

Project Manual For:

Shageluk Bulk Fuel Upgrades
Project No. 26030



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

Advertising Date: November 21, 2025

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DIVISION 00 – Bidding and Contract Requirements

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00 12 90	FEDERAL EEO BID CONDITIONS	25A-301	(12/14)
00 14 40	EEO-1 CERTIFICATION	25A-304	(8/01)
00 31 00	PROPOSAL	25D-9A	(07/03)
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00 41 00	BID BOND	25D-14	(8/01)
00 42 00	BID MODIFICATION	25D-16	(8/01)
00 43 00	SUBCONTRACTOR LIST	25D-5	(10/12)
00 51 00	CONSTRUCTION CONTRACT	25D-10A	(8/01)
00 61 00	PERFORMANCE BOND	25D-13	(8/01)
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00 67 00	CONTRACTOR'S QUESTIONNAIRE	25D-8	(8/01)
<u>Contract Provisions and Specifications</u>			
00 70 00	GENERAL CONDITIONS		
00 80 00	SUPPLEMENTARY CONDITIONS		
00 83 00	STATE LABORERS' AND MECHANICS' MINIMUM RATES OF PAY State wage rates can be obtained at http://www.labor.state.ak.us/lss/pamp600.htm . Use the State wage rates that are in effect 10 days before Bid Opening. The AUTHORITY will include a paper copy of the State wage rates in the signed Contract.		
00 83 50	FEDERAL WAGE RATES Federal wage rates can be obtained at http://www.wdol.gov/dba.aspx#0 for the State of Alaska. Use the federal wage rates that are in effect 10 days before bid opening. The AUTHORITY will include a paper copy of the State wage rates in the signed Contract.		
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ALASKA ENERGY AUTHORITY

INVITATION TO BID

for Construction Contract

Date: November 20, 2025

**Shageluk Bulk Fuel Upgrades
Project No. 26030**

Location of Project: Shageluk, Alaska

Contracting Officer:

Issuing Office: ALASKA ENERGY AUTHORITY (AUTHORITY)

State Funded Federal Aid

Description of Work: This State and Denali Commission funded contract is for a new bulk fuel tank farm, complete with gravel pad, aboveground fuel storage tanks, steel containment dike, fuel dispensing systems, fuel piping, and all electrical work required in 'Section 01 11 13 Work Covered by Contract Documents'.

The Engineer's Estimate is between **\$4,500,000.00 – 5,000,000.00**

Base Bid Schedule:

All work shall be substantially completed no later than: **September 30th, 2026**

Final Completion by: **October 30th, 2026**

Bidders are invited to submit sealed bids, in single copy, for furnishing all labor, equipment, and materials and for performing all work for the project described above. Bids will be opened telephonically at 2:00 pm local time, in the Redoubt conference room, 813 West Northern Lights Blvd., Anchorage, Alaska on December 11, 2025. *Bids may be hand delivered to the designated lock box at the front entrance of the building located at 813 W. Northern Lights Blvd prior to schedule bid opening. It will be the responsibility of the Bidder to contact Selwin Ray phone: 771-3000 or email: scray@aidea.org that they have submitted a bid. Bidders may attend by calling 1-888-585-9008 when prompted enter 508-917-314#.*

Emailed bid amendments must be addressed to Selwin Ray, Email: scray@aidea.org

SUBMISSION OF BIDS

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

Bid for Project: Shageluk Bulk Fuel Upgrade Project Number: 26030	ATTN: Procurement (Selwin Ray) Alaska Energy Authority 813 West Northern Lights Blvd. Anchorage, AK 99503
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Bids, amendments or withdrawals transmitted by mail must be received in the above specified address no later than 7 hours prior to the scheduled time of bid opening. Hand-delivered bids, amendments or withdrawals must be received by the **Front Desk of the Alaska Energy Authority**, prior to the scheduled time of bid opening. Emailed bid amendments must be addressed to **Selwin Ray**, Email: scray@akenergyauthority.org, or 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.)

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. PRE-BID MEETING

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

Phone: (907) 771-3000

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:

Ashley Streveler, Project Manager

Phone: (907) 771-3011

Fax: (907) 771-3044

³ All questions concerning bidding procedures should be directed to:

Selwin Ray
Contracting Officer
813 West Northern Lights Blvd.
Anchorage, AK 99503

Phone: (907) 771-3000 Email: sray@aidea.org

The Bid Calendar, Planholder lists, and Bid Results information are available on the Internet at: www.aidea.org under Procurement Opportunities.

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. To qualify as an Alaska bidder under 3 AAC 109.220, a bidder shall have a valid Alaska business license at time designated in the invitation to bid for bid opening.

Bids may be hand delivered to the designated lock box at the front entrance of the building located at 813 W. Northern Lights Blvd prior to schedule bid opening. It will be the responsibility of the Bidder to contact Selwin Ray phone: 771-3000 or email: sray@aidea.org that they have submitted a bid. Bidders may attend by calling 1-888-585-9008 when prompted enter 508-917-314#.

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.

Special Notice to Bidders

A non-mandatory pre-bid meeting is scheduled for **January 15th, 2026 @ 1:00 PM**,

Potential bidders may attend remotely by calling in through;

Microsoft Teams,

Meeting ID: 297 346 880 605 1
Passcode: Cc33Uu28

Telephonically

Phone Number: 469-810-0642
Passcode: 763864229#,

Please note the call-in is limited to participants so if more than one person from companies are attending telephonically, we respectfully request you call in from a conference room speaker phone and have all people together. 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 Contracting Officer, Selwin Ray, at (907) 771-3035 for more information.

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

PREFERENCES:

ALASKA BIDDER PREFERENCE: Award will be made to the lowest responsive and responsible bidder after an Alaska bidder preference of five percent (5%) has been applied. The preference will be given to a person who: (1) holds a current Alaska business license at the time designated in the invitation to bid for bid opening; (2) submits a bid for goods or services under the name on the Alaska business license; (3) has maintained a place of business within the state staffed by the bidder, or an employee of the bidder, for a period of six months immediately preceding the date of the bid; (4) is incorporated or qualified to do business under the laws of the state, is a sole proprietorship and the proprietor is a resident of the state, is a limited liability company organized under AS 10.50 and all members are residents of the state, or is a partnership under AS 32.06 or AS 32.11 and all partners are residents of the state; and, (5) if a joint venture, is composed entirely of ventures that qualify under (1) - (4) of this subsection. AS 36.30.170, AS 36.30.321(a) and AS 36.30.990(2)

ALASKA ENERGY AUTHORITY
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-7, 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."

