITY OF PRODUCTS

A. Furnish all products to provide the proper orientation of serviceable components to access space provided.

B. Coordinate installation of all products to allow proper service areas for any items requiring periodic maintenance inspection or replacement.

C. Replace or relocate all products incorrectly ordered or installed.

1.5 ACCESSIBILITY OF PRODUCTS

A. Arrange all work to provide access to all serviceable and/or operable products. Layout work to optimize net usable access space within confines of space available. Advise the Authority, in a timely manner, of areas where proper access or required clearspace cannot be maintained. Furnish Layout Drawings to verify this claim, if requested.

B. Provide access doors in ceilings, walls, floors, etc., for access to j-boxes, automatic devices, and all serviceable or operable equipment in concealed spaces.

PART 2 – PRODUCTS

2.1 PRODUCTS FURNISHED IN DIVISION 26

A. All products furnished and installed in permanent construction shall be new, full-weight, standard in every way, and in first class condition.

B. All equipment furnished by the Contractor shall be listed by and shall bear the label of Underwriters' Laboratories, Incorporated (UL) or equivalent independent testing laboratory.

C. All products of similar class or service shall be of one manufacturer.

D. Capacities, sizes, and dimensions given are minimum unless otherwise indicated. All systems and products shall be subject to review for adequacy and compliance with Contract Documents.

2.2 PRODUCTS FURNISHED IN OTHER DIVISIONS

A. Controls, including conduit, wiring, and control devices required for the operation of systems furnished in other Divisions shall be installed in accordance with Division 26 Specifications.

B. All equipment furnished by the Contractor shall be listed by and shall bear the label of Underwriters' Laboratories, Incorporated (UL) or equivalent independent testing laboratory.

C. Provide complete power connections to equipment including but not limited to feeders, connections, disconnects and motor running overcurrent protection. Where starters are provided as part of a packaged product, overcurrent devices shall be provided.

2.3 IDENTIFICATION

A. Equipment Nameplates:

1. Provide rigid engraved nameplates of laminated plastic 1/16-inch thick with white letters on a black or gray background. Nameplates for emergency equipment shall be red with white letters.

    a. Securely attach nameplates with two screws, minimum.

    b. Temporary markings not permitted on equipment. Repaint trims housings, etc., where markings cannot be readily removed. Refinish defaced surfaces.

    c. No labeling abbreviations will be permitted without prior approval.

2. Nameplate Locations:

    a. Provide 1/2-inch minimum height letters on following equipment:

        1) Service disconnects (red background).

        2) Secondary feeder breakers in distribution equipment. Designation as required by load served.

        3) Special equipment housed in cabinets, as designated on Drawings, on outside of door.

    b. Provide 1/4-inch minimum height letters on:

1) Disconnects and starters for motors or fixed appliances - (include item designation and branch feeder circuit number); and

2) Designated electrical equipment.

B. Branch Circuit Panelboard Schedules: Provide neatly typed schedule (odd numbered circuits on left side or top, even on right side or bottom) under plastic jacket or protective cover to protect the schedule from damage or dirt. Securely mount on inside face of panelboard door. Define briefly, but accurately, nature of connected load (i.e., Lighting, interior; receptacles, work bench; etc.) as approved.

C. Conduit Labeling: Unless a conduit is completely exposed and the purpose is clearly obvious, all conduits shall be permanently marked using a label maker.

1. Conduits Entering Panels: All conduits entering panels shall be labeled with the circuit numbers of the circuits contained inside.

2. Concealed Conduits: Conduits that are concealed inside building structure or below grade shall be marked at each with the designation of the opposite end.

3. For interior conduits the label shall be applied directly to the conduit. For exterior conduits the label shall be applied inside the junction box or conduit body where the conduit terminates.

D. Junction Boxes: All junction boxes with steel covers shall be permanently marked using a label maker with the circuit numbers of wiring inside. For interior locations the label shall be applied on the outside and for exterior locations the label shall be applied inside the junction box.

E. Conductors:

1. Conductors shall be color coded as indicated on the Electrical Conductor Schedule on the Drawings.

2. Control and alarm circuit conductors

a. Field conductors shall be identified by destination panel and terminal block designations.

b. Internal (Control Panel) numbering system shall be provided by the Contractor or panel Fabricator. The numbering system shall assign each logical conductor set a unique identification number that will be reflected on the as-built drawings.

PART 3 – EXECUTION

3.1 STORAGE AND HANDLING

A. Division 1 – Material and Equipment.

B. All items shall be delivered and stored in original containers, which shall indicate manufacturer's name, the brand, and the identifying number.

C. Items subject to moisture and/or thermal damage shall be stored in a dry, heated place.

D. All items shall be covered and protected against dirt, water, chemical and/or mechanical damage.

3.2 PROTECTION OF PRODUCTS

A. The Contractor shall be held responsible for products to be installed under this Contract.

B. The Contractor will be required to make good, at his own cost, any injury or damage which said products may sustain before Final Acceptance.

3.3 INSTALLATION

A. All products shall be installed by skilled craftsmen. The norms for execution of the work shall be in conformity with NEC Chapter 3 and the NECA "Standards of Installation," which herewith is made part of these Specifications.

B. Provide working space in accordance with NEC 110.26 to permit ready and safe operation and maintenance of equipment.

C. Installation of all equipment shall be in accordance with manufacturer's instructions.

3.4 SUPPORT SYSTEMS

A. All interior materials used shall be galvanized or zinc plated.

B. All exterior materials used shall be hot dip galvanized. Where support elements are field cut, exposed metal shall be coated with spray-on cold galvanizing.

C. Support from structure or as specifically detailed on the Drawings.

D. Conduits shown to be run at grade shall be supported by sleepers as shown on the drawings. Conduits may share fuel piping sleepers if installed such that neither system will require removal during maintenance or replacement.

3.5 MOUNTING HEIGHTS

A. Mounting heights shall be above finished floor (AFF) or above finished grade as noted below, unless otherwise shown or indicated.

1. Lighting Switches, 48 inches to center

2. Receptacles shall be mounted as indicated on the Drawings.

B. Other mounting heights are indicated on the Drawings by detail.

3.6 CUTTING AND PATCHING

A. Where previously completed building surfaces or other features must be cut, penetrated, or otherwise altered, such work shall be carefully laid out and patched in a neat and workmanlike manner to the original condition. Perform work only with craftsmen skilled in their respective trades.

B. Do not cut, drill, or notch structural members unless specifically approved by the Authority. Minimize penetrations and disruption of building features

3.7 FLASHING AND SEALING

A. Seal all interior and exterior wall penetrations with polyurethane caulking. Seal both sides of walls where accessible.

3.8 PROTECTIVE FINISHES

A. Take care not to scratch or deface factory finish on electrical apparatus and devices. Repaint all marred or scratched surfaces.

B. Provide hot dip galvanized components for ferrous materials installed in exterior locations.

3.9 CLEAN-UP AND COMMISSIONING

A. Throughout the Work, the Contractor shall keep the work area neat and orderly by periodic clean-ups.

B. As independent parts of the installation are completed, they may be placed in service and utilized during construction.

END OF SECTION

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. This section describes general requirements, products, and methods of execution relating to the furnishing and installation of a complete grounding system as required for this project.

1.2 RELATED REQUIREMENTS

A. Section 26 05 00 Common Work Results for Electrical.

B. Section 26 05 02 Basic Materials and Methods.

1.3 MINIMUM REQUIREMENTS

A. The minimum requirement for the system shall conform to Article 250 of the NEC.

1.4 SUBMITTALS

A. Product Data: Provide in accordance with Section 26 05 00 Common Work Results for Electrical and Division 1.

PART 2 – PRODUCTS

2.1 GENERAL

A. Install types indicated and of sizes and ratings to comply with NEC. Where types, sizes, ratings, and quantities indicated are in excess of NEC requirements, the more stringent requirements and the greater size, rating, and quantity indications shall govern.

B. Material: Copper only. Aluminum is not acceptable for use in any location.

2.2 WIRE AND CABLE CONDUCTORS

A. Station Service Circuit Grounding Conductor: General use conductors in accordance with the conductor schedule, green insulated. Minimum No. 12 AWG.

B. Generator and Feeder Circuit Grounding Conductor: Equivalent to the phase conductors in accordance with the conductor schedule, size as indicated.

PART 3 – EXECUTION

3.1 EQUIPMENT GROUND

A. The raceway system shall be bonded in conformity with NEC requirements to provide a continuous ground path. Where required by code or where called for on the Drawings, an additional grounding conductor shall be sized in conformity with Table 250.122 of the NEC.

B. Provide a separate copper equipment grounding conductor for each feeder and for each branch circuit indicated. Install the grounding conductor in the same raceway with the related phase and neutral conductors, and connect the grounding conductor to pull boxes or outlet boxes at intervals of 100 feet or less. Where paralleled conductors in separate raceways occur, provide a grounding conductor in each raceway. Connect all grounding conductors to bare grounding bars in panel boards, and to ground buses in service equipment to the end that there will be an uninterrupted grounding circuit from the point of a ground fault back to the point of connection of the equipment ground and system neutral. All grounding conductors shall be sized in conformity with Table 250.122 of the NEC.

C. Provide separate grounding conductor securely bonded and effectively grounded to both ends of all non-metallic raceways and all flexible conduit.

D. If non-metallic enclosures are provided, all metal conduits terminating or entering the enclosure shall be bonded together with approved bonding bushings and minimum #6 AWG copper cable.

END OF SECTION

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. Support and align raceways, cabinets, boxes, fixtures, etc., in an approved manner and as specified.

1.2 RELATED REQUIREMENTS

A. Section 26 05 00 Common Work Results for Electrical.

B. Section 26 05 02 Basic Materials and Methods.

C. Section 26 05 33 Raceway and Boxes for Electrical Systems.

1.3 SUBMITTALS

A. Shop Drawings and Product Data: Provide in accordance with Section 26 05 00 Common Work Results for Electrical and Division 1.

PART 2 – PRODUCTS

2.1 HANGERS AND SUPPORTS

A. Support equipment and raceways on strut, brackets, trapeze hangers, or as detailed. Anvil, B-Line, Grinnell, Unistrut, or approved equal.

2.2 FORMED STEEL CHANNEL

A. Strut: Cold formed mild steel channel strut, pre-galvanized finish and slotted back unless specifically indicated otherwise.

B. Standard Strut: 12 gauge thick steel, 1-5/8” x 1-5/8”, B-line B22-SH-Galv or approved equal.

C. Double Strut: 12 gauge thick steel, 1-5/8” x 3-1/4”, B-line B22A-SH-Galv or approved equal.

D. Shallow Strut: 14 gauge thick steel, 1-5/8” x 13/16”, B-line B54-SH-Galv or approved equal.

E. On all exterior installations provide hot dip galvanized strut and fittings.

2.3 FITTINGS AND ACCESSORIES

A. Hanger Rods: Continuous threaded rod. Zinc plated carbon steel except for exterior installations provide hot dip galvanized.

B. Provide fittings, brackets, channel nuts, and accessories designed specifically for use with specified channel strut. Zinc plated carbon steel except for exterior installations provide hot dip galvanized.

C. Pipe Clamps: Two piece pipe clamp designed to support pipe tight to strut, B-line B20##, or approved equal. Zinc plated carbon steel except for exterior installations provide hot dip galvanized

D. Fasteners: All bolts, nuts, and washers to be zinc plated carbon steel except on exterior installations provide hot dip galvanized or stainless steel.

2.4 FASTENERS

A. All bolts, nuts, and washers to be zinc plated carbon steel except as specifically noted otherwise.

B. On exterior installations provide hot dip galvanized steel bolts, nuts, and washers.

C. Hanger Rods: Continuous threaded rod. Zinc plated carbon steel except for exterior installations provide hot dip galvanized.

D. Provide stainless wood screws and sheet metal screws where specifically indicated on the Drawings.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Conduits and equipment shall be mounted using strut or similar supports unless otherwise noted.

B. Support material shall be cut square and smooth using a floor mounted bandsaw or chop saw. Hacksaws shall not be used to cut support material.

C. Do not strap conduits to piping except where specifically detailed on the Drawings. When run in parallel with piping maintain adequate separation to allow maintenance to take place on either piping or conduit system so that the other does not have to be removed when maintenance is required.

D. Conduits shown to be run at grade shall be supported by sleepers as shown on the drawings. Conduits may share fuel piping sleepers if installed such that neither system will require removal during maintenance or replacement.

END OF SECTION

SECTION 26 05 33

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. This section describes specific requirements, products, and methods of execution relating to conduit and conduit fittings approved for use on this project. Type, size and installation methods shall be as shown on the Plans, required by Code and specified in these specifications.

1.2 RELATED REQUIREMENTS

A. Section 21 13 29 Fire Suppression.

B. Section 26 05 00 Common Work Results for Electrical.

C. Section 26 05 02 Basic Materials and Methods.

D. Section 26 05 26 Grounding and Bonding for Electrical Systems.

E. Section 26 05 29 - Hangers and Supports for Electrical Systems.

1.3 QUALITY ASSURANCE

A. Conduit and conduit fittings shall be standard types and sizes as manufactured by a nationally recognized manufacturer of this type of materials and be in conformity with applicable standards and UL listings.

1.4 SUBMITTALS

A. Shop Drawings and Product Data: Provide in accordance with Section 26 05 00 Common Work Results for Electrical and Division 1.

PART 2 – PRODUCTS

2.1 GALVANIZED RIGID CONDUIT (GRC)

A. Galvanized rigid conduit shall be mild steel with continuous welded seam, hot-dip galvanized complying with ANSI C80.1 and shall be UL listed.

B. Elbows, bends, and fittings shall be made of full weight materials complying with the above and shall be coated and threaded the same as conduit.

C. Threads for conduit shall be tapered and clean cut. All threads shall be hot dip galvanized after cutting.

D. Conduit shall be 1/2-inch trade size or larger.

2.2 ELECTRICAL METALLIC TUBING (EMT)

A. Steel tubing, galvanized outside and provided with a slick corrosion resistant interior coating; UL listed and labeled according to Standard 797; conforming to ANSI Standard C80.3.

2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

A. Liquidtight flexible conduit shall be manufactured from galvanized steel strip, sealed with a polyvinyl outer jacket and shall be UL listed.

B. Fittings shall be designed for use with liquidtight flexible conduit and shall maintain electrical continuity throughout fittings and conduit.

C. Liquidtight flexible metal conduit shall be 1/2-inch trade size or larger and shall be manufactured by O-Z/Gedney Co., Southwire Co., or approved equal.

2.4 FITTINGS

A. Conduit bodies shall be factory made with threaded hub connections and weather tight screw type covers. For all exterior locations provide malleable iron conduit bodies with hot dipped galvanized finish.

B. Fittings utilized with rigid steel shall be galvanized steel. Conduit bushings shall be of the insulated type. Where grounding bushings are required, insulated grounding bushings with pressure type lugs shall be provided. Lock rings shall be of the sealing gland type. Provide conduit bushings on all penetrations without hubs.

C. Couplings and Terminations for Electrical Metallic Tubing (EMT): Join lengths of EMT with steel compression type couplings and connectors. The connectors shall have insulated throats or a smooth interior so as not to damage the insulation during pulling operations.

D. Fittings for liquid-tight flexible conduit shall be steel or malleable iron, of a type incorporating a threaded grounding cone, nylon or plastic compression ring, and a tightening gland, providing a low resistance ground connection. All throats shall be insulated.

2.5 JUNCTION BOXES AND ENCLOSURES

A. Metallic device/junction boxes for interior use with Electrical Metallic Tubing (EMT) shall be minimum .0625” thick SAE 1008 pressed steel with galvanized finish, 2-1/8” deep welded or drawn construction with 1/2” and 3/4” knockouts. Provide with 1/2” raised face metal covers.