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 (Form 25D-14)**
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-Aid Contracts
Shageluk Bulk Fuel Upgrades
Project No. 26030

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
of

NAME _____

ADDRESS _____

To the CONTRACTING OFFICER, ALASKA ENERGY AUTHORITY:

In compliance with your Invitation To Bid dated _____ the Undersigned proposes to furnish and deliver all the materials and do all the work and labor required in the construction of Project:

Project Name

Shageluk Bulk Fuel Upgrades

Project No. 26030

Located at **Shageluk, Alaska**, according to plans and specifications and for the amount and prices named herein as indicated on the Bid Schedule), 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 after the effective date of Notice to Proceed and to complete work based on the following schedule IAW the Bid Schedule that is awarded:

Base Bid Schedule:

All work shall be substantially completed no later than: **September 30th, 2026**

Final Completion by: **October 30th, 2026**

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

Name and Title of Person Signing

Telephone Number

Fax Number

BID SCHEDULE

**Shageluk Bulk Fuel Upgrades
Project No. 26030**

Bidders Please Note: Before preparing this bid schedule, read carefully, "Work Covered by Contract Documents" and the following:

The Base Bid for Shageluk Bulk Fuel Upgrades assumes classified materials (gravel) will be provided in stockpiles located in the community's old gravel pit (adjacent to the proposed collocated tank farm). For Additive Alternate 1, 50% of the classified materials will be provided in the old community gravel pit and 50% will be located approx. 1-mile to the North of the community along the airport access road.

Bid Schedule:

All work shall be substantially completed no later than: September 30th, 2026
Final Completion by: October 30th, 2026

Bidder is required to bid on all Base Bid Schedule items and Additive Alternates. Contract award of the Base Bid and Additive Alternates will be made at the discretion of the Alaska Energy Authority.

The Alaska Energy Authority reserves the right to award some, none, or all of the Additive Alternates. Alternates may be awarded in the best interest of the Alaska Energy Authority.

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; in a lot bid, the lot prices will govern. Conditioned or qualified bids will be considered non-responsive.

Shageluk BFU Base Bid Schedule

Base Bid Schedule A - Collocated Bulk Fuel Upgrades

Item	Description	Quant.	Unit	Unit Price	Extended Total Amount
A1	Mobilization / Demobilization	1	LS	\$	\$
A2	Collocated Tank Farm Civil Site Work	1	LS	\$	\$
A3	Collocated Bulk Fuel Tank Farm	1	LS	\$	\$
A4	Electrical Systems	1	LS	\$	\$
A5	Spill Response Equipment & Connex's	1	LS	\$	\$
A6	Transfer Fuel & Decommission Existing Tank Farms	1	LS	\$	\$
A7	Manifesting, Transport, and Disposal of RCRA Hazardous Waste	6	EA	\$	\$
A8	Transport and Disposal of State Regulated Non - Hazardous Waste	6	EA	\$	\$
Total Base Bid					\$

Base Bid Schedule B - AVEC Bulk Fuel Upgrades

Item	Description	Quant.	Unit	Unit Price	Extended Total Amount
B1	Mobilization / Demobilization	1	LS	\$	\$
B2	AVEC Tank Farm Civil Site Work	1	LS	\$	\$
B3	AVEC Bulk Fuel Tank Farm	1	LS	\$	\$
B4	AVEC Electrical Systems	1	LS	\$	\$
B5	AVEC Spill Response Equipment	1	LS	\$	\$
B6	AVEC Temporary Fuel Supply & Decommission Existing Tank Farm	1	LS	\$	\$
B7	Manifesting, Transport, and Disposal of RCRA Hazardous Waste	6	EA	\$	\$
B8	Transport and Disposal of State Regulated Non - Hazardous Waste	6	EA	\$	\$
Total Base Bid					\$

Additive Alternates

Item	Description	Quant.	Unit	Unit Price	Extended Total Amount
Additive Alternate 1 – Contractor Supplied Classified Material (Gravel)					
ALT 1	50% Classified Material (Gravel) Located 1-mile North of Bridge	1	LS	\$	\$
ALT 2	Cut-up Decommissioned Tanks & Stack	17	EA	\$	\$
ALT 3	Disposal of Cut-up Decommissioned Tanks	17	EA	\$	\$
Total Additive Alternates 1, 2, &3					\$

Notes:

1. See Section 01 11 13 Work Covered by Contract Documents for detailed descriptions of Bid Items.
2. If Additive Alternate 1 is awarded, Contractor shall supply Classified Materials for project Construction.

1. I certify that I am entitled to: **5% Alaska Bidder Preference** [] []

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

**Shageluk Bulk Fuel Upgrades
Shageluk, Alaska**

**Section 00 32 00
Bid Schedule**

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
Shageluk Bulk Fuel Upgrades
Project No. 26030

DATE BOND EXECUTED: _____

PRINCIPAL (Legal name and business address):

TYPE OF ORGANIZATION:

	<input type="checkbox"/> Individual <input type="checkbox"/> Partnership <input type="checkbox"/> Joint Venture <input type="checkbox"/> 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
Shageluk Bulk Fuel Upgrades
Project No. 26030

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.

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**Shageluk Bulk Fuel Upgrades**
Project No. 26030

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 $\frac{1}{2}$ 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

ALASKA ENERGY AUTHORITY

CONSTRUCTION CONTRACT
Shageluk Bulk Fuel Upgrades
Project No. 26030

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 (based on the Bid Schedule that is awarded):

Base Bid Schedule:

All work shall be substantially completed no later than: **September 30th, 2026**
Final Completion by: **October 30th, 2026**

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

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

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

CONTRACTOR

Company Name

Signature of Authorized Company Representative

Typed Name and Title

Date

(Corporate Seal)

ALASKA ENERGY AUTHORITY

Signature of Contracting Officer

Typed Name

Date

ALASKA ENERGY AUTHORITY

PERFORMANCE BOND

Bond No. _____

For

**Shageluk Bulk Fuel Upgrades
Project No. 26030**

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., 2020, 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., 2020.

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
Shageluk Bulk Fuel Upgrades
Project No. 26030

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., 2020, 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., 2020.

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

Shageluk Bulk Fuel Upgrades Project No. 26030

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.

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

ARTICLE 2 AUTHORIZATION AND LIMITATIONS

- 2.1 Authorities and Limitations
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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 1 of the Specifications which contain administrative and procedural requirements as well as requirements for temporary facilities which apply to Specification Divisions 2 through 16.

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

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

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

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

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

4.1 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 6.17. The CONTRACTOR may be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are directly attributable to the existence of any underground utility that was not shown or indicated in the Contract Documents and which the CONTRACTOR could not reasonably have been expected to be aware of.

4.7 Survey Control:

The 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 CONTRACTOR 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
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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

6.1 Supervision of Work:

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

6.2 Superintendent 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 13 – 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:

- 6.26.1 Records of the CONTRACTOR and Subcontractors relating to personnel, payrolls, invoices of materials, and any and all other data relevant to the performance of this Contract, must be kept on a generally recognized accounting system. Such records must be available during normal work hours to the Contracting Officer for purposes of investigation to ascertain compliance with Regulatory Requirements and provisions of the Contract Documents.

- 6.26.2 Payroll records must contain the name and address of each employee, his correct classification, rate of pay, daily and weekly number of hours of work, deductions made, and actual wages paid. The CONTRACTOR and Subcontractors shall make employment records available for inspection by the Contracting Officer and representatives of the U.S. and/or State Department of Labor and will permit such representatives to interview employees during working hours on the Project.
- 6.26.3 Records of all communications between the 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 18.60.075 and all pertinent provisions of the Construction Code Occupational Safety and Health Standards issued by the Alaska Department of Labor.

7.6 Sanitary Provisions:

The CONTRACTOR shall provide and maintain in a neat and sanitary condition such accommodations for the use of his employees and 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 35.10.025 which requires construction in accordance with applicable local building codes to include the obtaining of required permits.

7.10 Air Quality Control:

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

7.11 Archaeological or Paleontological Discoveries:

When the CONTRACTOR's operation encounters prehistoric artifacts, burials, remains of dwelling sites, or paleontological remains, such as shell heaps, land or sea mammal bones or tusks, the CONTRACTOR shall cease operations immediately and notify the 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.

7.15 Overtime Work Hours and Compensation:

Pursuant to 40 U.S.C. 327-330 and AS 23.10.060 -.110, the CONTRACTOR shall not require nor permit any laborer or mechanic in any workweek in which he is employed on any Work under this Contract to work in excess of eight hours in any Calendar Day or in excess of forty hours in such workweek on Work subject to the provisions of the *Contract Work Hours and Safety Standards Act* unless such laborer or mechanic receives compensation at a rate not less than one and one half times his basic rate of pay for all such hours worked in excess of eight hours in any Calendar Day or in excess of forty hours in such workweek whichever is the greater number of overtime hours. In the event of any violation of this provision, the CONTRACTOR shall be liable to any affected employee for any amounts due and penalties and to the 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 \$10.00 for each Calendar Day on which such employee was required or permitted to be employed on such Work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by this paragraph.

7.16 Covenant Against Contingent Fees:

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

recover the full amount of such commission, percentage, brokerage, or contingent fee.

7.17 Officials Not to Benefit:

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

7.18 Personal Liability of Public Officials:

In carrying out any of the provisions thereof, or in exercising any power or authority granted to the Contracting Officer by the Contract, there will be no liability upon the Contracting Officer nor upon 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

8.1 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 10 - CONTRACT PRICE; COMPUTATION AND CHANGE

10.1 Contract Price:

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

10.2 Claim for Price Change:

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

10.3 Change Order Price Determination:

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

- 10.3.1 Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of subparagraphs 10.9.1 through 10.9.3, inclusive).
- 10.3.2 By mutual acceptance of a lump sum price 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.

10.4 Cost of the Work:

The term "cost of the work" means the sum of all costs necessarily incurred and paid by the CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by the 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 10.5:

10.4.1 Payroll costs for employees in the direct employ of the CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by the 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's "cost of the work" shall be determined in the same manner as the CONTRACTOR's "cost of work" as described in paragraphs 10.4 through 10.5; and the Subcontractor's fee shall be established as provided for under subparagraph 10.6.2 clause b. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

10.4.4 Costs of special consultants (including but not limited to engineers, architects, testing laboratories, and surveyors) employed for services necessary for the completion of the Work.

10.4.5 Supplemental costs including the following:

- a. The proportion of necessary transportation, travel and subsistence expenses of the CONTRACTOR's employees incurred in discharge of duties connected with the Work.
- b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of the CONTRACTOR.
- c. Rentals of all construction equipment and machinery and the parts thereof whether rented from the CONTRACTOR or others in accordance with rental agreements Approved by the 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 10.4.1 or specifically covered by paragraph 10.4.4 all of which are to be considered administrative costs covered by the CONTRACTOR's fee.
- 10.5.2 Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

- 10.5.3 Any part of CONTRACTOR's capital expenses including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.
- 10.5.4 Cost of premiums for all bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 10.4.5.i above).
- 10.5.5 Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of Defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.
- 10.5.6 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 10.4.

10.6 CONTRACTOR's Fee:

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

- 10.6.1 A mutually acceptable fixed fee; or if none can be agreed upon.
- 10.6.2 A fee based on the following percentages of the various portions of the "cost of the work":
 - a. For costs incurred under paragraphs 10.4.1 and 10.4.2, the CONTRACTOR's fee shall be twenty percent;
 - b. For costs incurred under paragraph 10.4.3, the CONTRACTOR's fee shall be ten percent; and if a subcontract is on the basis of "cost of the work" plus a fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all Subcontractors and multiple tiers thereof shall be fifteen percent;
 - c. No fee shall be payable on the basis of costs itemized under paragraphs 10.4.4, 10.4.5 and 10.5;
 - d. The amount of credit to be allowed by the CONTRACTOR to the 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 in 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 I2 - 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:

- 12.3.1 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 12.9.
- 13.7.4 The AUTHORITY's actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.2.1.a through 14.2.1.k inclusive.
- 13.7.5 Claims have been made against the 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 13.7.1 through 13.7.5.
- 13.7.7 The CONTRACTOR has failed to fulfill or is in violation of any of his obligations under any provision of this Contract.