B. For interior electrical junction boxes larger than 4” square provide NEMA 1 steel wall mount screw cover enclosures. Minimum 12-gauge steel with color ANSI 61 gray powder coated finish. Hoffman, B-Line, or approved equal. Provide with plated or stainless-steel cover screws.

C. Weatherproof gang boxes for exterior use and where specifically indicated shall be die cast zinc metal with powder coated finish and threaded hubs. Provide with matching weatherproof gasketed covers and mounting hardware.

PART 3 – EXECUTION

3.1 CONDUIT USAGE

A. INTERIOR - All interior locations shall be electrical metallic tubing (EMT) except where specifically indicated as wireway or GRC.

B. FIRE SUPPRESSION - All raceways for fire suppression shall be equivalent to INTERIOR previously specified except that the cover plates on all junction and pull boxes shall be painted red.

C. EXTERIOR - All exterior above grade locations shall be galvanized rigid conduit (GRC).

D. Liquidtight flexible metal conduit shall be used in lengths of 18 to 24 inches for connections to motors or equipment subject to vibration and where indicated on the Drawings. Longer lengths may be used for equipment connection if grounding conductor is installed through conduit.

3.2 CONDUIT INSTALLATION, GENERAL

A. Conduit field joints shall be cut square and reamed smooth. Threads shall be cleanly cut and joints drawn up tight. Running threads shall not be permitted.

B. After cutting and threading exterior GRC, threads shall be cleaned and degreased and shall receive two coats of cold galvanizing compound.

C. Offsets and bends shall be made carefully, without reducing cross sectional area, and shall not be less than the radius of standard elbows.

D. Convenience outlets, switches, and other devices located on walls shall be serviced from above, unless otherwise indicated.

E. Raceways penetrating vapor barriers or traversing from warm to cold areas shall be sealed (at the penetration point) with a non-hardening duct sealing compound to prevent the accumulation of moisture.

F. Provide seal off fittings when crossing hazardous boundaries into non-hazardous locations and at enclosures where required by Code. Not all locations where these fittings are required are shown.

G. All metal conduits shall have insulating bushings and shall have locknuts inside and outside of enclosure box, etc. Conduits smaller than 1-1/4-inch trade size shall be equipped with bushings and shall have locknuts inside and outside of enclosure.

H. All conduit runs shall be grounded in an effective and approved manner at point of origin and shall maintain a continuous ground throughout all runs, cabinets, pull boxes, and fittings from point of service to all outlets.

I. Conduit Supports:

1. Support conduits by wall brackets, pipe straps and strut sections, or trapeze hangers spaced not more than 10 feet on center.

2. Conduits shall be supported from the structural system. Provide additional support as required for junction and pull boxes.

J. All conduit runs shall be completed and cleaned free from foreign matter inside before conductors are drawn in. After installation conduit ends shall be plugged or capped to prevent the entrance of foreign materials.

K. All conduits and junction boxes shall be permanently labeled in accordance with Section 26 05 02.

L. All conduits not used by this Contract shall have a pull wire installed and securely tied off at each end for future conductor installation.

END OF SECTION

LIST OF ABBREVIATIONS

CAC: Charger Air Cooler
CPU: Central Processor Unit
CT: Current Transformer
ECU: Engine Control Unit
EULA: End User License Agreement
FPR: Feeder Protection Relay
GC: Genset Controller
GPH: Gallons per Hour
HMI: Human Machine Interface
kWh: kilowatt hour
LAN: Local Area Network
O&M: Operations & Maintenance
OIU: Operator Interface Unit
PLC: Programmable Logic Controller
PT: Potential Transformer
PSI: Pounds per Square Inch
RPM: Revolutions per Minute
SCADA: Supervisory Control and Data Acquisition
SMS: System Mode Switch
UL: Underwriters Laboratory
VAC: Volts, AC
VDC: Volts, DC
VFD: Variable Frequency Drive

SECTION 26 23 03

PRIME POWER LOW-VOLTAGE SWITCHGEAR CHANGES

PART 1 - GENERAL

1.1 SCOPE

A. The Work shall consist of, but not be limited to, making minor modifications to existing switchgear which is used to parallel diesel generating units for prime power generation as indicated on the project design drawings and as specified herein.

B. The specifications and project design drawings are complementary. What is shown on one is binding whether or not it is shown or specified in the other.

C. The existing paralleling switchgear is capable of unattended automatic and manual operation. The automatic control and overall sequencing, starting, and stopping of the generators (Demand Control) is performed by a Programmable Logic Controller (PLC). Automatic start/stop is accomplished through the Easygen Genset Controllers (GC). Each generator and each feeder has an electrically operated circuit breaker to perform the normal online/offline function.

D. Modifications to the existing switchgear shall include but not be limited to:

1. Replacing current transformers and circuit breaker trip plugs to match the ampacity of the new generators.
2. Modifying engine control and monitoring to interface with the new engines.
3. Revising the PLC Demand Control settings and the Easygen settings.
4. Modifying existing 24VDC power.
5. Replacing existing Variable Frequency Drives (VFD) with new.

1.2 RELATED REQUIREMENTS

A. Section 26 05 00 – Common Work Results for Electrical

B. Section 26 05 02 – Basic Materials and Methods

C. Section 26 32 13 – Engine Generators

1.3 SUBMITTALS

A. Provide in accordance with Section 26 05 00 Common Work Results for Electrical and Division 1.

B. Provide a bill of material for all equipment or material provided as part of the switchgear.

C. Provide manufacturer’s catalog literature for all accessories and equipment. Literature shall be limited to only the items furnished and shall not include entire

sections of catalogs or data sheets for items not used. Items shall be marked electronically such that it is clear which item is for what purpose.

1.4 QUALITY ASSURANCE

A. The switchgear modifications shall be performed and tested by a qualified Electrical Contractor with experience installing and working on generation switchgear. A list of five prior projects that key staff have worked on may be requested by the Authority after the bid opening and prior to award to verify Contractor qualifications. The list shall include installation date, description of installation, and a reference contact for each installation.

B. Perform all work with skilled craftsman specializing in said work. Install all materials in a neat, orderly, and secure fashion as required by the specifications and commonly recognized standards of good workmanship.

1.5 FABRICATOR QUALIFICATIONS - not used

1.6 FABRICATOR WARRANTIES - not used

1.7 OPERATION AND MAINTENANCE MANUALS - not used

PART 2 - PRODUCTS AND ASSEMBLY

2.1 GENERAL

A. All equipment and material furnished shall be new. Equipment furnished and installed under this section shall be fabricated and assembled in full conformity with the project design drawings, specifications, engineering data, instructions, and applicable standards.

2.2 ACCEPTABLE MANUFACTURERS OF SWITCHGEAR COMPONENTS

A. Specific parts manufacturer and model have been specified in the following paragraphs not only to meet performance function but also to coordinate and interface with other devices and systems. Approved equal substitutions will be allowed only by Authority's approval. To obtain approval, submittals shall clearly demonstrate how substitute item meets or exceeds specified item quality and performance characteristics and also complies with electrical connections and physical layout requirements.

B. Acceptable manufacturers of all components not otherwise indicated shall be ABB, Allen-Bradley, Eaton, IDEC, or Square D.

2.3 SWITCHGEAR ENCLOSURE - not used (existing to remain)

2.4 PAINTING - not used (existing to remain)

2.5 CONTROL WIRING

A. All control wiring for the switchgear shall be minimum 600-volt, copper 16-gauge, strand type SIS wire or equivalent. The Fabricator shall be responsible for

sizing the appropriate wire for each component and circuit. Current transformer wiring shall be 12-gauge wire.

B. Terminate all wiring on terminal blocks or devices. No more than two wires shall be connected to a termination point. Terminal blocks for control wiring shall be 20 amp, 600 volt. Provide all terminal blocks and exposed relays located in the controls compartment with a plastic safety cover. Terminal blocks for DC circuits shall be separated from terminal blocks for 120VAC.

C. Wiring shall be installed in a neat and orderly manner in horizontal and vertical wiring troughs or channels with removable covers for easy accessibility. Wire bundles, when required shall not exceed one (1) inch in diameter. Adhesive backed Ty-Rap bases shall not be used to support bundles. All wiring bases shall be securely attached with metal screws.

D. Extra flexible stranding wires shall be used in areas subject to flexing, such as areas where hinged brackets or swing racks/doors are used.

E. Only one wire shall be inserted into a lug. Install lugs with a ratcheting type crimping tool. Tag all wires with wire markers at both ends.

F. Splicing of control, CT, or PT wires is not allowed.

G. All control wiring landing on screw terminals shall have solderless terminals, ABB Sta-Kon or approved equal. Solderless terminals for current transformer leads shall be insulated ring-tongue type, all others shall be insulated fork-tongue type. All lugs and solderless terminals shall be tin-plated copper.

H. Wire current transformer leads to shorting type terminal blocks. Shorting pins shall be provided with storage locations for the shorting pins.

I. Provide terminal blocks for control wires that run between the switchgear and external equipment and devices. Clearly label terminal blocks to match the designation shown on the Fabricator's drawings. Provide a separate terminal strip for interconnection with each generator. The generator terminal strip shall be arranged and numbered exactly as shown on the project design drawings.

J. Both ends of each wire shall be identified per the marking and numbering shown on the wiring drawings with heat shrink or wrap-around adhesive labels.

K. All ground wires shall have green insulation. Note that wires larger than #6 may be marked with green tape.

2.6 BUS BAR - not used (existing to remain)

2.7 GENERATOR AND DISTRIBUTION CIRCUIT BREAKERS

A. Existing generator circuit breakers to remain. Provide new trip plugs. See Drawings for manufacturer and model of existing circuit breakers and replacement trip plugs.

2.8 SWITCHGEAR DEVICES

A. Nameplates. All nameplates shall be black with white core type. Nameplates shall have beveled edges and shall be secured with a minimum of two mounting

screws. Provide nameplates for each device on the front of the switchgear and inside the switchgear. Inside the switchgear compartments, all relays, control switches, lights, etc. to which control or instrument transformer wiring connects, shall be marked by nameplates, with designations corresponding to the same device designations used on the wiring drawings and approved by the Authority. Nameplates inside the switchgear located on the front doors may be attached using adhesive epoxy.

Relays shall have the nameplates installed separate from the relay such that the relay can be removed without affecting the nameplate. Route all wiring such that it does not inhibit the visibility of the nameplate or interfere with the removal of the relay.

B. Time Delay Relays. Timer relays shall be of the plug-in socket base type with dustproof plastic enclosures unless noted otherwise. Relays and timers shall be UL recognized, 24-volt DC coil, with minimum one double-throw contact and shall be programmable for multiple functions.

1. Crouzet 88867105 or approved equal.

C. Circuit Breakers. Protective devices shall be resettable circuit breakers for all AC and DC circuits in the switchgear. Replaceable fuse type devices are not acceptable.

D. Current Transformers. Provide replacement current transformers as indicated on the Drawings. Provide current transformers of the wound or window type, with brass stud primary terminals. Insulation shall be suitable for 600 volt service.

1. Current transformers for relay service - minimum Class 50 with a rating factor of 2.0, 600:5A ratio and 4” window. ITI 110-601 or approved equal.

2.9 GENSET CONTROL PACKAGE - not used (existing to remain)

2.10 PROGRAMMABLE LOGIC CONTROLLER - not used (existing to remain)

2.11 OPERATOR INTERFACE UNIT - not used (existing to remain)

2.12 FEEDER PROTECTION RELAY - not used

2.13 METERING EQUIPMENT - not used (existing to remain)

2.14 DATA STORAGE SERVER - not used (existing to remain)

2.15 LOCAL AND REMOTE ACCESS - not used (existing to remain)

2.16 CONTROL POWER

A. Existing control power for the switchgear is 24VDC, except where specifically indicated otherwise.

B. Provide modifications to the 24VDC control power as indicated on the Drawings to provide redundant secondary backup in the event of the loss of the battery buffer module and the AC power supply.

C. The new connection shall be supplied through a 15A circuit breaker and connected to the main 24VDC control power source through a diode, minimum 35A, rated, Powersem PSB-35/08 or approved equal.

2.17 VARIABLE FREQUENCY DRIVES

A. Variable Frequency Drive. Square D Altivar ATV320U40N4B, or approved equal, complete with the following features and accessories:

1. Sized for continuous operation of 5 hp motor.
2. Ramp regulation, flying start, and step logic.
3. Built-in PID control using 4-20 mA signal as the control variable.
4. Sensorless vector slip compensation.
5. Motor protection including overload protection, short circuit protection, ground fault protection, and under & over voltage protection.
6. 1:100 speed range.
7. RS-485, ModBus protocol.
8. 4-20 mA analog input.
9. Four assignable logic inputs.
10. Two relay logic outputs.
11. Remote Graphic Display Terminal. Square D VW3A1101, or approved equal.
12. Remote Graphic Display Mounting Kit. Square D VW3A1102, or approved equal.
13. Modbus TCP/IP Ethernet communications card. Square D VW3A3616, or approved equal.
14. Cables and connectors as required.

2.18 ENGINE/GENERATOR SECTION ASSEMBLY

A. Provide new circuit breaker trip plug as specified and modify wiring as indicated on the Drawings.

2.19 MASTER SECTION ASSEMBLY

A. Provide new 24VDC circuit breaker, diode, and modify wiring as indicated on the Drawings.

2.20 DISTRIBUTION FEEDER/VFD SECTION ASSEMBLY - not used (existing to remain)

PART 3 - PROGRAMMING, TESTING AND PACKAGING

3.1 SYSTEM PROGRAMMING AND SOFTWARE INSTALLATION

A. The following software was installed on the switchgear in 2022 and will remain in service:

1. AB Studio 5000 Mini Edition EN License (PLC programming software).
2. Woodward Toolkit Easygen (GC configuration software) or ComAp equal.
3. SHARK metering software (latest version).
4. LogMeIn
5. Electric Power Systems custom Ignition SCADA system.

B. The Contractor shall furnish and install the following software on the Data Storage Server. All licenses shall be in the name of the Alaska Energy Authority

1. Square D (SOMOVE). Or software for VFD provided.

C. The Contractor shall revise the PLC programming as required to provide the new demand control sequence. See Part 4 of this specification and Sheet E6.2 of the Drawings.

D. The Contractor shall revise the Woodward Easygen Genset Controller (GC) programming as required to properly monitor and control the new engines. See Attachment A, Genset Controller Settings Table and Sheet E6.2 of the Drawings.

E. Upon completion of testing, archive at a minimum the following files on the server:

1. The original licensed copy of the VFD software package.
2. The End User License Agreement (EULA).
3. Final setup files for the CG (Woodward wset).
4. Final PLC programming.
5. Final Tag list.

F. Provide an identical copy of all archived files on a USB thumb drive.

3.2 INSPECTION AND WITNESS TESTING - not used

3.3 FACTORY TESTING - not used

3.4 FIELD TESTING

A. Upon completion of field changes the Contractor shall test the switchgear to ensure proper operation.

B. Not Used

C. Not Used

D. Field Testing and Commissioning shall coincide with Substantial Completion. Provide written notice to the Authority in accordance with 01 77 00 Contract Closeout. The Authority reserves the right to witness all tests.

E. Prior to performing tests verify that all changes are complete and all new or revised wiring has been connected and secured.