13.8 Retainage:

At any time the 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 10% 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 5.1, the written consent of the Surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the CONTRACTOR to the 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 19, such Work shall constitute a continuing obligation under the Contract.

13.16 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.

13.17 Waiver of Claims by CONTRACTOR:

The making and acceptance of final payment will constitute a waiver of all claims by the CONTRACTOR against the 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 14 - SUSPENSION OF WORK, DEFAULT AND TERMINATION

14.1 AUTHORITY 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 15 - 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 16**.
- 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.”

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SECTION 00 80 00 SUPPLEMENTARY CONDITIONS MODIFICATIONS TO THE GENERAL CONDITIONS

The following supplements modify, change, delete from, or add to Section 00 70 00 "General Conditions", 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 manufacturing 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-4.1-AVAILABILITY OF LANDS

At General Conditions Article 4.1, delete "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."

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 planholders upon request. They are made available so Bidders have access to the same

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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 first sentence and replace with the following "Horizontal and Vertical control data are provided in the Design Drawings".

SC-5.4.1 – INSURANCE REQUIREMENTS

At General Condition Article 5.4.1, delete the second to the last sentence and replace with the following: "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
The Denali Commission

SC-5.4.2d- BUILDER'S RISK INSURANCE

At General Conditions Article 5.4.2.d, delete paragraph "d" in its entirety and replace with the following:

- d) Inland Marine Cargo Insurance: Contractor shall provide Inland Marine Cargo Insurance for the full value of all Owner Furnished materials in transport. Minimum coverage amount shall be \$1,500,000.

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 – 6.16 – RECORD DOCUMENTS

At Record Documents 6.16, add the following:

A daily work report shall be prepared and submitted by the site Superintendent recording all pertinent daily events and statuses of any ongoing items. All daily reports must include:

- a) Summary of general tasks relative to construction progress
- b) Weather conditions

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- c) Names and titles of all laborers onsite (daily basis)
- d) Regular labor hours worked (daily basis)
- e) Overtime hours worked (as encountered and cumulative)
- f) Material quantities delivered (daily and cumulative)
- g) General material management items (daily and cumulative)
- h) Unsuitable quantities hauled offsite (daily and cumulative)
- i) Quantities of pay items installed (daily and cumulative)
- j) Any construction issues resulting in delays (reported day of, as encountered)
- k) Any equipment issues causing delays (reported day of, as encountered)
- l) Safety issues and concerns (reported day of, as encountered)
- m) Disputes (reported day of, as encountered)
- n) Items that could require a change order (reported day of, as encountered)
- o) Requests for information (reported day of, as encountered)
- p) Site characteristics that warrant a Change In Conditions (reported day of, as encountered)
- q) 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)
- r) A minimum of 4 project photos of the work performed that day (daily), unless no new work was performed. Additional photos must be submitted if problematic site conditions are encountered resulting in delays, change of conditions, or any existing site elements that would potentially change the contract cost.
- s) Any information required, or outstanding, from owner or owner's representative.

Daily reports must be transmitted to Owner, Owner Representatives and Project Manager daily. Contractor shall submit a draft daily work report to owner prior to construction for review and acceptance.

Additional daily report requirements can be found in specification sections 01 45 00 Quality Control and 01 33 00 – Submittal Procedures, sub section 1.9 - Construction Photographs.

SC-9.4-CHANGE ORDER

B. 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."

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

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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 passed the date listed in the Contract, the AUTHORITY shall deduct \$500 from progress payments.

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-12.6-CORRECTION OR REMOVAL OF DEFECTIVE WORK

At General Condition Article 12.6, add the following paragraphs:

"Work contrary to the AUTHORITY'S instructions, Work done beyond the limits of the Contract, or any extra Work done without authority, will be considered as unauthorized and shall not be paid for by the AUTHORITY, and may be ordered removed or replaced at no additional cost to the AUTHORITY."

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."

END OF SECTION 00 80 00

**REQUIRED CONTRACT PROVISIONS
For
FEDERAL-AID CONSTRUCTION CONTRACTS**

- I. General
- II. Non-discrimination
- III. Non-segregated Facilities 3
- IV. Payment of Predetermined Minimum Wages
- V. Statements and Payrolls
- VI. Record of Materials, Supplies, and Labor
- VII. Subletting or Assigning the Contract
- VIII. Safety: Accident Prevention
- IX. False Statements
- X. Implementation of Clean Air Act and Federal Water Pollution Control Act
- XI. Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion
- XII. Certification Regarding Use of Contract Funds for Lobbying

I. GENERAL

1. These contract provisions shall apply to all work performed on the contract by the Contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.
2. Except as otherwise provided for in each 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 subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.
3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.
4. A breach of the following clauses of these Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:
 - Section I, paragraph 2;
 - Section IV, paragraphs 1, 2, 3, 4, and 7;
 - Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.

6. Selection of Labor: During the performance of this contract, the contractor shall not:
 - a. discriminate against labor from any other State, possession, or territory of the United States, or
 - b. Employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION (Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630 and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

- a. The contractor will work with the Alaska Energy Authority (AEA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.
- b. The contractor will accept as his operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the AEA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

- a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
- b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
- c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.
- d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
- e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)

c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the AEA and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the AEA.

8. Selection of Subcontractors, Procurement of Materials, and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 26 shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from AEA personnel.

c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

9. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years

following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the AEA and the U.S. DOT.

a. The records kept by the contractor shall document the following:

(1) The number of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

(4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. The contractors will submit an annual report to the AEA each July for the duration of the project, indicating the number of minority, women, and non minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on the job training is being required by special provision, the contractor will be required to collect and report training data.