F. Perform adequate tests prior to Substantial Completion to verify that the switchgear is fully functioning. At a minimum, provide the following operational tests:

1. Verify that the system performs the sequence of operations as specified under Part 4.
2. Verify that multiple generators share load equally and that the load sharing remains stable.
3. Verify all protective relay function settings for the GC.
4. Verify all engine and generator protection functions for each GC.
5. Verify that the PLC starts and stops each generator based on the demand table requirements specified under Part 4.
6. Verify that each VFD operates properly.
7. Verify that each annunciation point operates correctly. For external alarms, simulate the alarm.
8. Verify that all screens on the SCADA display correct data. Use an external computer to verify remote access for Log-Me-In and SCADA.
9. Disconnect 120-volt AC control power in the master section to verify that the system continues to operate without interruption from the 24VDC source and that the server continues to operate from the UPS.

G. Repeat tests during Substantial Completion as required by the Authority to adequately demonstrate satisfactory operation of all functions.

3.5 PACKAGING - not used

PART 4 - MONITORING, CONTROL, AND SEQUENCE OF OPERATION

Notes:

1) ***All paragraphs below shown in light italic text reference existing sequences that will not be revised as part of this work and are included here for reference only.***
2) ***All paragraphs below shown in standard text are to changes or new sequences that are to be performed under this contract.***
3) ***The 2022 switchgear modifications were completed by Electric Power Constructors (EPC). The following files that were prepared as part of that work will be made available to the successful bidder upon request.***
   - ***A) Operation and Maintenance Manual***
   - ***B) PLC Programming***
   - ***C) Tag List***
   - ***D) Woodward Easygen Settings (.wset files)***

4.1 ENGINE MONITORING

A. The GC shall monitor temperatures, alarms and status of the following engine devices:

1. Monitor engine speed, jacket water temperature, lubricating oil pressure, and fuel flow rate from the engine ECU via J1939.
2. Engine Runtime. Log and maintain engine runtime. Time shall be expressed in hours. Note that when the engine ECU is off, the SCADA shall continue to display the Engine Hours at the time the engine stopped. Verify proper reading from new J1939 communication.
3. *Hours until Engine Service. Using the engine runtime from the GC, the PLC will log and maintain hours until engine service required. Time shall be expressed in hours.*
4. *Generator Lockout Switch. Connect key switch to GC Discrete Input 5.*
5. *Oil Level Switch. Monitor status of engine-mounted oil level switch through GC Discrete Input 3 and 4. A normally open switch closes when the oil level drops below or rises above a pre-determined level.*
6. Exhaust Gas Temperature. Monitor exhaust temperature through GC Analog Input 1 via a 4-20mA signal converter. The exhaust gas temperature sensor is a 2-wire 100 ohm RTD. Verify proper reading from new instrument.
7. Air Filter Vacuum. Monitor air vacuum through GC Analog Input 2 via a 4-20mA signal converter. The air filter vacuum transmitter is 4-20mA, -408” H2O to 0” H2O range. Power supply for the signal converter shall be provided from the GC power supply. Verify proper reading from new instrument.
8. Intake Air Temperature. For engines with a charge air cooler, monitor intake air temperature through GC Analog Input 3 via a 4-20mA signal

converter. The intake air temperature transmitter is 4-20 mA, 20°F to 240°F range. Power supply for the signal converter shall be provided from the GC power supply. Signal shall be series looped through the GC and the engine charge air cooler VFD. Verify proper reading from new instrument.

4.2 *AMBIENT AIR TEMPERATURE MONITORING*

A. *The PLC shall monitor through RTD input module the following air temperatures.*

1. *Outside air temperature.*
2. *Inside air temperature.*
3. *VFD section temperature.*

4.3 FUEL AND OIL SYSTEM MONITORING

A. The PLC shall monitor and provide the following:

1. *Plant Total Fuel Consumption and Last Day Tank Fill Cycle Quantity. The PLC shall calculate the total plant fuel consumption and the last day tank fill cycle quantity from the day tank supply meter. Monitor daytank meter pulser through digital input module. The day tank meter pulser provides one pulse per each gallon of fuel.*
2. *Plant Fuel Efficiency. The PLC shall calculate the overall plant fuel efficiency (kWh/gallon). At the end of each day tank fill cycle, divide the total kWh generated since the end of the last fill cycle (from bus power meter) by the gallons of fuel pumped into the day tank during the latest fill cycle.*
3. *Low Fuel Level Alarm. Monitor daytank low level switch status through digital input module. A normally closed contact on the day tank control panel will open when the fuel level in the day tank drops below a preset level.*
4. Generator Fuel Consumption. The PLC shall read the instantaneous fuel flow rate (gallons per hour) and the total fuel consumption (gallons) from the engine ECU via J1939.

4.4 COOLING SYSTEM MONITORING

A. The PLC shall monitor the following:

1. Low Coolant Alarm. Monitor low coolant level switch status through digital input module. A normally closed switch in the coolant piping will open when the coolant drops below a preset level. Verify proper function of new switch.
2. Engine Coolant Return Temperature. Monitor engine coolant return temperature through analog input module via a 4-20 mA, 20°F to 240°F range temperature transmitter. Power supply for the transmitter shall be provided from the switchgear 24VDC power supply. Verify proper reading from new instrument.

4.5 HEAT RECOVERY SYSTEM MONITORING

A. The PLC shall monitor through analog input module the following:

1. Heat Recovery Supply Temperature. Monitor heat recovery supply temperature via a 4-20 mA, 20°F to 240°F range temperature transmitter. Power supply for the transmitter shall be provided from the switchgear 24VDC power supply.

2. Heat Recovery Return Temperature. Monitor heat recovery return temperature via a 4-20 mA, 20°F to 240°F range temperature transmitter. Power supply for the transmitter shall be provided from the switchgear 24VDC power supply.

3. Heat Recovery Pressure. Monitor heat recovery fluid pressure via a 4-20 mA, 0 to 60 PSIG range pressure transmitter. Power supply for the transmitter shall be provided from the switchgear 24VDC power supply.

4. Heat Recovery Flow Rate. Monitor heat recovery fluid flow rate via a 4-20 mA, 0 to 100 GPM range flow meter. Power supply shall be provided from the switchgear 24VDC power supply.

4.6 OIU DISPLAY

The OIU shall provide the operator local access to the demand system setup parameters and shall display all screens required for system monitoring. The OIU shall communicate with the PLC via Ethernet/IP for tag information. The OIU programming and development of all display screens shall be provided by the Fabricator, see SCADA specification 26 23 05. The Fabricator shall program the following functions and display the following data. All multiplication factors or other proportional scaling of the raw data shall be provided by the Fabricator so the data provided will not need to be modified.

A. Demand Control – Generator kW rating (overload level), raise level set point, raise level time duration, lower level set point, lower level time duration.

B. *Generator Control – Amount of time each generator will run off-line before it is shut down (cooldown duration). Enable/disable droop unloading and the kW load or amount of time before going offline.* Provide Prioritization selection for new identical rated generators.

C. Engine/Generator Data:

1. Alarms – All engine/generator alarm conditions.

2. Status of the breaker (open or closed).

3. Phases A, B, and C voltage, current, and power factor.

4. Generator Frequency (Hz).

5. Engine Speed (RPM). Verify proper reading from new J1939 communication.

6. Engine Run Time (hours). Verify proper reading from new J1939 communication.

7. Hours until Engine Service (hours).
8. Engine Water Jacket Temperature (°F). Verify proper reading from new J1939 communication.
9. Engine Exhaust Temperature (°F). Verify proper reading from new instrument.
10. Engine Oil Pressure (PSI). Verify proper reading from new J1939 communication.
11. Engine Air Cleaner Vacuum (in-H2O). Verify proper reading from new instrument.
12. Engine Fuel Flow Rate (GPH). Verify proper reading from new J1939 communication.
13. *Fuel Efficiency (kWh/Gal).*
14. *Total kWh Generated.*
15. Priority Selection.
16. Intake Air Temperature. Verify proper reading from new instrument.

D. *Bus/Station Service Power Data:*
   1. *Bus Phases A, B, and C voltage and current.*
   2. *Bus frequency, kVAR, kW and power factor, total kWh and peak demand.*
   3. *Station service Phases A, B, and C current.*
   4. *Station service kW and total kWh.*
   5. *Trip indication for station service breaker.*

E. *Feeder Data:*
   1. *Position indication for each feeder breaker*
   2. *Trip indication for each feeder breaker.*

F. *Fuel/Oil System Data*
   1. *Plant total fuel use.*
   2. *Plant total fuel efficiency.*
   3. *Plant previous 30 minute fuel efficiency.*
   4. *Day tank last fill quantity.*

G. *Ambient Temperature Data:*
   1. *Outside Air Temperature.*
   2. *Inside Air Temperature.*
   3. *VFD Section Temperature(s).*

H. Engine Coolant Data:
   1. Low coolant level alarm. Verify proper function of new switch.

2. Coolant return temperature. Verify proper reading from new instrument.

I. VFD Data – All data available from each variable frequency drive, quantity as indicated on the communication diagram of the project design drawings.

1. Radiator coolant temperature.
2. Intake air temperature.
3. VFD breaker open.
4. VFD frequency.
5. VFD status (On, Off, Bypass, Running, Fault).

J. *Heat Recovery System Data:*

1. Supply Temperature.
2. Supply Temperature Signal Lost.
3. Return Temperature.
4. Return Temperature Signal Lost.
5. System Pressure.
6. Flow Rate.
7. No Load Warning.
8. Loss of Pressure.
9. Loss of Flow.
10. Recovered Heat Output.
11. Total Recovered Heat Delivered.

4.7 *GENERAL CONTROL SPECIFICATIONS*

A. *The switchgear shall automatically and manually connect and parallel all generators to the switchgear main bus.*

B. *The PLC shall control the automatic load demand system and overall sequencing, starting, and stopping of the engine generators. The SCADA on the OIU shall provide operator access to the demand system and shall display the current demand system status.*

C. *The GC shall control all functions and features of the generator under both automatic and manual control. The GC shall start, stop, synchronize, and provide load sharing of the generator. All GC's shall communicate via CANbus for load sharing. If the communications bus is disabled, each GC shall be fully capable of operating the individual generator without the aid of the PLC.*

4.8 *GENERATION SEQUENCE OF OPERATION.*

A. *A complete and successfully operating system shall be provided for starting, stopping, and paralleling, both automatically and manually, all engine generators. The following paragraphs describe the basic functional requirements*

of the system. The Fabricator shall be responsible for the detailed design to provide a safe and satisfactorily functioning system.

B. *The PLC shall monitor the system load and status and shall control automatic start and stop of each unit. Time delays shall be incorporated in the PLC that shall be adjustable through the OIU Use relays in conjunction with PLC logic for automatic start/stop. Failure of the automatic control system shall not prevent the manual operation of the system to start, stop, or synchronize any one, or all, of the generating units.*

C. *The GC shall be configured according to the parameters indicated in Attachment A, Genset Controller Settings Table, which is appended at the end of this Section.*

D. *The GC shall control engine speed, voltage compensation, synchronization, and generator breaker operation.*

1. *The GC shall perform all engine and generator safety functions. Provide annunciation through the PLC via Point I/O blocks.*
2. *The GC shall perform the cranking and disconnecting of the starter.*
3. *The GC shall turn on the run signal to the ECU then have a 5 second delay before cranking the starter to ensure fuel is up to pressure. During the delay the GC shall display a banner indicating pre-start mode.*
4. *The GC shall make up to 4 attempts to start an engine with a pre-set cranking time of 10 seconds and a 10 second pause between each attempt. If the engine does not start after the fourth time, the OVERCRANK and ENGINE ALARM lamp will illuminate and a FAIL TO START message will appear on the monitoring screen.*
5. *The GC shall control the engine speed using 0.5-4.5 VDC signal to the engine ECU.*
6. *The GC shall control the voltage regulator through the voltage regulator auxiliary voltage bias input.*
7. *Generator Lockout Switch. When in the OFF position the switch shall disable the GC and prevent engine starting.*

E. *Upon activation of the dead bus relay the feeder breaker shall open. This function shall be independent of the PLC and shall operate in all modes.*

F. *Automatic Operating Conditions.*

1. *With the System Mode Switch in the "AUTO" position and each GC in "AUTO" mode, the following sequences of operation shall be performed:*

a. *Dead-Bus Startup: All available generators shall start and come up to rated speed. The generators shall be started sequentially in order of generator number with a 15 second delay between each start signal. The first unit to stabilize will close to the dead bus. The remaining units shall auto-synchronize to that unit and close to the bus in sequence. After 15 second delay after the last generator comes on line, the PLC shall close the feeder breaker*

and energize the feeder. On systems with two feeder breakers the PLC shall close feeder breaker #1 and then after an additional time delay of 15 seconds, the PLC shall close feeder breaker #2. If available, a minimum of two units shall be running and synchronized prior to energizing the feeder. If only one generator is available for operation, the PLC shall use that unit to energize the feeder.

b. *With all available units operating and all GC's in "AUTO" mode, the PLC shall monitor the bus load and determine which unit best fits the demand load. The PLC shall signal the GC to unload and shut down any unit not needed to meet the load.*

c. *When the load exceeds a preset percentage of the prime power rating of a unit, the PLC shall signal the GC to automatically start, synchronize, and connect to the bus another unit. Predetermined demand level set points in the PLC shall determine which unit should be placed online. If that unit is not available, the PLC shall automatically switch to another unit. The PLC shall continue to monitor load and signal the appropriate GC to start, synchronize, unload, and stop as required, to match the appropriate unit to the load.*

d. *Provide lead/lag control for multiple generators of the same capacity.* Provide lead/lag control for all 4 units so the operator can manually select one generator to run preferentially. When a second generator is required or the lead generator faults, the PLC shall select the next unit in numerical order (2--3--4--1).

e. *When any GC is not in "AUTO" mode, the PLC shall skip that unit and switch to the next available unit. Any time a unit's GC is switched from "STOP" or "MAN" to "AUTO" mode, the PLC shall compare the unit with the operating unit and load to determine which unit is more appropriate for the load. If the new unit is more appropriate, the PLC shall send a command signal to the GC to start, synchronize, and connect the unit to the bus and unload and shut down the other.*

f. *When one unit is operating and is dropped from the bus, for any reason, the PLC shall signal all GC's to automatically start all remaining available units and perform a dead bus start up sequence as previously specified. After the bus is stabilized, the PLC shall resume normal demand level control operation and signal the GC's to shut down units not required to carry the load.*

g. *When two units are operating and one of the units is dropped from the bus for any reason, the PLC shall check the raise level and overload level of the unit operating. When the system demand exceeds the raise level of the operating unit, the PLC shall signal the GC to start the next unit and place it in service after the raise level time delay times out. When the system demand exceeds the*

overload level of the operating unit, the PLC shall immediately signal the GC to start the next unit available under the automatic demand system and place it in service within 10 seconds.

h. The GC shall provide a programmable cool down period for each unit prior to engine shut down. Each unit shall operate at rated speed for 3 minutes, and then automatically stop the engine.

i. When the GC of an operating unit is switched to "MAN" mode, the PLC shall signal the GC to start another unit, as specified above. The unit placed in "MAN" mode will continue to run until the GC is switched to "STOP" or placed in "AUTO".

j. When the GC of an operating unit is switched to "STOP" mode, the GC will check to see if any other generators are online. If there is another unit on-line, the GC will shed the load to the other unit, open the generator breaker, and shut off the engine after a cool-down period. If there is no other unit on-line, the generator breaker will open and the engine will shut off after a cool-down period.

k. Upon normal shut down of a unit, all parameters shall be automatically reset to allow the unit to be operated again, either manually or automatically, without further reset action.

2. When the System Mode Switch is switched from the "AUTO" position to the "MAN" position while units are operating in automatic mode, the system shall continue to operate in the present state. If the Mode Switch is moved back to the "AUTO" position, the PLC shall revert to operation in the automatic demand mode.

3. Demand Control: The automatic Demand Control System shall provide 2 levels of starting control and 1 level of stopping control.

The 2nd level of starting control is considered the "overload" level and it shall be equal to the generator prime power rating. When the load equals or exceeds the "overload" level the system shall immediately go to the next higher demand level.

The 1st level of starting control is considered the "raise" level and it shall normally be equal to 90% of the generator prime power rating. When the load equals or exceeds the "raise" level for 20 seconds, adjustable, the system shall go to the next higher demand level.

The stopping control is considered the "lower" level and it shall normally be equal to 80% of the generator prime power rating. When the load is less than the "lower" level for 120 seconds, adjustable, the system shall go to the next lower demand level.

The Demand Control System shall have multiple demand levels. The highest demand level will command all units to start and go on-line.

See Sheet E6.2 on the Drawings for demand control settings.

G. *Manual Operating Condition. When the System Mode Switch is in the "MAN" position each generator GC shall control the respective generator in isochronous mode. The GC must be placed in MAN mode to start, stop, and control the generator. All functions shall be manually executed through the GC. If multiple generators are placed online the GC's shall proportionally share load.*

H. *Engine and Generation Alarm Conditions and Sequences. Note that these apply to both Auto and Manual operation.*

1. Provide the following types of alarm sequences for each condition listed below:

a. Type 1 (Engine Alarm Soft Shutdown):

Upon alarm condition bring another generator on line, unload the first generator, open the generator breaker, run engine through a cool down cycle, shut down engine, and illuminate "Alarm/Lockout" light and associated alarm annunciation light. Alarm light shall remain illuminated until the problem is corrected and the GC is manually reset. Note that this a Class B Easygen alarm with PLC assist to first start another generator and then take the first offline.

b. Type 2 (Engine Alarm Hard Shutdown):

Upon alarm, immediately open the generator breaker and shut down without going through a cool down cycle. Illuminate "Alarm/Lockout" light and associated alarm annunciation light. Unit shall be locked out and alarm light shall remain illuminated until the problem is corrected and the GC is manually reset. Note that this a Class F Easygen alarm.

c. Type 3 (Generation Alarm):

Upon alarm, immediately open the generator breaker, run engine through a cool down cycle, shut down engine, and illuminate "Alarm/Lockout" light and associated alarm annunciation light. Unit shall be locked out and alarm light shall remain illuminated until the problem is corrected and the GC is manually reset. Note that this a Class D Easygen alarm.

2. For the following engine/generator alarm conditions perform the sequence indicated and illuminate the associated alarm light. See Attachment A, Genset Controller Settings Table, for specific alarm and shut down setpoints and time delays. Change settings as indicated in the Table.

a. <u>Low Oil Pressure</u> - Provide a Type 1 soft shutdown when the oil pressure drops to the Alarm level and stays below that level for 5 seconds, or if the pressure transducer signal is lost. Provide a Type 2 hard shutdown when the oil pressure drops to the Shut Down level and stays below that level for 5 seconds.

b. Oil Level - Provide a Type 1 soft shutdown when the oil level switch closes.

c. High Coolant Temperature - Provide a Type 1 soft shutdown when the jacket water temperature reaches the Alarm level and stays above that level for 30 seconds or if the temperature transducer signal is lost. Provide a Type 2 hard shutdown when the jacket water temperature reaches the Shut Down level and stays above that level for 30 seconds.

d. Over Speed - Provide a Type 2 hard shutdown when the engine speed reaches the Shut Down level.

e. Over Crank – Lock out engine if a unit fails to start when the over crank time delay has expired.

f. Running Timeout - Shut down the engine and lock it out if the engine runs without being placed online for 5 minutes, adjustable.

g. Battery Charger Failure – Illuminate the appropriate alarm light when an alarm is received from the battery charger. Note this alarm is for indication only and not shutdown.

h. Air Filter Plugged - Provide a Type 1 soft shutdown when the vacuum on the air filter reaches the Alarm level and stays above that level for 60 seconds or if the vacuum signal is lost. Provide a Type 2 shut down when the vacuum on the air filter reaches the Shut Down level and stays above that level for 30 seconds.

i. High Intake Air Temperature - Provide Type 1 soft shutdown when the intake air temperature reaches the Alarm level and stays above that level for 30 seconds or if the temperature signal is lost. Provide a Type 2 shut down when the intake air temperature reaches Shut Down level and stays above that level for 30 seconds. Note that this only applies to engines with a charge air cooler.

j. High Exhaust Temperature – Illuminate the associated alarm light when the exhaust temperature reaches the Alarm level and stays above that level for 30 seconds or if the temperature signal is lost. Note this alarm is for indication only and not shutdown.

k. Fail to Synchronize - Provide a Type 3 shutdown if a unit fails to synchronize after the preset time delay.

l. Over Current - Provide a Type 3 shutdown on operation of an overcurrent element. See Sheet E6.2 on the Drawings for demand control settings.

m. Under Voltage - Provide a Type 3 shutdown when the voltage reaches the Shut Down level and stays below that level for 5 seconds.

n. Over Voltage - Provide a Type 3 shutdown when the voltage reaches the Shut Down level and stays above that level for 5 seconds.

o. Under Frequency - Provide a Type 3 shutdown when the frequency reaches the Shut Down level and stays below that level for 5 seconds.

p. Over Frequency - Provide a Type 3 shutdown when the frequency reaches the Shut Down level and stays above that level for 5 seconds.

q. Reverse Power - Provide a Type 3 shutdown when the reverse power reaches the Shut Down level and stays above that level for 5 seconds.

r. Charge Air VFD Failure - If an alarm is received from the charge air cooler VFD (either VFD fault or circuit breaker open), illuminate the associated alarm light. Do not shut down or lock out the unit.

3. For the following system alarm conditions perform the sequence indicated and illuminate the associated alarm light:

a. Fire Alarm - Upon receipt of a contact closure from the fire suppression system, all engines shall be shut down immediately without going through a cool down sequence. The system shall remain in a lockout condition and no units shall be started either manually or automatically until the alarm is cleared.

b. Emergency Stop - Upon receipt of a contact closure from the Emergency Stop Pushbutton, all engines shall be shut down immediately without going through a cool down sequence. The system shall remain in a lockout condition and no units shall be started either manually or automatically until the alarm is cleared.

c. Low Coolant Level – Opening of the low coolant alarm contact on the system low coolant level switch, all engines shall be shut down immediately without going through a cool down sequence. The system shall remain in a lockout condition and no units shall be started either manually or automatically until the alarm is cleared.

d. Low Fuel Level - Opening of the low fuel alarm contact on the day tank control panel (separate external panel) indicates a low fuel level condition. The low fuel level indication shall start a time delay relay, 2 hours, adjustable, and illuminate the alarm lamp. If the fuel level has not been corrected by the end of the timed interval all engines shall go through a Type 1 soft shutdown and the alarm lamp shall remain illuminated. The manual alarm reset button on the front of the switchgear master section will reset the timer relay for another interval and place the engines back in

service if timed out. The reset function shall work any time during or after expiration of the timed interval.

e. PLC/ Point I/O Failure - Upon failure of the PLC or the Point I/O ring, the alarm light shall remain illuminated until the system is back in acceptable service.

f. System Not In Auto – When the System Mode Switch is changed from Auto to Manual the alarm lamp shall illuminate. The alarm lamp shall remain illuminated until the Mode Switch is switched back to Auto.

g. Feeder Breaker Trip – Upon over current, the feeder breaker shall immediately trip and the alarm lamp shall illuminate. The generator shall continue to operate at rated speed.

I. *Engine Service Alarm Conditions and Sequences. Note that this applies to Auto operation.*

1. When an engine exceeds 300 service hours perform the sequence indicated below:

a. The Engine "Alarm/Lockout" annunciator is illuminated.

b. The "Service Engine" annunciator is illuminated

c. Demand control starts the next available engine, syncs it to the bus, closes the breaker, and transfers load.

d. A Type 1 shutdown is performed on the engine with service overdue.

e. Upon completion of the required engine service the operator shall press and hold the Service Hours Reset pushbutton for 10 seconds to reset the service interval to 300 hours. The operator shall then press the Alarm Reset pushbutton to clear the engine alarm. Once the service is complete and the alarm is cleared the operator shall put the engine back into Auto mode.

f. *Note: If the required engine service is performed manually prior to the Engine Service Alarm condition, the operator shall follow the procedure above without alarm condition in order to reset the service interval to 300 hours and place the engine back in service.*

4.9 *FEEDER BREAKER SEQUENCE OF OPERATION*

A. *Automatic Operation - When the System Mode Switch is in the "AUTO" position the feeder breaker shall operate under control of the PLC. The feeder breaker can be opened at any time by rotating the feeder control knob to the OPEN position. The PLC shall then perform a dead bus start sequence (start all available generators) and re-close the feeder breaker after the pre-set time delay.*

B. *Manual Operation - When the System Mode Switch is in the "MAN ISOCH" position and the bus is energized, the feeder breaker will operate under manual control. The feeder breaker shall close when the feeder control knob is rotated to*

the CLOSE position and open when the feeder control knob is rotated to the OPEN position.

4.10 VFD SEQUENCE OF OPERATION

A. General VFD Sequence of Operation. Each variable frequency drive shall operate as follows:

1. When the VFD main circuit breaker is closed and the selector switch is in either the “VFD” or “BYPASS” position, power shall be provided to all control devices. Time delay shall be incorporated into the fault alarm such that there is no alarm due to initial powering up of the VFD.
2. When the VFD main circuit breaker is open, the red “VFD Breaker Open” lamp shall illuminate and remote indication shall be provided to the PLC.
3. When the 3-position selector switch is in the "OFF" position, the motor will not operate and power to all control devices will be off.
4. When the 3-position selector switch is in the "Bypass" position, the motor shall operate at full speed and the "Bypass Mode" light shall be on. The VFD will not be in service and the contactor will be open. Provide remote indication that the VFD is in bypass mode from an auxiliary contact as indicated.
5. When the 3-position selector switch is in the "VFD" position, the motor shall operate under control of the VFD and the "VFD Mode" light shall be on. Upon receipt of a run signal the contactor shall close, the motor shall operate, and the “VFD Running” light shall be on.
6. Upon a fault of the VFD the red “VFD Fault” lamp shall illuminate and remote indication shall be provided to the PLC. Placing the selector switch in the “OFF” position shall clear the fault alarm indication.
7. Upon activation of the thermal overload, the VFD main circuit breaker shall trip, the red “VFD Breaker Open” lamp shall illuminate and remote indication shall be provided to the PLC.
8. Engine Coolant Return High Temperature Alarm. When the engine coolant return temperature rises above 190°F for a minimum of 2 minutes, the “HIGH COOLANT RETURN TEMPERATURE” lamp shall illuminate. Lamp shall remain on until master reset button is pressed

B. Radiator Sequence of Operation. Each variable frequency drive for glycol coolant radiators shall operate as follows:

1. The remote temperature sensor will sense Coolant Return Temperature and send a 4-20mA signal to the VFD where 20°F equals 4 mA and 240°F equals 20 mA. The operating temperature setpoints shall be adjustable through the OIU and scaled to display in °F.
2. When the Coolant Return Temperature reaches the PID Reference Temperature setpoint the motor will start at minimum speed and ramp up to the required speed.

3. Using its internal PID control, the VFD will modulate the fan speed as required to maintain Coolant Return Temperature at the PID Reference Temperature setpoint. As the Coolant Return Temperature rises, the VFD will increase the speed of the fan motor up to 100%. Once the fan reaches the Minimum Speed, the VFD will maintain that speed until the Low Speed Time Out expires.
4. When the Low Speed Time Out expires the motor will stop. The motor will remain off until the Coolant Return Temperature rises to the Wake Up Temperature setpoint.
5. Configure the OIU to display the fan speed in percentage and the PID Reference Temperature and Coolant Return Temperature in °F.
6. See Sheet E6.2 on the Drawings for demand control settings.

C. Charge Air Cooler Sequence of Operation. Each variable frequency drive for charge air coolers shall operate as follows:

1. The VFD shall operate the charge air cooler fan motor any time the respective engine is operating. Connect a contact from the respective GC to the VFD run relay as indicated.
2. The remote temperature sensor will sense intake manifold air temperature and send a 4-20mA signal to the VFD where 20°F equals 4 mA and 240°F equals 20 mA. The PID Reference Temperature shall be adjustable through the OIU and scaled to display in °F. The 4-20 mA signal from the sensor shall be looped from the respective engine GCP through the analog input on the VFD. The GCP shall be configured to provide a readout that displays actual air intake manifold temperature in °F.
3. Upon startup, the fan motor shall run for 30 seconds at full speed and then switch to minimum speed and ramp up to the required speed.
4. Using its internal proportional control, the VFD shall modulate the fan speed as required to maintain temperature in the intake manifold at the PID Reference Temperature. Once the fan speed reaches a minimum speed of 10%, the VFD shall maintain that speed as long as the signal from the remote temperature sensor is below the PID Reference Temperature. As the intake manifold air temperature rises, the VFD shall increase the speed of the fan motor up to 100%.
5. If the temperature is below the PID Reference Temperature, the motor shall operate at a minimum speed of 6 Hz as long as the run signal is on.
6. Configure the OIU to display the fan speed in percentage and the setpoint temperature and intake manifold air temperature in °F.
7. See Sheet E6.2 on the Drawings for demand control settings.

4.11 *HEAT RECOVERY SEQUENCE OF OPERATION*

A. *The PLC shall perform the following functions. Note that all heat recovery alarms shall be tied to the dead bus signal to prevent alarm indication when the power system is off-line:*

1. *Heat Recovery No Load Warning. When the heat recovery return temperature is greater than the heat recovery supply temperature for a minimum of 1 hour, the "NO LOAD ON HEAT RECOVERY" lamp shall illuminate. When the heat recovery supply temperature is a minimum of 1°F greater than the heat recovery return temperature the lamp shall turn off.*
2. *Signal Loss. If either the supply temperature or the return temperature signal is lost, the system shall provide the following message on the OIU "HEAT RECOVERY SUPPLY TEMPERATURE SIGNAL LOST" or "HEAT RECOVERY RETURN TEMPERATURE SIGNAL LOST".*
3. *Heat Recovery Loss of Pressure Alarm. When the heat recovery system pressure drops below 15 PSIG for a minimum of 15 minutes, the "HEAT RECOVERY LOSS OF PRESSURE" lamp shall illuminate. When the pressure rises above 18 PSIG the lamp shall turn off.*
4. *Heat Recovery Loss of Flow Alarm. When the heat recovery system flow rate drops below 10 GPM for a minimum of 15 minutes, the "HEAT RECOVERY LOSS OF FLOW" lamp shall illuminate. When the flow rate rises above 15 GPM the lamp shall turn off.*
5. *Recovered Heat Output. The PLC shall calculate the instantaneous rate of energy delivered based on the supply temperature, return temperature, and flow rate. A specific heat of 450 BTUH/GPM-F shall be used for the fluid.*
6. *Total Recovered Heat Delivered. The PLC shall calculate the total energy delivered in units of 100,000 BTU with no decimal places.*
7. *History. The PLC shall maintain a running total of energy delivered.*

SEE ATTACHMENT A, GENSET CONTROLLER SETTINGS TABLE

Note that settings table is based on as built conditions with changes required for new highlighted.