III. NONSEGREGATED FACILITIES (Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

1. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO Provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

2. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, or national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

3. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to the award of subcontracts or consummation of material supply agreements of \$10,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGES (Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. General:

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on

any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

c. All rulings and interpretations of the Davis-Bacon and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

2. Classification:

a. The AEA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

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

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

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

(4) With respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the U.S. Department of Labor, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days

of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

3. Payment of Fringe Benefits:

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

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

4. Apprentices and Trainees (Programs of the U. S. DOL) and Helpers:

a. Apprentices:

(1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

(1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

(2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers: Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, which is not a helper under an approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

5. Apprentices and Trainees (Programs of the U.S. DOT): Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and

trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

6. Withholding: The AEA shall, upon its own action or upon written request of an authorized representative of the DOL, withhold or cause to be withheld from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the AEA Procurement Officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

7. Overtime Requirements: No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such work week unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. Violation: Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible therefor shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. Withholding for Unpaid Wages and Liquidated Damages: The AEA shall, upon its own action or upon written request of an authorized representative of the U.S. Department of Labor, withhold or cause to be withheld from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

V. STATEMENTS AND PAYROLLS (Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. Compliance with Copeland Regulations (29 CFR 3): The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

2. Payrolls and Payroll Records:

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b) (2) (B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees and ratios and wage rates prescribed in the applicable programs.

c. Each contractor and subcontractor shall furnish each week in which any contract work is performed a payroll of wages paid each of its employees (including apprentices, trainees, and helpers described in Section IV, paragraphs 4 and 5 and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402 or the Government Bookstore, 915 Second Avenue, Seattle, WA 98174. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

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

(1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;

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

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

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this section V available for inspection, copying, or transcription by authorized representatives of the AEA, the U.S. DOT, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the AEA, the U.S. DOT, DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any

further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

VI. RECORDS OF MATERIALS, SUPPLIES, AND LABOR (Applicable to highway contracts)

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than \$1,000,000 (23 CFR Part 635) the contractor shall:

a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on the Form FHWA-47.

c. Furnish, upon the completion of the contract, to the AEA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

VII. SUBLetting OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items so performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR Part 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph 1 of this Section VII is computed includes the cost of materials and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the AEA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the AEA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the AEA is assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract, the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the AEA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract entered into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous, or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

IX. FALSE STATEMENTS

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. Title 18, United States Code, Section 1001, states:

"Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious or fraudulent statements or representations, or makes or uses any false writing or document knowing the same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than \$10,000 or imprisoned not more than five years, or both." (June 25, 1948, ch. 645, 62 Stat. 749.)

To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all personnel concerned with the project:

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (Applicable to all Federal-aid construction contracts and to all related subcontracts of \$100,000 or more.)

By submission of this bid, or the execution of this contract or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub. L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251, et seq., as amended by Pub. L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR Part 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the AEA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraphs 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. Instructions for Certification - Primary Covered Transactions: (Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to which this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary 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 Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this 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 by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that 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 nonprocurement portion of the "Lists of Parties Excluded from Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

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

j. Except for transactions authorized under paragraph f 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 other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion—Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and

d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Covered Transactions: (Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. 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 lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "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 Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

e. The prospective lower tier participant agrees by submitting this 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 by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

g. A participation in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that 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 Nonprocurement List.

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

i. Except for transactions authorized under paragraph e 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 other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification Regarding Debarment,

Suspension, Ineligibility and Voluntary Exclusion—Lower Tier Covered Transactions:

1. The prospective lower tier participant certifies, by submission of this 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. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING (Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, 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. 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 U.S.C. 1352. 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.

3. The prospective participant also agrees by submitting his or her bid or proposal 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.

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**BUILD AMERICA, BUY AMERICA ACT PREFERENCES FOR INFRASTRUCTURE PROJECTS –
2 CFR 184; Executive Order 14005 [Applicable to federally assisted infrastructure contracts which exceed \$250,000]**

The Contractor acknowledges that it understands the goods and services under this Agreement are funded with federal monies subject to statutory requirements known as "Build America, Buy America" that requires all of the iron and steel, manufactured products, and construction materials used in the Project to be produced in the United States ("Build America, Buy America requirements").

The Contractor hereby represents and warrants to the Authority and the Federal Awarding Agency:

(a) the contractor has reviewed and understands the Build America, Buy America requirements,

(b) all of the iron and steel, manufactured products, and construction materials used in the Project will be produced in the United States in a manner that complies with the Build America, Buy America requirements, unless a waiver of the requirements is approved, and

(c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the Build America, Buy America requirements, as may be requested by the Authority or the Federal Awarding Agency.

Notwithstanding any other provision of this Agreement, any failure to comply with these requirements by the Contractor shall permit the Authority to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Authority resulting from any such failure or any damages owed to the Federal Awarding Agency by the Authority. Neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without prior written consent of the Authority.

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 §184 apply to this certification and disclosure, if any.

Signature of Contractor's Authorized Official: _____

Name and Title of Contractor's Authorized Official: _____

Date: _____

Alaska Energy Authority Invitation to Bid

ALASKA ENERGY AUTHORITY SECTION 00 90 10 BUILD AMERICA, BUY AMERICA ACT PREFERENCES FOR INFRASTRUCTURE PROJECTS

Build America, Buy America (BABA) requirements are promulgated under 2 CFR 184. The Build America, Buy America Act Preference requirements described herein are paraphrased from 2 CFR 184. Following is a link to 2 CFR 184:

<https://www.ecfr.gov/current/title-2/subtitle-A/chapter-I/part-184>

The Office of Management and Budget issued Memo M-24-02, which provides additional guidance on the application of Preference requirements:

<https://www.whitehouse.gov/M-24-02-Buy-America-Implementation-Guidance-Update>

184.1 Build America, Buy America Act Requirement

All iron, steel, manufactured products, and construction materials incorporated into the Project shall be produced in the United States, as set forth in part I of subtitle A, Buy America Sourcing Preferences, of the Build America, Buy America Act included in the Infrastructure Investment and Jobs Act (Pub. L. 117-58) at division G, title IX, subtitle A, part I, sections 70911 through 70917.

184.2 Not Used

184.3 Definitions

Component means an article, material, or supply, whether manufactured or unmanufactured, that is incorporated directly into a manufactured product or an iron or steel product.