Alarm Classes		NOTES:	Akiachak Startup Settings
	Type 1 = Class B (Warning)		Note: Yellow highlights below indicated changes to be made.
	Type 2 = Class F (Open GCB & Immediate Shutdown)		
	Type 3 = Class D (open GCB & cool down)	Engine Speed Source	Configure MPU 15155 = ECU/J1939

Home Screen data: Engine	RPM, Engine Hours, Oil Pressure, Battery Voltage, Coolant Temperature	Generator/Engine	OK
: Generator	Volts, Power (kW), Freq, PF, AMPS - L1, L2, L3		OK
Custom Screen 1		Custom Program or Turn off button	NOT USED
Custom Screen 2		Custom Program or Turn off button	NOT USED

Configure frequency control	freq ctl init state	proportional gain	integral gain	Notes	Akiachak Startup Settings
Frequency Control Initial State	0.52	2	0.6	5508/5510/5511: use default settings for John Deere & CAT	FOR S60 SET: 5508=0.52; 5510=2; 5511=0.6

Configure general engine	Time	Ign delay	Vlv delay	S/S mode	Pre-mode	Notes	Akiachak Startup Settings
Preglow	5	5	5	Diesel	ALWAYS	powers up ECM 5 seconds before cranking to prime fuel system	OK

Configure Analog Inputs	Input	Type	Value	Sender	Self Ackn	Unit	Class*	Notes	Akiachak Startup Settings
								* Monitor Wire Break/Signal Loss - High/Low	
Exhaust Temp	1	Linear	70-1400	0-20mA	No	F	B	sender value 4-20mA	OK
Air Filter	2	Linear	-408 - 0	0-20mA	No	IWC	B	sender value 4-20mA	OK
Intake Air Temp	3	Linear	20-240	0-20mA	No	F	B	sender value 4-20mA	OK

Configure Analog OUTputs		Type	Filter	Src Min	Src Max	Min Lvl	Max Lvl	PWM lvl	Notes	Akiachak Startup Settings
Speed Bias	Out 1	**V**	Off	0	100	0.5	4.5	10V	JD:Type=V; Min/Max=0.5/4.5; CAT:Type=PWM, Min/Max=10/85; EPG: +/- 3V	S60 Speed Bias Type = V, 0.5-4.5V
Voltage Bias	Out 2	V	Off	0	100	-10	10	10V	CAT CDVR and DVR2000E Bias: +/- 3V, DEC Bias: +/- 10V	DEC Bias: +/- 10V

Configure Discrete Inputs	Input	Delay	Contact	Class	Enabled	Self Ackn	Notes	Akiachak Startup Settings
E-Stop	1	0.2	N.O.	F	Always	No		OK
Start in Auto	2	0.5	N.O.	Control	Always	No		OK
Oil Level Switch (Alarm)	3	5	N.O.	B	Always	No		OK
Oil Level Switch (SD)	4	100	N.O.	F	Always	No	Spare	OK
Stop Mode Lockout Switch	5	0.5	N.O.	F	Always	**Yes**	when stop switch set to RUN, easygen remains in STOP Mode	OK
Idle Mode / Spare / VFD Fault	6	0.5	N.O.	Control	Always	No	Class: Idle Mode = Control, VFD Fault = Class B	SPARE: VFD Fault relocated to IDK1 - Ext Disc Input 8
MCB Open Reply	7	0.5	N.O.	Control	Always	No	DI7 Jumpered for Islanded System	Akiachak power plant is Isolated Grid
GCB Open Reply	8			-			non configurable	--
Remote Acknowledge	9	0.2	N.O.	Control	Always	No		OK
Spare or Baseload	10	0.2	N.O.	Control	Always	No	Flexible Limit 11 used for Running Timeout	SPARE - NOT USED
PLC E-Stop / Master Shutdown	11	0.2	N.O.	F	Always	No	DI11 triggers EasyGen "Master Shutdown" alarm, indicates from Master Section	SPARE - NOT USED
Run w/o Load or spare	12	0.2	N.O.	Control	Always	No	DI12 keeps gen from closing to bus when bus is dead and SMS is not in auto	SPARE - NOT USED

Configure Discr Outputs (relays)	Relays Use Program Logic	Notes	Akiachak Startup Settings
		refer to easygen terminal diagram for function	Relay 5 used for OC 2&3 to Shunt Trip Breaker. Contactor Opened for all Ocs
VFD Fault		**Used in conjunction with Ext DI8, below**	92.02 Gen.volt/freq. ok

Configure external discrete Inputs		Delay	Contact	Class	Enabled	Self Ackn	Notes	Akiachak Startup Settings
							typically used when door-mounted pushbuttons provide easygen input	
VFD Fault	8	0.5	N.O.	B	Always	No	VFD Fault relocated from DI8 to provide future spare EZGN Inputs	

Configure Ctrs/Service Reset value	250 or 300 or 500	Notes	Akiachak Startup Settings
		Verify with Operator if 250hr / 300hr or 500 hr Oil Change Interva	Oil Change Service Interval 500 hours

Configure Interfaces/CANopen	used with IKDs	Notes	Akiachak Startup Settings
		15320 Select ext terminals	set to 1IKD

Configure Measurement					Notes	Akiachak Startup Settings
Busbar / configure transformer	480V	10%	200V	480V	verify Bus PT is 2.4 or 4:1 (2.4=200V, 4=120V)	2.4:1 = 200V
Engine	1800 rpm				Set 1752 and 1758 (kW/kVar) based on Generator Prime Rating	OK
Generator	See Notes		L1 L2 L3	480V	1754 (rated current) set based on Gen Conductor Ampacity	1754: BASE: G1 (3456) =800A; Alt A1: G1 (S60) = 600A; G2-4 (S60) = 600A
Configure transformer	200V	480V	See Notes		1800: Confirm PT ratio 2.4:1; 1806: Primary Rated Current = CT ratio	1800: 200V; 1806: BASE: G1= 800:5; Alt A1: G1= 600:5; G2-4 = 600:5
Mains	See Notes		Phase L1	480V	Set rated kvar, kW & rated current = sum of Gen Prime Ratings	BASE/Alt A1: 1748=1525/1400kW, 1746=1220/1120kVAR, 1785=2296/2108A
Configure transformer	200V	480V	See Notes		1803: Confirm PT ratio 2.4:1; 1807: Mains Rated Current = CT ratio	1803 = 200V; 1807 = 800:5

Configure Monitoring	Monitor	Class	Atmp/Ack	Time	Limit	Enabled	Akiachak Startup Settings
Configure GCB	ON	B	5 tries	2s	--	--	OK
Configure MCB	**OFF**						OK
Configure Synch GCB	ON	D	No	60s	--	--	OK
Engine/Overspeed Level 2	ON	F	No	0.5s	1900rpm	Always	OK
Engine/Speed Detection	ON	E	No	1s	--	Eng.mon	OK
Engine/Start/Stop/SD malfunction	ON	F	No	30s	--	--	OK
Engine/Start/Stop/Start Fail	ON	F	No	--	--	--	OK
Engine/Start/Stop/Unintended stop	ON	F	No	--	--	--	OK

Config Monitoring Flexible Limits	Intput	Monitor	Class	Self Ackn	Enabled	Monitor	Limit	Delay	Notes	Akiachak Startup Settings
Exhaust Temp SD	1	OFF	F	No	Always	Overrun	950F	30	spare, Not Used - easygen does not shutdown engine on high ex temp	OK
Exhaust Temp Alarm	2	ON	A	No	Always	Overrun	900F / 482C	30		OK - UNITS are F
Air Filter Restriction SD	3	ON	F	No	Always	Underrun	-20" WC/-1.47" Hg	30		OK - UNITS are IWC
Air Filter Restriction Alarm	4	ON	B	No	Always	Underrun	-15" WC/-1.10" Hg	60		OK - UNITS are IWC
High Intake Air SD (CAC)	5	ON	F	No	87.70 LM:Eng.mon	Overrun	170F	30	spare, or used for CAC engines	Set Limit to 150F
High Intake Air Alarm (CAC)	6	ON	B	No	87.70 LM:Eng.mon	Overrun	165F	30	spare, or used for CAC engines	Set Limit to 140F
Low Oil Pressure SD	7	ON	F	No	87.70 LM:Eng.mon	Underrun	10PSI/69kPa	5	UNITS are kPa	4296 AM: Set Analog1 to 91.02 AM Internal Value #
Low Oil Pressure Alarm	8	ON	B	No	87.70 LM:Eng.mon	Underrun	14.5PSI/100kPa	5	UNITS are kPa	6006 AM: Set Analog1 to 91.02 AM Internal Value #
High Coolant Temp SD	9	ON	F	No	Always	Overrun	215F / 102C	30	UNITS are C	6016 AM: Set Analog1 to 91.03 AM Internal Value #
High Coolant Temp Alarm	10	ON	B	No	Always	Overrun	210F / 99C	30	UNITS are C	6026 AM: Set Analog1 to 91.03 AM Internal Value #
Running Timeout	11	ON	F	No	Always	Overrun	300s	1		OK - 5 minutes
	setpoints may be either Metric or ANSI units									

Config Monitoring Generator		Monitor	Class	Self Ackn	Enabled	Limit	Delay (sec)	Rest / Hyst	Notes	Akiachak Startup Settings
Current/OC Level 1	--	ON	D	No	Always	100%	3	No		OK
Current/OC Level 2	--	ON	D	No	Always	120%	1	No		OK
Current/OC Level 3	--	ON	D	No	Always	250%	0.4	No		OK
Frequency/OF Level 2	--	ON	D	No	Always	103%	5	--		OK
Frequency/UF Level 2	--	ON	D	No	Eng.mon	97%	5	--		OK
Operating Ranges	--	OFF	--	--	--	--	--	--		OFF - NOT USED
Other Monitoring/Phase rotation	--	ON	F	No	Always	--	--	CW		OK
Other Monitoring/Power factor	--	OFF	--	--	--	--	--	--		OFF - NOT USED
Power/Load Share	--	OFF	--	--	--	--	--	--		OFF - NOT USED
Power/Overload	--	OFF	--	--	--	--	--	--		OFF - NOT USED
Power/Power Mismatch	--	ON	B	No		5%	30	--	used when genset is in Baseload	NOT USED
Power/Gen Unloading mismatch	--	ON	B	No		5%	60	--	60s min delay, 180s max delay	OK - 60s
Power/Rev / Reverse power level 2	--	ON	D	No	Always	-10%	5	--		OK
Power/Unbal Load	--	OFF	--	--	--	--	--	--		OFF - NOT USED
Power/Volt/OV Level 2	--	ON	D	No	Always	110%	5	--		OK
Power/Volt/UV Level 2	--	ON	D	No	Eng.mon	90%	5	--		OK
Mains		OFF??								

Miscellaneous/Free Alarms	Alarm	Class	Self Ackn	Enabled	Monitor	Delay	Notes	Akiachak Startup Settings
Oil Level AL	1	B	No	Always	Disc Inp 3	5	input from DI3	NOT USED
Oil Level SD	2	F	No	Always	Disc Inp 3	100	input from DI3	NOT USED

Miscellaneous/Interfaces		Monitor	Class	Self Ackn	Enabled	Delay	Notes	Akiachak Startup Settings
CAN Interface 2	--	ON	B	Yes	Always	0.2	16187 CAN2 Monitoring	OK
J1939 Amber Alarm	--	OFF	A	No	Always	2	15120 J1939 Monitoring	TURN ON FOR S60
J1939 DM1 alarms	--	OFF	--	Yes	--	--	15156 J1939 Monitoring	TURN ON FOR S60
J1939 Interface (Device 1-3)	--	OFF	--	--	--	--	1919 Monitoring	OFF - NOT USED
J1939 Red Alarm	--	OFF	F	No	Always	2	15115 Monitoring	TURN ON FOR S60

SECTION 26 32 13
ENGINE GENERATORS

Notes:

1) All paragraphs below shown in light italic text reference work that was performed as part of the prior engine-generator purchase contract and are included here for reference only.

2) All paragraphs below shown in standard text are to be performed under this contract.

3) Pacific Power is the fabricator that is providing these engine-generators under the purchase contract. Approved submittals for the engine-generators will be made available to the successful bidder upon request.

PART 1 - GENERAL

1.1 SCOPE

A. The Work included herein shall consist of providing, fabricating, and shop testing complete engine generators as specified herein.

B. The engine generators shall be delivered complete and ready for installation.

C. Provide all accessories as specified for all engine generators plus any additional components listed.

1.2 RELATED REQUIREMENTS

A. Section 26 32 13.20 - Rebuilt Engines

B. Section 26 32 13.50 - Coolers for Engine Generator

1.3 SUBMITTALS

A. Provide submittal for all specified items in a single electronic file in Adobe Acrobat PDF format.

B. Provide complete and accurate drawings of the equipment, including outline drawings and dimensional data which fully describe the height, width, and depth of the equipment; skid construction; schematics; wiring diagrams; and other relevant details.

C. Provide mechanical and electrical performance data for the engine and generator.

D. Provide manufacturer's catalog literature for all accessories and equipment.

E. A torsional vibration analysis (TVA) has been prepared and accepted for the following engine-generator combinations indicated in paragraph 2.2 specific configuration:

1. Detroit Diesel Series 60, 6063TK35 with Newage/Stamford HCI534D.

For any substitute engine generator combinations not specifically listed above, a TVA shall be provided for the proposed engine generator combination within 14-days of contract award.

1.4 REGULATORY COMPLIANCE

The Environmental Protection Agency (EPA) has issued New Source Performance Standards (NSPS) regulations governing use of stationary diesel engines in remote areas of Alaska. These regulations were revised effective June 29, 2021. The following provisions of 40 CFR apply to this solicitation:

A. The Environmental Protection Agency (EPA) has issued regulations governing the rebuilding of diesel engines for controlling and maintaining emissions and performance standards. In order to comply with EPA emissions requirements and also be compatible with the intended service applications, the used diesel engine(s) furnished under this solicitation ***must have a block manufacture date on or before April 1st, 2006****. In addition to the block, the rebuilt engine must also contain at least one other documented major component that is remanufactured.*

B. 40 CFR 60.4211(a)(3) of EPAs New Source Performance Standards (NSPS) stipulates that an Owner or operator of a stationary diesel engine must meet the requirements of 40 CFR part 1068, as they apply. ***A pre-2007 model year engine must be certified to at least a nonroad Tier 1 emissions standard.***

C. 40 CFR 1068.120 describes requirements for rebuilding engines. ***The rebuild requirements of 40 CFR 1068 apply to engines furnished under this solicitation****.*

In order to comply with EPA emissions requirements and also be compatible with the intended service applications, the diesel engines furnished under this solicitation shall utilize a block manufactured on or before April 1, 2006, shall be certified nonroad minimum Tier 1, and shall meet the other requirements of these specifications.

1.5 QUALITY ASSURANCE

A. Equipment shall not have been in service at any time prior to delivery, except as required by tests.

B. All equipment shall be designed, fabricated, and assembled in accordance with recognized and acceptable engineering and shop practices. Individual parts shall be manufactured to standard sizes and gauges so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable.

C. Equipment and components furnished under these specifications shall be in accordance with the requirements of applicable UL, NEC, IEEE, NEMA, and ANSI standards.

1.6 FABRICATOR QUALIFICATIONS

The engine generators shall be furnished, assembled, and tested by a qualified fabricator (Fabricator) who is regularly engaged in the business of providing diesel engine driven generator equipment.

A. The Fabricator must have staff with extensive experience in packaging diesel engine driven electrical generators. A list of five successful installations that key

staff have worked on may be requested by the Authority after the bid opening and prior to award in order to verify Fabricator qualifications. The list must include installation date, description of installation, and a reference contact for each installation.

B. The Fabricator must maintain a competent service organization that is available for field service calls. A description of the organization including resumes of key personnel may be requested by the Authority after the bid opening and prior to award in order to verify Fabricator qualifications.

C. The Fabricator must have a fabrication facility with adequate space and appropriate equipment as required to perform the work. The Authority may inspect the Fabricator's shop after the bid opening and prior to award in order to verify Fabricator qualifications.