Construction materials means articles, materials, or supplies that consist of only one of the below listed items. To the extent one of the below listed items contains other listed items in this paragraph, it is nonetheless a construction material.

A. The listed items are:

1. Non-ferrous metals;
2. Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
3. Glass (including optic glass);
4. Fiber optic cable (including drop cable);
5. Optical fiber;
6. Lumber;
7. Engineered wood;
8. and Drywall.

Iron or steel products means articles, materials, or supplies that consist wholly or predominantly of iron or steel or a combination of both.

Manufactured products means:

- A. Articles, materials, or supplies that have been:
 1. Processed into a specific form and shape; or
 2. Combined with other articles, materials, or supplies to create a product with different properties than the individual articles, materials, or supplies.
- B. If an item is classified as an iron or steel product, a construction material, or a section 70917(c) material under 184.4 and the definitions set forth in this section, then it is not a manufactured product. However, an article, material, or supply classified as a manufactured product under 184.4 and paragraph (1) of this definition may include components that are construction materials, iron or steel products, or section 70917(c) materials

Section 70917 (c) materials means cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives.

Manufacturer means the entity that performs the final manufacturing process that produces a manufactured product.

Predominantly of iron or steel or a combination of both means that the cost of the iron and steel content exceeds 50 percent of the total cost of all its components. The cost of iron and steel is the cost of the iron or steel mill products (such as bar, billet, slab, wire, plate, or sheet), castings, or forgings utilized in the manufacture of the product *and a good faith estimate of the cost of iron or steel components*

Produced in the United States means:

- A. In the case of iron or steel products, all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
- B. In the case of manufactured products:
 1. The product was manufactured in the United States; and
 2. The cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product. The costs of components of a manufactured product are determined in accordance with 184.5.
- C. In the case of construction materials, all manufacturing processes for the construction material occurred in the United States. *See 184.6 for more information on the meaning of "all manufacturing processes" for specific construction materials.*

184.4 Applying the Build America, Buy America Act Preference.

Categorization of articles, materials, and supplies.

An article, material, or supply incorporated into an infrastructure project shall meet the Buy America Preference for the category in which it is classified. The classification of an article, material, or supply into one of the below categories *shall be made based on its status at the time it is brought to the work site for incorporation into an infrastructure project.*

- A. An article, material, or supply shall be classified into one of the following categories:

1. Iron or steel products;
2. Manufactured products;
3. Construction materials; or
4. Section 70917(c) materials.

184.5 Determining the cost of components for manufactured products.

In determining whether the cost of components for manufactured products is greater than 55 percent of the total cost of all components, the following applies:

- A. **For components purchased by the manufacturer**, the acquisition cost, including transportation costs to the place of incorporation into the manufactured product (whether or not such costs are paid to a domestic firm), and any applicable duty (whether or not a duty-free entry certificate is issued); or
- B. **For components manufactured by the manufacturer**, all costs associated with the manufacture of the component, including transportation costs as described in paragraph (a) of this section, plus allocable overhead costs, *but excluding profit. Cost of components does not include any costs associated with the manufacture of the manufactured product.*

184.6 Construction materials

- A. The Build America, Buy America Act Preference applies to the following construction materials incorporated into infrastructure projects. Each construction material is followed by a standard for the material to be considered “produced in the United States.” Except as specifically provided, only a single standard under this section should be applied to a single construction material.
 1. Non-ferrous metals. All manufacturing processes, from initial smelting or melting through final shaping, coating, and assembly, occurred in the United States.
 2. Plastic and polymer-based products. All manufacturing processes, from initial combination of constituent plastic or polymer-based inputs, or, where applicable, constituent composite materials, until the item is in its final form, occurred in the United States.
 3. Glass. All manufacturing processes, from initial batching and melting of raw materials through annealing, cooling, and cutting, occurred in the United States.
 4. Fiber optic cable (including drop cable). All manufacturing processes, from the initial ribboning (if applicable), through buffering, fiber stranding and jacketing, occurred in the United States. All manufacturing processes also include the standards for glass and optical fiber, but not for non-ferrous metals, plastic and polymer-based products, or any others.
 5. Optical fiber. All manufacturing processes, from the initial preform fabrication stage through the completion of the draw, occurred in the United States.
 6. Lumber. All manufacturing processes, from initial debarking through treatment and planing, occurred in the United States.
 7. Drywall. All manufacturing processes, from initial blending of mined or synthetic gypsum plaster and additives through cutting and drying of sandwiched panels,

occurred in the United States.

8. Engineered wood. All manufacturing processes from the initial combination of constituent materials until the wood product is in its final form, occurred in the United States.

184.7 Build America, Buy America Act Preference waivers.

- A. A Federal agency may waive the application of the Build America, Buy America Act Preference in any case in which it finds that:
 1. Applying the Build America, Buy America Act Preference would be inconsistent with the public interest (a "public interest waiver");
 2. Types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality (a "nonavailability waiver"); or
 3. The inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall infrastructure project by more than 25 percent (an "unreasonable cost waiver").
- B. *Requesting a waiver.* Recipients may request waivers from a Federal agency if the recipient reasonably believes a waiver is justified under paragraph (a) of this section. A request from a recipient to waive the application of the Build America, Buy America Act Preference must be provided to the Federal agency in writing. Federal agencies must provide waiver request submission instructions and guidance on the format, contents, and supporting materials required for waiver requests from recipients.
- C. Existing waiver(s) applicable to this Project.

The Federal Awarding Agency for this project (Denali Commission) has issued the following General Applicability Waiver of Build America, Buy America Act Preferences:

[De Minimis Infrastructure Project Purchases, Small Grants, and Minor Components within Iron and Steel Products](#)

The *De Minimis Project Purchases* waiver is applicable to this Project, which states:

5% of the total costs for iron and steel, manufactured products and construction materials subject to the Build America, Buy America Act preference is exempt from the Buy America preference requirement.