1.7 FABRICATOR WARRANTIES

A. The Fabricator shall warrant the work for a period of not less than one-year after energization of the equipment or 18 months after delivery to the F.O.B. point, whichever comes first.

B. In the event of equipment or component failure during the warranty period, the Fabricator shall repair or replace such defective equipment or components and bear all associated costs. Costs shall include material, parts, and labor. The Fabricator will be allowed to charge for travel and per diem expenses within Alaska related to warranty service at actual cost plus 10%. The Fabricator shall assist the Authority as directed to determine the cause of failure and pursue manufacturer's warranties to the extent necessary to obtain replacement equipment and provide proof of action taken upon request.

C. Provide a nametag on each piece of equipment that clearly identifies the party responsible for the warranty. Nametag shall include the name, address, and phone number, and shop order or Fabricator's serial number.

1.8 OPERATION AND MAINTENANCE MANUALS.

A. Provide one (1) complete bound set of operation and maintenance (O&M) manuals for each unique engine generator unit. Identification symbols for all replaceable parts and assemblies shall be included. Provide manuals for the following equipment:

1. Engine.
2. Generator.
3. Voltage Regulator.
4. All accessories.

B. For each engine provide all available factory service publications including parts manuals, service manuals, component technical manuals, etc.

C. For all other components of each engine generator unit provide:

1. *Equipment function, normal operating characteristics, and limiting conditions.*
2. *Assembly, installation, alignment, adjustment, and checking instructions.*
3. *Operating instructions for start-up, routine and normal operation, regulation and control, shutdown, and emergency conditions.*
4. *Lubrication and maintenance instructions.*
5. *Guide to "troubleshooting."*
6. *Parts list.*
7. *Outline, cross section, elevation, and assembly drawings*
8. *Engineering data including all mechanical and electrical performance characteristics.*
9. *Complete AC connection and three-line diagrams.*
10. *Complete DC schematics including voltage regulator, fuel injector pump, sensors, switches, fuses, and all other devices.*

D. *The operation and maintenance manuals shall be in addition to any instructions or parts list packed with or attached to the equipment when delivered, or any information submitted for review.*

E. *Bind materials in locking three ring "D" style binders. Binder capacities shall not exceed 3 inches, nor shall material included exceed the designed binder capacity. If material to be bound exceeds capacity rating, multiple volumes shall be furnished. Binder capacity shall not be less than approximately 1/2 inch greater than the thickness of the material within the binder. Permanently label with project information on the front cover and edge.*

F. *Where reduction is not practical, larger drawings shall be folded separately and placed in envelopes, which are bound into the manuals. Each envelope shall bear suitable identification on the outside.*

G. *All information in the O&M manuals shall be new and original publications.*

PART 2 - PRODUCTS

2.1 GENERAL CONFIGURATION AND MANUFACTURERS

A. *All units shall be complete skid mounted engine generators utilizing all new components except where allowance is made for rebuilt engines.*

B. *All units shall be configured as specified herein and shall include all accessories as indicated.*

C. *Engines shall be rated for prime power duty at the horsepower (shaft) and electrical kilowatt (generator) ratings indicated for each unit. All engines shall be 1800 RPM unless specifically indicated otherwise. All starting and control systems shall be 24 VDC.*

D. *Provide engines of the manufacturer and model as indicated in Paragraph 2.2 - Specific Configuration, no other substitutes except as specifically noted below.*

E. Approved equal substitutions of engines will be allowed only by Engineer's approval. To obtain approval, submittals must clearly demonstrate the following:

1. *The substitute engine must meet all of the requirements of Paragraph 2.3*
2. *The substitute engine manufacturer must have at least one factory authorized service representative with a permanent shop in Southcentral Alaska.*
3. *The size and weight of the substitute engine must not exceed that of the specified engine by more than 10%.*
4. *The physical layout, piping connections, and service access areas of the substitute engine must be sufficiently similar to that of the specified engine so that no major changes will be required to the power plant design.*
5. *The substitute engine must meet or exceed the fuel efficiency rate of the specified engine. Provide fuel curve showing fuel consumption (kWh/gallon) at 25%, 50%, 75% and 100% of prime rated capacity.*
6. *The substitute engine must be provided with a single jacket water cooling circuit with a separate air-to-air aftercooler. Low temperature liquid aftercoolers will not be accepted.*
7. *The substitute engine must meet or exceed the heat rejection to the jacket water circuit of the specified engine.*
8. *The engine must not be equipped, or require to be equipped, with any exhaust emissions equipment including Exhaust Gas Recirculation, Diesel Oxidation Catalyst, Diesel Particulate Filter, or Selective Catalytic Reduction.*

F. Provide Newage/Stamford generators as indicated in the Specific Configuration requirements that follow or Kato equal, no other substitutes except as specifically noted below. The generator shall be rated for continuous output at the value and temperature rise indicated at 0.8 power factor. The generator shall be 2/3 pitch winding, 3 phase, 277/480 volt, 12 lead reconnectable, with PMG excitation.

G. If a Marathon or other generator of equivalent or greater capacity is provided it shall be modified and upgraded prior to installation. Upon receipt of the generator from the factory it shall be taken to a manufacturer's authorized warranty service shop and the following tasks shall be performed:

1. *Remove rotor assembly, bearing, exciter, diode plate and inspect for defects.*
2. *If any defects are encountered immediately file a warranty claim with the manufacturer.*
3. *Electrically test all windings.*
4. *Encapsulate exciter rotor winding with epoxy.*
5. *Replace bearing prior to reinstalling exciter. Bearing shall meet the minimum requirements of these specifications.*
6. *Replace diode plate mounting bolts with grade 8 bolts and use Loctite.*

7. *Insulate main rotor leads with phase paper. Secure leads with heat shrinkable polyester tape using epoxy on all knots.*
8. *Spray coat all windings with epoxy.*
9. *Dynamically balance and re-assemble.*
10. *Test at rated RPM.*

2.2 SPECIFIC CONFIGURATION

Furnish Engine Generators of the capacity and configuration listed below:

No. 1: ***Engine*** *- Detroit Diesel, Series 60, 12.7 liter, 550 HP at 1800 rpm, Model 6063TK35, DDEC IV, no substitutes, rebuilt in accordance with Specification 26 32 13.20. All starting and control systems shall be 24 VDC.* ***Generator*** *- Minimum 470kW continuous at 105°C rise, Newage/Stamford HCI-534D or Kato equal.*

2.3 ENGINE

A. Provide a skid mounted, 1800 RPM, diesel engine complete with generator/alternator and ready for service.

B. In final assembly, engines shall be configured without a charging alternator, fan, radiator, accessory reduction gear drive, or any other accessories not specifically required by these specifications.

C. Engine Control: All engine control functions will be performed by remote switchgear which will perform all start/stop, speed, paralleling, and load sharing control functions in addition to all engine function monitoring and safety shut downs. Engine manufacturer's electronic control panels shall not be provided.

D. ECM and Isochronous Governor: Provide an Engine Control Unit (ECM) for interface with the switchgear. Mount in a readily accessible location on the engine or on the generator enclosure. Provide service loops in wiring harnesses as required.

E. Program the ECM for nominal 1800 RPM operation at 2.5 VDC input, variable RPM above and below 2.5 VDC input, and idle operation at input less than or equal to 0.5 VDC.

F. Fuel: The engine shall be capable of satisfactory performance on No. 1 or No. 2 Ultra Low Sulphur Diesel (ULSD) Fuel.

G. Fuel System: The engine shall have manufacturer's engine mounted fuel filters with replaceable elements. Fuel supply and return lines shall be routed to the front of generator skid for field connection to the plant piping. See Drawings for detailed configuration.

H. Lubrication: The engine shall have a gear type lubricating oil pump for supplying oil under pressure to the main bearings, crankshaft bearings, pistons, piston pins, timing gears, camshaft bearings and valve rocker mechanism. Threaded spin-on type, full flow lubricating oil filters shall be provided. The oil drain line shall be

routed to the front of generator skid for field connection to the plant piping. See Drawings for detailed configuration.

I. *Fuel Pump Gear Lubrication: The engine shall be modified to provide positive oil pressure lubrication to the fuel pump gear drive.*

J. *Oil Level: The engine shall have a combination visual oil level site gauge with adjustable high and low level switches, Murphy L129CK1 or approved equal. Mount on rubber isolators and connect to engine with minimum #8 hoses. Carefully route upper vent hose to avoid any low point traps and connect directly into crankcase. Route lower hose to a connection directly on the oil pan. Do not tee lower hose into oil drain line. See Drawings for installation detail.*

K. *Fuel and Oil Hoses: All hoses for fuel, lube oil, vents, mechanical gauges, etc., shall be Aeroquip type FC300, Eaton Weatherhead H569 or approved equal. Minimum hose size shall be 5/16" (#6). Provide with re-useable JIC swivel type fittings. Push-on or barb type hose connections will not be allowed. Route hoses to avoid wear points and to ensure access to normal service points on the engine. Securely support hoses from engine and skid.*

L. *Glycol Hoses: All hoses for glycol shall be Teflon hose with stainless steel outer braid, Eaton Weatherhead H243 or approved equal. Provide with re-useable plated steel straight JIC swivel ends with NPT adapters. Route hoses to avoid wear points and to ensure access to normal service points on the engine. Securely support hoses from engine and skid.*

M. *Wire Loom: All wiring for control and instrumentation shall be routed in plastic loom. Provide tee fittings for all branch connections. Route loom to avoid wear points and to ensure access to normal service points on the engine. Securely support loom from engine and skid.*

N. *Protective Guards: All moving parts and hot surfaces shall be provided with protective guards in accordance with U.L Standard 2200.*

O. *Air Cleaners: The engine shall be provided with a metal canister air cleaner with a reusable oiled cotton stock element. John Deere, K&N, Parker, or approved equal. Open disposable type air filters or plastic canisters will not be accepted. Provide visual air restriction indicator, 1/8" MPT, 20" water column limit, manual reset, Donaldson X002251 or approved equal.*

P. *Starting: The engine shall be equipped with a 24 VDC electric starting system. The starting system shall be of sufficient capacity to crank the engine at a speed which will allow full diesel starting. A 24 VDC starter auxiliary relay shall be remote mounted in control wiring junction box. John Deere AT145341, Caterpillar 9X-8124, or Denso equal.*

Q. *Control Power: To provide 24VDC power to the control wiring junction box, a 30A circuit breaker with switch shall be mounted on the engine in the vicinity of the starter, Cooper 187-030-F-00 or approved equal. A second identical circuit breaker shall be installed to provide dedicated power to the engine ECU.*

R. Sensors and Safety Controls: The engine shall be equipped with the following:

1. Air Filter Vacuum Sensor. 4-20mA, -30"Hg to 0 PSIG, 1/8" MPT. Noshok 100-30V-1-1-1-7 or approved equal.

2. Exhaust Gas Temperature. High temperature (650°C) 2 wire 100 ohm RTD with 2' high temperature lead wire, spring strain relief, Deutz DT06-2S-E008 male connector, Deutz DT04-2P-E008 female connector, and compression fitting with 1/4" MPT adapter. Eustis RGB7B203B02X0 with NS44 adapter or approved equal. See note 2 below for installation.

3. Intake Air Temperature Sensor. 4-20mA, 20-240°F, 1/2" MPT. Noshok 800-20/240-1-1-8-8-025-6 or approved equal. Note that this is only installed on units with charge air coolers as indicated in the prior Specific Configuration requirements. See note 3 below for installation.

Note 1. The above listed sensors shall be independent from engine gauges and all other devices and sensors. Where standard factory furnished sensors for the above listed functions are required for operation of the ECU, provide additional duplicate sensors as specified. All sensors shall be installed on the engine and wired to terminal blocks as indicated in the Drawings.

Note 2. Upon completion of shop testing, if exhaust gas temperature sensor is installed in flex remove sensor and tywrap to engine in a secure location for shipping.

Note 3. Intake air temperature sensor will be field installed in charge air tubing off the engine. Provide min 6' service loop of wire in loom for field routing and termination. Tywrap sensor to engine in a secure location for shipping.

S. Safety Controls: The automatic switchgear provided by others shall be equipped with automatic safety controls which will shut down the engine in the event of high jacket water temperature (primary), high lubricating oil temperature, low lubricating oil pressure, high or low lubricating oil level, high air filter vacuum, and engine overspeed based on J1939 CANbus and engine mounted sensors. Note that a single low water shut down switch will be installed on the external cooling system.

2.4 EXHAUST FLEX

A. A flexible, continuous, 18 inch long stainless steel exhaust flex connector with welded connections shall be furnished for each engine, Alaska Rubber, DME, Harco, or approved equal. Provide an appropriate engine mating connection at one end and an ASA 125 lb. flange at the opposite end sized as indicated below. Slotted cuff connections are not acceptable. Provide gasket, bolts, v-clamp, or any other components required for connection to the engine. Provide a 90° elbow where required for the flex to be installed vertically. Note that if the exhaust temperature sensor cannot be installed directly in the outlet connection, a 1/4" FPT stainless steel thread-o-let shall be welded into the flex between the engine connection and the corrugated hose.

1. *Provide 6" flanged end for all engines.*

2.5 ACCESSORIES

Provide the following accessories for each engine generator (unless otherwise indicated):

A. *Spring vibration isolators complete with mounting hardware, four (4) per each unit, sized for the complete engine generator unit weight. Caldyn Type RJ or approved equal.*

B. *Drip pan, 16-gauge galvanized sheet metal, liquid tight joints, 20" wide by 50" long by 1" high.*

C. *Minimum 800 cold crank amp 12-volt starting batteries, two for each engine. Batteries shall be sealed maintenance free, Optima Red Top NAPA Part Number BAT N993478RED or approved equal. Furnish and install battery racks sized to hold the batteries with hardware to secure the battery for shipping.*

D. *Each engine shall be provided with two each #2/0 AWG arctic flex battery cables, 15 ft. long, plus one each #2/0 AWG by 12-inch long jumper. All cables shall include compression type terminal ends shipped loose. One battery cable shall be red for the positive lead and the other shall be black for the negative lead. The jumper shall be black with red heat shrink one end. Provide plastic terminal covers.*

2.6 COOLING SYSTEM

A. *Engine cooling shall be by remote radiators (provided by others) with coolant circulation driven by the engine coolant pump.*

B. *Glycol Filter: Provide screw-on canister style filter element with 3/8" NPT connections on head, Wix #24019 head with #24069 element or approved equal. Mount head on steel bracket fixed to front or side of engine. Connect to engine with glycol hoses with 3/8" NPT quarter turn gauge cock isolation valves. Connect inlet to thermostat housing and connect outlet to water pump inlet. On thermostat housing connection provide 3/8" NPT tee fitting with plug for field connection of pre-heat line by others. When filters are provided as part of engine manufacturer's assembly the standard factory filters may be substituted for the above specified parts; however, equivalent mounting, connections, and isolation valves shall be included.*

2.7 DIAGNOSTIC GAUGE

A. *Provide a J1939 multi-function monitoring panel, Murphy PV101-C or approved equal. The panel must not be configured for Tier 4 engines and must be programmed specifically to read data from the specified engine. The panel shall be mounted on the side of the control wiring junction box. Provide with wiring harness as required for connection to ECU and battery power.*

2.8 GENERATOR/ALTERNATOR

A. *Generator shall be a single bearing, four pole, synchronous type. Generator shall be directly connected to the engine flywheel housing and driven through a flexible*

coupling to ensure permanent alignment. Windings shall 2/3 pitch, random wound, and lashed at the end turns to provide superior mechanical strength. The generator shall be brushless, 12 lead reconnectable, three phase, 60 Hz, 1800 RPM, and connected for 277/480V service.