SECTION 01 11 13

WORK COVERED BY CONTRACT DOCUMENTS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Work Covered by Contract Documents
- B. Description of Bid Items
- C. Contract Method
- D. Work By Others
- E. Shutoffs, Disruptions to Service
- F. Contractor's Use of Premises
- G. Coordination
- H. Access for Testing and Inspection

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work under this Contract comprises all labor, materials, transportation, and equipment to construct new AVEC & Collocated community bulk fuel tank farms, complete with gravel pads, pre-engineered secondary containment areas, all associated dispensing, piping, fencing, and electrical work required for two complete fuel storage & handling systems in the community of Shageluk, Alaska in accordance with the contract drawings and specifications.
 - 1. **Important Note:** The Base Bid assumes classified materials (gravel) will be provided for the Contractors use in stockpiles located in the old community gravel pit (adjacent to the proposed collocated tank farm). For Additive Alternate 1, 50% of the classified materials will be provided in the old community gravel pit and 50% will be located approx. 1-mile to the North of the community along the airport access road.
 - 2. **Basic Bid** – Provide all labor, materials and equipment required to construct Bid Schedule A & B as described in Section 1.3.1 & 1.3.2 Description of Bid Items below.
 - 3. **Additive Alternates** – Provide all labor, materials and equipment required to construct Additive Alternates as described in Section 1.3.3 Description of Bid Items below.

1.3 DESCRIPTION OF BID ITEMS

1.3.1 Base Bid Schedule A – Collocated Bulk Fuel Upgrades

A. Bid Item A1: Mobilization/Demobilization

4. The unit price Bid for Mobilization/Demobilization shall include all mobilization and demobilization costs associated with construction of the basic bid items described in Bid Schedule A and must include the following principal items performed or established in accordance with the Contract Documents:
 - a. Pre-construction and post-construction costs of obtaining all required bonds, insurance, and permits, and other costs Contractor must incur before beginning the Work.
 - b. Transportation of all materials, supplies, plant(s), equipment and personnel to and from the jobsite.
 - c. Erecting and maintaining all plants, temporary structures, storage yards erosion control measures, and other construction facilities, and for Work required to remove said temporary facilities and perform cleanup of the project area in accordance with Section 01 50 00 Construction Facilities and Temporary Controls and Section 01 57 13 Temporary Erosion and Sediment Control.
 - d. Obtaining and paying for all permits required of the Contractor.
 - e. Posting all OSHA-required notices and establishing safety programs.
 - f. Submittal of required Project Schedules.
2. Mobilization/Demobilization costs for all subcontracted work shall be considered to be included.
3. Items which are not to be included in this item include:
 - a. Any portion of the Work covered by specific Bid item or incidental work which is to be included in a Bid item or items.
 - b. Profit, Interest on borrowed money, overhead or management costs.
4. Method of Measurement: Payment for mobilization and demobilization will be made in partial payments as follows:

- a. Up to 60% of the amount bid for mobilization and demobilization may be paid when equipment and supplies are landed in serviceable condition at the project site and other necessary preparations have been completed so that work can commence on Bid Schedule A bid items.
- b. The remaining balance will be paid as Contractor facilities are dismantled and equipment is removed from the project site, with the final increment paid upon completion of demobilization. The owner reserves the right to require Contractor to submit invoices, payroll records, and other appropriate documentation to substantiate any or all payments under this item.

5. Basis of Payment: Payment will be made at the Contract Lump Sum price for mobilization / demobilization.

B. Bid Item A2: Community Tank Farm Civil Site Work

1. The unit price Bid for Community Tank Farm Civil Site Work shall include full payment for all labor, material, transportation, freight, and equipment required to:
 - a. Complete all Earthwork Related to the Community Facilities as shown on the design drawings: Activities to complete this task include all clearing and grubbing, waste disposal, removal/relocation of construction debris, building materials that would interfere with construction, dewatering, surface preparation, stockpiling, excavation, erosion control, placement, compaction and finish grading of classified fill as required to construct foundation pads and access drives for the community bulk fuel tank farm and related facilities, in accordance with the Contract Drawings and Specifications.
 - b. **The Base Bid assumes classified materials (gravel) will be provided for the Contractors use in stockpiles located in the old gravel pit (adjacent to the proposed collocated tank farm).**
2. Items which are not to be included in this bid item are listed below:
 - a. Any portion of the Work covered by separate Bid item or incidental work.
 - b. Fence, containment system, tank farm membrane liner systems and classified fill within containment systems.
3. Measurement for payment shall be lump sum complete in-place.

C. Bid Item A3: Community Bulk Fuel Tank Farm

1. The unit price Bid for the Community Bulk Fuel Tank Farm shall include full payment for all labor, material and equipment required to:
 - a. Construct Secondary Containment System: Activities to complete this task include furnishing and installing pre-engineered steel containment dike, geotextile and liner, drainage piping and sumps, stairways and platforms, and placement, compaction and finish grading of classified fill as required to construct a fully functional lined secondary containment system in accordance with the Contract Drawings and Specifications.
 - b. **The Base Bid assumes classified materials (gravel) will be provided for the Contractors use in stockpiles located in the old gravel pit (adjacent to the proposed collocated tank farm).**
 - c. Install Tanks, Tank Foundations, and Mechanical Equipment: Activities to complete this task include procuring, transporting and installing above ground storage tanks and procuring, transporting, and installing dispensing tanks, venting, gauging, water draw, pressure relief, and other appurtenances, timber foundations, meters, dispensers, hose reels, piping, valves, fittings, meters, tags, and related appurtenances, all fencing, and mechanical systems and controls, fire extinguishers, signs and placards, and other components as required to provide a complete, fully functional bulk fuel tank farm and dispensing facility in accordance with the Contract Drawings and Specifications.

2. Measurement for payment shall be lump sum complete in-place.

D. Bid Item A4: Electrical Systems

1. The unit price Bid shall include but not be limited to full payment for all labor, material and equipment required to:
 - a. Construct electrical systems and controls including control panels, conduit, conductors, lighting, fence & system grounding, motor starters, tank pumps & level switches. Contractor to coordinate new electrical service to the facility with local power utility. Complete electrical systems as required to provide a complete, fully functional bulk fuel facility in accordance with the Contract Drawings and Specifications.
 - b. Furnish and Install standalone retail dispensers: System shall be fully operational and self-contained with retail dispenser and be supplied with all required appurtenances, cords, hardware, and software required to be fully functional.