B. The rotating assembly shall be dynamically balanced to less than 2 mils peak to peak displacement and shall be designed to have an over speed withstand of 125% of rated speed for 2 minutes in accordance with NEMA MG1-32.

C. Cast iron end brackets with bearing bores machined for an O-Ring to retard bearing outer race rotation and fabricated steel frames shall be used. Bearings shall be pre-lubricated, double shielded, ball type, single row Conrad, C3 fit. Minimum B-10 bearing life shall be 30,000 hours for single bearing units.

D. Generator wiring diagram shall be permanently installed on the inside of the terminal enclosure cover.

E. The insulation system of both the rotor and stator shall be of NEMA Class H materials or better and shall be synthetic and non-hygroscopic. The stator winding and rotor shall be coated with resin plus an epoxy sealant for extra moisture and abrasion resistance.

F. The generator shall be equipped with a permanent magnet generator (PMG) excitation system. The system shall supply a minimum short circuit support current of 300% of the rating for 10 seconds. The rotating exciter shall use a three-phase full wave rectifier assembly with hermetically sealed silicon diodes protected against abnormal transient conditions by a multi-plate selenium surge protector. The diodes shall be designed for safety factors of 5 times voltage and 1.5 times current.

G. Voltage Regulator: The voltage regulator shall be compatible with the PMG excitation and shall control the output of the brushless AC generator by regulating the current into the exciter field. The regulator shall include an autotuning feature with two PID stability groups. The voltage regulation shall be minimum 0.25% accuracy. Basler DECS-150 5NS1V1N1S or approved equal.

1. *The voltage regulator shall be configured for rear mounting and shall be mounted inside of the control wiring junction box as indicated in the Drawings.*
2. *The voltage regulator shall be connected to the 3 phase voltage sensing, field, and PMG on terminal blocks in the control wiring junction box as indicated in the Drawings.*

H. Nameplate: On the side of the generator housing, provide a nameplate that provides the following information. The nameplate shall be located in a clearly visible location and shall not be obscured by the terminal enclosure or located such that the nameplate is behind any part of the generator or housing.

1. *Rated kW as specified.*
2. *Full load amps.*
3. *Rated voltage, phase, and power factor.*

4. *Rated voltage and current of the field exciter.*

I. *Each generator shall be provided with a standard sized terminal compartment. The terminal compartment shall be provided with a load connection block to allow easy field termination of the load, neutral, and ground conductors. The generator neutral connection shall not be connected to the mounting skid or the generator frame. The neutral shall be isolated for field grounding by others at the switchgear or transformer.*

J. *The generator shall be self-ventilated with a direct drive one-piece, cast aluminum alloy, unidirectional internal fan for high volume, low noise air delivery. Airflow shall be from opposite drive end through generator to drive end. The exciter shall be in the airflow.*

K. *Replace the standard factory hardware used for attachment of the generator coupling disc to the engine flywheel with Grade 8 hex head bolts. Install heavy gauge washers, tighten and torque bolts in accordance with manufacturer's specifications, and paint pen mark after final torquing.*

2.9 MOUNTING SKID

A. *The engine generator shall be equipped with a suitable full length base frame (skid) for mounting the engine and generator. The skid shall be constructed from structural steel channel with ends beveled and plated for short term skidding and rolling of unit.* ***No formed or stamped steel base frame designs will be accepted.*** *Provisions shall be made so that the generator can slide back a minimum of 12" to access the rear main seal on the engine without removing the generator end off of the skid or requiring the use of blocking to support it. See the Drawings for skid design and layout.*

B. *Provisions shall be made in the skid for the mounting of vibration isolators at locations as indicated on the Drawings. Wedge washers shall be welded in place on the skid to provide a flat surface for the vibration isolator lock nuts.*

C. *Each engine generator shall be placed on the skid at the location indicated on the Drawings.*

2.10 WIRING INTERFACE WITH REMOTE SWITCHGEAR

A. *A control wiring junction box shall be furnished for each generator as follows:*

1. *The junction box shall be steel, NEMA 12, with hinged door and screw down latches. B-Line, Hoffman or approved equal. See Drawings for size.*

2. *The junction box orientation, device layout, terminal block layout, and labeling shall be as indicated on the Drawings.*

3. *Install the voltage regulator and the instrument panel as previously specified in the junction box as shown on the Drawings.*

4. *All wiring for control, monitoring, and safety shall be terminated on terminal blocks within the control wiring junction. The terminals shall be IDEC or approved equal, BNH15LW except where indicated 50A provide*

BNH50W. Terminals shall be mounted on DIN rail with heavy duty end anchors. Each terminal block and all wire terminations shall be individually numbered as indicated.

5. *The generator control wiring shall be provided with a maintenance loop of sufficient length to allow the generator to be slid back 12" minimum for maintenance of the engine without being disconnected.*

6. *The engine control wiring shall be connected to the ECU mounting panel using manufacturer's standard connectors.*

B. *The DC power supply for the switchgear shall be provided from the engine starting batteries through the engine-mounted circuit breaker. Terminals shall be provided as indicated on the Drawings for supplying 24 VDC to the switchgear. All remote indication will be 24VDC, 4-20mA, or as otherwise indicated. All switches used for remote indication shall be rated for operation at 24 VDC.*

C. *Label each control wiring junction box with the serial number of the associated engine. Connect to the engine and generator prior to performing the load test.*

2.11 PAINTING

Each unit shall be painted Detroit Diesel Blue, #TTF SD15237SP including engine, skid, and generator.

2.12 SPARE FILTERS

In addition to the filters installed on the engines, provide the following quantities of replacement filters for each engine plus break in oil. Package spare filters and oil in boxes and label each box with the engine model and the community name.

A. *Twelve (12) oil filters.*

B. *Four (4) fuel filters.*

C. *Two (2) air filters plus one air filter service kit.*

D. *Four (4) glycol filters.*

E. *Break in oil identical to oil installed in engine. One (1) gallon for each engine.*

PART 3 - EXECUTION

3.1 FACTORY TESTS

A. *Prior to shipment, the engine generator Fabricator shall perform factory tests on each unit at the shop where the engine generator is assembled. Supply sufficient notice to the Authority prior to performing tests. The Authority reserves the right to witness all tests. Test procedures shall conform to ASME, IEEE, and ANSI standards, and NEMA standard practices section on testing, as appropriate and applicable*

B. The Fabricator shall provide all required mechanical and electrical equipment including but not limited to fuel supply, radiator, charge air cooler, exhaust, load bank, voltage regulator, etc.

C. The Fabricator shall provide all required measuring and indicating devices. All devices shall be certified correct or correction data furnished for the device.

D. Prior to performing the load test, the engine generator Fabricator shall perform the following:

1. Verify that engine is filled with break in oil. The break in oil shall be approved by the engine manufacturer for 100 to 500 hour run time. Pull a sample of the clean lube oil installed in the engine.

2. Perform hydrostatic test on water jackets to ensure that water seals and water jackets are watertight. Test report shall indicate pressure at which test was made and the results.

3. Connect engine coolant piping to radiator or heat exchanger. Note that all engine coolant circulation must be performed by the engine water pump without the benefit of any external pump or pressurized system.

4. Install thermometer to monitor coolant return temperature entering the engine for comparison against the coolant discharge temperature.

5. Connect engine air piping to charge air cooler.

6. Connect engine and generator to the associated control wiring junction box.

E. Engine Tests: Perform customary commercial factory 8 hour load test on each engine generator including, but not limited to, the following:

1. Prior to the 8 hour run, connect the ECU to an analog throttle input and verify that it is correctly responding including 900 RPM idle operation at 0 VDC, 1800 RPM at 2.5 VDC, and variable RPM above and below 2.5 VDC. Note confirmation on the load test.

2. Take a screen shot to document the ECU throttle programming and include with the load test reports for each engine.

3. Place engine in continuous operation without stoppage for a period of not less than eight hours. Operate not less than one hour at each load point (1/2, 3/4, and full load) and 1 hour at 110 percent of rated load. If stoppage becomes necessary during this period, repeat the 8-hour run.

4. Record the following data at the start, at 15-minute intervals, and at the end of each load run: Hz, kW load, fuel consumption, exhaust temperature, intake air temperature, jacket water temperature, coolant return temperature, lube oil temperature, lube oil pressure, manifold (boost) pressure, and crankcase vacuum.

5. Tests shall indicate satisfactory operation and attainment of guarantees and specified performance.

F. Provide completed test reports to the Authority. Reports shall include but not limited to the following:

1. Complete 8-hour load test data.

2. Screen shots of throttle programming and confirmation of response.

3. Photos of split oil filters as described below.

4. Laboratory analysis of the clean lube oil sample and the sample pulled after the test as described below.

3.2 PREPARATION AND SHIPPING

A. Upon completion of testing perform the following steps to prepare for shipping:

1. Flush the cooling system with extended life 50/50 ethylene glycol mix, Shell Rotella ELC or approved equal. Install covers over the connections. Note that if testing was performed with extended life ethylene glycol solution the engine does not need to be flushed.

2. Pull a sample of the lube oil. Send to a laboratory for analysis. Include the sample of clean lube oil pulled prior to the load test for reference comparison.

3. Remove oil filter, split case, inspect contents and take photo to document. Note that if excessive or unusual metal fragments are found contact the Authority immediately. Install new oil filter.

4. Turn the engine at cranking speed with throttle control in full off position and use a sprayer to add a mixture of 50% VCI (volatile corrosion inhibitor) oil and 50% 30-weight engine oil into the air intake or turbocharger inlet.

5. Continue spraying the VCI-oil mixture into the air intake or turbocharger inlet long enough to ensure the cylinders and exhaust ports are coated.

6. Clean the outside of the engine and inspect and ensure that the engine and generator are covered by good quality paint. Correct any deficiencies.

7. Spray a thin amount of VCI-oil mixture on the flywheel, ring gear teeth, and starter pinion. Install the covers to keep the vapors in.

8. Install a positive mechanical seal consisting of a fitting plate and gasket on exhaust opening. Then install all covers and/or tape on any other openings. Ensure all covers are air tight and weatherproof. Use waterproof, weather resistant type tape. Do not install tape in such a manner as will damage paint when the tape is removed. Install a mechanical protective device over any protruding items, which may be vulnerable to damage during transportation.

B. After preparing the equipment for shipping, package each engine generator separately as follows:

1. *Coil wiring harnesses and secure control wiring junction box and ECU mounting panel to generator.*
2. *Put a waterproof cover over the entire engine generator unit. Make the cover tight, but loose enough to let air circulate around the unit to prevent damage to exposed metal parts from condensation.*
3. *All other included components (spare parts, loose items, etc.) shall be packaged individually in waterproof wrapping. Each individual component package shall then be packed in a box or crate, and each box/crate wrapped in waterproof wrapping to prevent corrosion to the components during extended periods of outside storage. All boxes or crates shall be palletized onto the minimum number of pallets, as required for the quantity and size of the boxes/crates.*
4. *Each component package shall be sequentially numbered and marked for ease of identification. Each box/crate shall also be marked with a unique identifying number. Each pallet shall be provided with a packing slip identifying the number of each box/crate on the pallet, in addition to a listing of each component package within each box/crate. Each pallet shall be marked (with two inch high letters/numbers), on all four sides and the top, with the project or community name.*
5. *Two copies of the packing slip identifying the quantity of pallets, the crates/boxes on each pallet, and the listing of component packages within each box/crate shall be provided to the Authority.*

C. *Final payment will not be made until completion of the following:*

1. *All engine-generators and all loose ship parts have been accepted by the Authority at the F.O.B. Point.*
2. *All required manuals have been accepted by the Authority at the F.O.B. Point.*
3. *All test reports have been received and approved by the Authority.*

3.3 INSTALLATION AND COMMISSIONING

A. Install the engine generators as indicated on the Drawings.

B. Adjust spring vibration isolators as indicated on the Drawings.

C. Ensure correct fit and alignment of all connections to not cause stress on engine connections or wear on piping, flex, hoses, conduit, wiring, etc.

D. Have the Fabricator that provided the engine-generators or their authorized representative perform initial startup, test run, and final inspection as required to ensure full authorization of factory warranty by the Fabricator.

E. Assist the Authority with functional testing and commissioning as required by the Contract Documents.

END OF SECTION

SECTION 26 32 13.20
REBUILT ENGINES

Note: ***The rebuilt engines specified herein are included in the Owner Furnished Materials. This specification is provided here for information and coordination only.***

PART 1 - GENERAL

1.1 SCOPE

A. The Work consists of furnishing diesel engines as specified herein.

B. The engines shall be used and shall be rebuilt to original equipment manufacturer (OEM) tolerances, durability, and quality.

C. The engines will be packaged with generators in accordance with Specification 26 32 13.10 for use in a prime power, 1800 rpm, application.

D. The Owner will not be furnishing cores. The Fabricator or Rebuilder shall furnish cores in compliance with Paragraph 1.4 A, Regulatory Compliance.

1.2 RELATED REQUIREMENTS

A. Section 26 32 13.10 – Engine Generators

1.3 SUBMITTALS

A. The Rebuilder shall furnish the following a minimum of seven days prior to beginning final engine assembly:

1. An action plan specifying all work to be performed on existing engine components and a complete list of all new and remanufactured parts to be installed on each engine, with indication of new/remanufactured status as specified in Attachment A.

2. All NDT inspection reports, existing component and original OEM dimensions and clearances, recorded by engine serial number for each engine. Note that if the Rebuilder is furnishing OEM factory remanufactured engines the above information may not be available prior to final assembly. The information shall be provided as soon as available. If the results of the above inspections do not meet the requirements of these specifications for any engine that engine will be rejected.

B. The Rebuilder shall provide each submittal in a single electronic file in Adobe Acrobat PDF format. The file shall be e-mailed to the Engineer.

1.4 REGULATORY COMPLIANCE

A. See Specification 26 32 13.10 for engine regulatory compliance requirements.

1.5 QUALITY ASSURANCE

A. Engines shall not have been in service at any time after rebuilding and prior to delivery except as required to comply with Part 3.1, Factory Tests.

B. All new and refurbished parts, castings, assemblies and components furnished under these specifications shall meet original OEM specifications and be provided with Rebuilder's warranty.

C. All work shall be performed by certified and experienced technicians trained and authorized to work on the engines being rebuilt and furnished.

D. All nondestructive testing (NDT) of castings and parts provided under these specifications to be performed to ASTM standards. All NDT inspections shall be performed by a Level II or Level III certified NDT inspector using a certified Quality System.

E. Where items are described as factory rebuilt or remanufactured, the term factory shall mean a machine shop that is regularly engaged in the practice of remanufacturing the type of items required.

1.6 REBUILDER QUALIFICATIONS

The rebuilt engines shall be furnished and assembled by a qualified Rebuilder who is regularly engaged in the business of rebuilding heavy duty diesel engines to original OEM specifications.

A. The Rebuilder must have staff with extensive experience in rebuilding diesel engines. A list of three prior projects that key staff have worked on may be requested by the Owner after the bid opening and prior to award in order to verify Rebuilder qualifications. The list must include date, description of work, and a reference contact for each project.

B. The Rebuilder must maintain a competent service organization that is available for warranty service calls. A description of the organization including resumes of key personnel may be requested by the Owner after the bid opening and prior to award in order to verify Rebuilder qualifications.

C. The Rebuilder must have a fabrication facility with adequate space and appropriate equipment as required to perform the work. The Owner may inspect the Rebuilder's shop after the bid opening and prior to award in order to verify Rebuilder qualifications.

1.7 REBUILDER'S WARRANTIES

A. The Rebuilder shall warrant the engines for a period of not less than one-year after being placed into service in prime power genset application or 18 months after delivery to the F.O.B. point, whichever comes first. In the event of equipment or component failure during the warranty period, the Rebuilder shall replace such defective equipment or components and bear all associated costs. Costs shall include material, parts, and labor. The Rebuilder will be allowed to charge for travel within Alaska and per diem expenses related to warranty service at actual cost plus 10%. The Rebuilder shall pursue manufacturer's warranties to the extent necessary to obtain replacement equipment and provide proof of action taken upon request. Assist Owner as directed in determining cause of failure.

B. The warranty shall state in clear terms exactly what warranty coverage the Rebuilder provides for each engine. This shall include the terms, length of

coverage, reporting responsibilities, how the warranty applies to accessory equipment, restrictions, locations of local facilities for handling warranty and other repairs (including contact names), and any other available information pertaining to warranty.

C. Provide a nametag on each engine that clearly identifies the party responsible for the warranty. Nametag shall include the name, address, and phone number, and shop order or Rebuilder's serial number.

D. Proposal's that provide a warranty that does not meet these specifications shall be considered non-responsive.

1.8 OPERATION AND MAINTENANCE MANUALS.

A. See Specification 26 32 13.10 for manual requirements.

PART 2 - PRODUCTS

2.1 USED ENGINE MANUFACTURE DATE AND MODEL YEAR

A. The engines furnished under this solicitation shall be model year 2006 or earlier and shall have a date of manufacture on or before April 1, 2006.

2.2 USED ENGINE MANUFACTURER AND MODEL

A. Detroit Diesel, Series 60, 12.7 liter, Model 6063TK35, DDEC IV.

2.3 FINAL ENGINE CONFIGURATION

A. The engines shall include all items listed by the OEM as a complete operational engine except do not include charging alternator, fan, radiator, air filter assembly, exhaust riser or electronic control panel.

B. The engines shall be configured for 550 HP standby (495 HP Prime), at 1800 RPM, with DDEC IV ECM. The final assembly, including ECM programming, shall be equivalent to Serial No. 06RE301396.

C. The ECM shall be programmed for nominal 1800 RPM operation at 2.5 VDC input, variable RPM above and below 2.5 VDC input, and idle operation at 0 VDC. The nominal idle speed shall be 900 RPM.

D. The engines shall have 24 VDC starting and control systems.

E. The engines shall be furnished with an SAE#1/14 Flywheel, Part #23514751, and an SAE#1/14 Flywheel Housing, Part #23529959 for connection to a generator.

2.4 ENGINE REBUILD STANDARDS AND PROCEDURES

A. Replacement Parts: These specifications require that some existing engine components be reconditioned and reused. Other components are required to be replaced with either new or factory remanufactured parts. For the remaining components, the Rebuilder may recondition the existing part, or replace it with either a new or factory remanufactured part. All parts and components, whether new, remanufactured, or reconditioned, shall meet or exceed original OEM

specifications, tolerances, durability and quality. Refer to the specific components listed below in this section, and to Attachment A, Replacement/Reconditioned Parts Requirements, for specific replacement part requirements.

B. *Disassembly & Cleaning: The used engines furnished for rebuilding shall be fully disassembled for cleaning, part inspection, qualification and reconditioning. All cylinder liners, core plugs, passage plugs and other fittings shall be removed from all castings, including the cylinder block, cylinder head, oil cooler/filter housing, exhaust manifold, intake manifold, flywheel housing, front cover, etc., to enable complete and thorough cleaning. All bearings and bushings shall be removed. All castings and other parts to be inspected shall be cleaned in a caustic cleaning solution to remove all grease, oil, loose paint, surface corrosion, carbon deposits and any other foreign material. All oil passages shall be mechanically cleaned where possible and confirmed to be free of any obstructions. After cleaning, all parts subject to corrosion must be lightly oiled and wrapped.*

C. *Inspection and Measurement: After disassembly and cleaning, the following castings that are to reused shall be visually and magnetic particle NDT inspected for defects: cylinder block external surfaces, cylinder block main bearing housing bore, cylinder head, crankshaft and camshaft (remove galley plugs, counterweights and gears), flywheel housing, timing gear cover, and intake manifold. All components that are to be reused in engine assembly shall be inspected and measured to confirm tolerances are within OEM specifications.*

D. *Corrective Action Plan: After cleaning, inspecting, and measuring all engine components to be reused in the engine assembly, provide a corrective action plan, including a complete parts list with measured dimensions and OEM specified tolerances, for each engine serial number and submit to the Engineer for approval prior to proceeding with engine assembly. All engine components shall be upgraded to include the latest factory design improvements and shall be included in the corrective action plan.*

E. *Threaded Connections, Hardware and Fasteners: All threaded holes shall be inspected and tapped. Fasteners and hardware that are corroded, damaged, or do not meet original OEM specifications shall be replaced with new. All head bolts, flywheel bolts and any other torque-to-yield bolts shall be replaced with new. Any locking devices (such as lock washers and lock nuts) shall be replaced with new. During reassembly all fasteners shall be paint pen marked at the conclusion of final torque tightening.*

F. *Cylinder Block: After cleaning and inspection, the existing cylinder block shall be reconditioned.*

1. *The cylinder block shall be measured for deck height and deck surface flatness. The condition of all gasket and sealing faces as well as all o-ring lands and bolt holes shall also be inspected. All block surfaces shall be machined as necessary to meet OEM specifications. Furnish all new expansion plugs.*

2. *The cylinder block main bearing housing bore shall be checked for proper fit of caps to block, bore roundness, diameters and alignment. If fit, dimensions, and alignment meet OEM specifications, hone existing caps. If fit, dimensions*

and alignment meet do not meet OEM specifications, replace caps and perform line bore.

3. *After resurfacing block, recut cylinder counter bores to proper dimensions. Note that upper and lower bore inserts are permitted as long as they meet or exceed factory repair procedures and factory new counter bore depth is maintained. Ensure that all cylinder parent bores meet OEM specifications and check o-ring and crevice ring liner sealing areas for pitting prior to installing new cylinder liners.*
4. *If the reconditioned block does not meet all original OEM specifications, the block shall be replaced with a used block that that meets all original OEM specifications and has a manufacture date on or before April 1, 2006.*

G. *Crankshaft: The crankshaft shall be either reconditioned or replaced with a factory remanufactured crankshaft. Undersized journals and repair sleeves shall not be allowed. As a minimum, reconditioning shall include confirmation that dimensional, hardness, alignment, wear surface finish, and seal surface finish conditions meet OEM specifications. If the crankshaft has passed all other inspections, the journals shall be polished and checked with a surface profilometer to meet or exceed OEM smoothness requirements.*

H. *Camshaft: The camshaft shall be either reconditioned or replaced with new. As a minimum reconditioning shall include confirmation that dimensional, hardness, alignment, wear surface finish, and seal surface finish conditions meet OEM specifications. If the camshaft has passed all other inspections, the lobes shall be ground to meet or exceed OEM specifications.*

I. *Connecting Rods: The connecting rods shall be reconditioned or replaced with new. If reconditioned only the castings shall be reused. After magnetic particle NDT inspection and checking for straightness, connecting rod big end shall be machined to OEM specifications using new bolts. Connecting rod small end shall receive a new bushing and be machined to OEM specifications.*

J. *Cylinder Head: The cylinder head shall be replaced with a new or factory remanufactured complete assembly that meets or exceeds OEM specifications.*

K. *Electrical and Controls: Furnish new DDEC IV ECM, new engine sensors, and new wiring harnesses. Furnish new or remanufactured starter.*

L. *Fuel System: Furnish new or remanufactured fuel injection pump, fuel transfer (lift) pump, injectors, and metering valves, Furnish new governor springs, filters, screens, gaskets, seals, O-rings, and fuel hoses. All new fuel hoses shall be Aeroquip type FC300, Eaton Weatherhead H569, or equal. Minimum hose size shall be 5/16" (#6). Provide with re-useable JIC swivel type fittings. Push-on or barb type hose connections will not be allowed. Route hoses to avoid wear points and to ensure access to normal service points on the engine. Inspect all metallic fuel tubing and replace with new if corroded, pitted, damaged, or otherwise not in compliance with OEM original specifications.*

M. Fuel Pump Drive: The gear drive housing for the fuel pump shall be drilled and tapped and connected to the lube oil system with minimum #4 oil hose to ensure continuous lubrication.

N. Lubrication System: Furnish new or remanufactured oil pump and pressure regulator valve. Furnish new oil cooler, thermetic regulator valve, filters, screens, gaskets, seals, o-rings and hoses. See section L "Fuel System" above for hose type and installation. Inspect all metallic lubrication tubing and replace with new if corroded, pitted, damaged, or otherwise do not meet OEM original specifications.

O. Cooling System: Furnish new or remanufactured water pump. Furnish new thermostat, filters, gaskets and hoses. All new coolant hoses shall be 1/2" silicon heater hose, Parker 6621, no substitutes. Terminate on barbed fittings with stainless steel T-bolt hose clamps. Route hoses to avoid wear points and to ensure access to normal service points on the engine. Inspect all metallic coolant tubing and replace with new if corroded, pitted, damaged, or otherwise do not meet OEM original specifications.

P. Air Intake and Exhaust Systems: The existing intake manifold shall be reconditioned and reinstalled if deemed suitable for reuse after NDT and visual inspections. If deemed unsuitable, replace with new OEM casting. Furnish a new or remanufactured exhaust manifold and turbocharger. Furnish all new gaskets, clamps and seals.

2.5 MARINE CONVERSION - not applicable this project

PART 3 - EXECUTION

3.1 FACTORY TESTS

A. The engines shall be tested with the complete genset package. See Specification 26 32 13.10 for engine testing requirements.

See Attachment A - Replacement/Reconditioned Parts Requirements

Attachment A - Replacement/Reconditioned Parts Requirements – Page 1 of 1

Item #	Castings/Parts	Type *	Item #	Castings/Parts	Type *
1	Cylinder Block	RR	21	Water Pump	NR
2	Crankshaft	O	22	All Gears	N
3	Cylinder Head	NR	23	Gear Train Idler Assemblies	N
4	Camshaft	O	24	Rocker Assemblies	NR
5	Intake Manifold	O	25	Intake/Exhaust Valves	NR
6	Exhaust Manifold	NR	26	Fuel Pump	NR
7	Flywheel Housing	O	27	Fuel Transfer Pump	NR
8	Timing Gear Cover	O	28	Turbocharger	NR
9	All Gaskets, O-Rings, Seals	N	29	Vibration Damper	NR
10	Injectors	NR	30	Starter	NR
11	Injector Coppers	N	31	ECM	N
12	All Bearings & Bushings	N	32	All Coolant & Air Hoses	N
13	Connecting Rods	O	33	All Fuel & Lube Hoses	N
14	Pistons Complete with Wrist Pins, Keepers and Rings	N	34	Intake/Exhaust Valves, Seats, Guides, Springs, Rotators, & Keeper	N
15	Cylinder Liners	N	35	Sensors	N
16	Oil Pump	NR	36	Wiring Harnesses	N
17	Oil Pres Regulator Valve	NR	37		
18	Oil Thermetic Valve	N	38		
19	Oil Cooler	N	39		
20	Thermostat	N	40		

Type *	Definition
RR	Reconditioned Reused original casting only
N	New parts only
NR	New parts preferred, factory remanufactured parts acceptable if new parts not available
O	Option by Rebuilder – reconditioned existing, factory remanufactured, or new parts all acceptable

Notes:

1) *The above list is not intended to be complete but rather representative of required parts and to indicate type required for critical parts.*
2) *Some of the parts listed above will be eliminated and replaced with alternate parts under the Marine Conversion option.*
3) *Parts indicated as required to be new only are desired to be of new manufacture. If at the time of bidding any of the above listed new parts are not available new, the Rebuilder shall provide an attachment to their bid indicating the specific parts that will not be new and whether that part will be factory remanufactured or reconditioned existing.*

END OF SECTION

SECTION 26 32 13.50
COOLERS FOR ENGINE GENERATORS

Note: ***The coolers specified herein are included in the Owner Furnished Materials. This specification is provided here for information and coordination only.***

PART 1 - GENERAL

1.1 SCOPE

A. The Work included herein shall consist of providing liquid glycol and charge air coolers for diesel engines as specified herein.

1.2 RELATED REQUIREMENTS

A. Section 26 32 13.10 – Engine Generator

1.3 SUBMITTALS

A. Submit manufacturers shop drawings and calculation sheets for each item specified herein.

B. Prior to shipment, submit manufacturer's quality control reports with record of bolt torque confirmation, pressure testing, and other quality control checks. All test reports shall be signed and dated.

C. Provide all submittals in Adobe Acrobat PDF format.

1.4 QUALIFICATIONS

A. Company specializing in manufacturing products specified in this section.

PART 2 - PRODUCTS

2.1 GLYCOL COOLER (RADIATOR)

A. The radiators will be used to replace existing L&M Mesabi radiators in an existing installation and therefore must be custom configured as indicated on the attached reference drawing DR3734 Modified.

B. The radiators shall be configured with a vertical core with 3" ANSI 125# flanged connections oriented and dimensioned as indicated. The radiators shall include expanded metal core guards and wire cage fan guards.

C. The radiators shall have a minimum thermal capacity of 15,000 BTU/minute at 80°F ambient air temperature with 70 GPM flow of 50% ethylene glycol at 200F inlet. The glycol pressure drop through the radiator shall not exceed 0.5 PSI.

D. The radiators core to tank connections shall be sealed with RTV silicone and shall be connected with oversize bolts, flat washers, and split lock washers per AEA standard.

E. The radiator cores shall be coated with Hempel Blue. The radiator frames and all steel accessories shall be galvanized.

F. The radiator fans shall be propeller type direct mounted to the motor shaft. The radiator fan motors shall be 5 HP, 460 V, 3 PH suitable for VFD operation at a 10:1 turndown ratio. Baldor, Century, or approved equal.

2.2 CHARGE AIR COOLER (AIR COOLER)

A. The air coolers will be used to replace existing L&M Mesabi air coolers in an existing installation and therefore must be custom configured as indicated on the attached reference drawing DR3776A.

B. The air coolers shall be configured with a vertical core with 4" ANSI 125# flanged connections oriented and dimensioned as indicated. The air coolers shall include expanded metal core guards and wire cage fan guards.

C. The air coolers shall be rated for 1340 SCFM charge air at 395F in and 110F out at 75F ambient. The air pressure drop through the cooler shall not exceed 34 Inches H2O.

D. The air cooler cores shall be epoxy coated. The air cooler frames and all steel accessories shall be galvanized.

E. The air cooler fans shall be propeller type direct mounted to the motor shaft. The air cooler fan motors shall be 5 HP, 460 V, 3 PH suitable for VFD operation at a 10:1 turndown ratio. Baldor, Century, or approved equal.

PART 3 - EXECUTION

3.1 FACTORY TESTS

A. Prior to shipment, the cooler manufacturer shall perform factory tests on each unit at the shop where the cooler is assembled. Tests shall include but not be limited to:

1. Bolt torque confirmation.

2. Hydrostatic or air pressure tests.

3. All other manufacturer quality control tests.

B. Submit test reports prior to shipping. All test reports shall be signed and dated.

3.2 PREPARATION AND SHIPPING

A. After testing, each cooler shall be packaged in wooden crates of sufficient strength to protect them from damage during shipment, handling, and storage. The crates shall include a pallet base to allow lifting with a forklift.

B. The exterior of each crate shall be clearly labeled with the community name "AKIACHAK".

C. Final payment will not be made until completion of the following:

1. All coolers have been accepted by the Authority at the F.O.B. Point.

2. All test reports have been received and approved by the Authority.

END OF SECTION