2. Measurement for payment shall be lump sum complete in-place

E. Bid Item A5: Spill Response Equipment & connexs:

1. The unit price Bid for Spill Response Equipment & connexs shall include but not be limited to full payment for all labor, material and equipment required to:
 - a. Provide spill response gear within like-new connex van: Activities to complete this task include, the procurement of an 8-ft by 20-ft, like new weather-tight connex van and all required spill response equipment listed in the Contract Documents, packaging of the spill response equipment within the connex van, delivery, construction of shelving, and placement of the filled connex van in accordance with the Contract Drawings and Specifications.
2. Paint spill response & attendant connex to match IAW with the coating specification.
3. Measurement for payment shall be lump sum complete in-place

F. Bid Item A6: Transfer Fuel & Decommission Existing Tank Farms

1. The unit price Bid for Transfer Fuel & Decommission Existing Tank Farms shall include full payment for all labor, material and equipment required to:
 - a. Decommission existing tanks: Activities to complete this task shall include visual inspection, filtering (particulate and water removal) and transferring all useable product from the tanks to be decommissioned to the appropriate new tanks, removing, filtering, and properly disposing of any accumulated oily water in the tanks, transfer of any accumulated sludge into 55-gallon steel barrels, cleaning the inside of the tanks, proper disposal of all rinsate and other waste materials generated during cleaning of the tanks, disconnecting and blanking off all piping connected to the tanks to be decommissioned, closing all penetrations with the exception of a vent, cutting a rectangular hole in the tank and welding the removed piece back on at a 90 degree angle, and posting a sign on each tank stating that the tank is permanently closed and noting the date of closure in accordance with the Contract Drawings and Specifications.
 - b. Important Note: Contractor to coordinate with tank farm Owner to minimize amount of fuel transfer required and to follow all code mandated procedures and regulations relating to fuel transfers. See Decommissioning Sheets for additional information on existing tank farms.
 - c. Decommission existing above grade pipelines: Activities to complete this task include disconnecting piping from all tanks and appliances, purging piping and properly disposing of all liquids and sludges, removing and disposing of all valves unless tagged for salvage, cutting of all piping into maximum 10 ft lengths and transporting and neatly stacking the cut pieces to a location within

the existing tank farm as directed by the Owner and in accordance with the Contract Drawings and Specifications.

2. NOTE: The existing Tank Farm & dispensing system must remain operational until the new Tank Farm is fully operational.

3. Measurement for payment shall be lump sum complete in-place.

G. Bid Item A7: Manifesting, Transport and Disposal of RCRA Hazardous Waste

1. The unit price Bid for Manifesting, Transport and Disposal of RCRA Hazardous Waste shall include full payment for all labor, material and equipment required to:

a. Test, Label, Manifest, Transport and Dispose of sludge removed from the tanks and confirmed by certified testing lab to be a RCRA Hazardous Waste: Activities to complete this task shall include all sample collection, transport and laboratory testing costs, sealing the steel 55 gallon drums containing RCRA hazardous waste in approved overpack drums, labelling each overpack drum with the name of the tank owner, completion of all required forms, manifests and other applicable documentation, transportation of sealed drums to an approved disposal facility and payment of all related handling and disposal fees in accordance with the Contract Drawings and Specifications. Sludge from tanks with differing owners shall not be mixed. The volume of each drum shall be utilized to the fullest practical extent. Partially full drums shall be avoided whenever possible.

2. Measurement for payment shall be per full 55-gallon drum sealed within appropriate over pack drum and delivered to an approved disposal site.

H. Bid Item A8: Transport and Disposal of State Regulated Non-Hazardous Waste

1. The unit price Bid for Transport and Disposal of State Regulated Non-Hazardous Waste shall include full payment for all labor, material and equipment required to:

a. Test, label, transport and dispose of sludge removed from the tanks and confirmed by certified testing lab to be State Regulated Non-RCRA Hazardous Waste: Activities to complete this task shall include all sample collection, transport and laboratory testing costs, completion of all required forms, manifests and other applicable documentation, transportation to an approved disposal facility and payment of all related handling and disposal fees in accordance with the Contract Drawings and Specifications. Sludge from tanks with differing owners shall not be mixed. The volume of each drum shall be utilized to the fullest practical extent. Partially full drums shall be avoided whenever possible.

2. Measurement for payment shall be per full 55-gallon drum delivered to an approved disposal site.

1.3.2 Base Bid Schedule B – AVEC Bulk Fuel Upgrades

A. Bid Item B1: AVEC Mobilization/Demobilization

1. The unit price Bid for Mobilization/Demobilization shall include all mobilization and demobilization costs associated with construction of the basic bid items described in Bid Schedule B and must include the following principal items performed or established in accordance with the Contract Documents:
 - a. Pre-construction and post-construction costs of obtaining all required bonds, insurance, and permits, and other costs Contractor must incur before beginning the Work.
 - b. Transportation of all materials, supplies, plant(s), equipment and personnel to and from the jobsite.
 - c. Erecting and maintaining all plants, temporary structures, storage yards erosion control measures, and other construction facilities, and for Work required to remove said temporary facilities and perform cleanup of the project area in accordance with Section 01 50 00 Construction Facilities and Temporary Controls and Section 01 57 13 Temporary Erosion and Sediment Control.
 - d. Obtaining and paying for all permits required of the Contractor.
 - e. Posting all OSHA-required notices and establishing safety programs.
 - f. Submittal of required Project Schedules.
6. Mobilization/Demobilization costs for all subcontracted work shall be considered to be included.
7. Items which are not to be included in this item include:
 - c. Any portion of the Work covered by specific Bid item or incidental work which is to be included in a Bid item or items.
 - d. Profit, Interest on borrowed money, overhead or management costs.
8. Method of Measurement: Payment for mobilization and demobilization will be made in partial payments as follows:

- a. Up to 60% of the amount bid for mobilization and demobilization may be paid when equipment and supplies are landed in serviceable condition at the project site and other necessary preparations have been completed so that work can commence on Bid Schedule A bid items.
- b. The remaining balance will be paid as Contractor facilities are dismantled and equipment is removed from the project site, with the final increment paid upon completion of demobilization. The owner reserves the right to require Contractor to submit invoices, payroll records, and other appropriate documentation to substantiate any or all payments under this item.

9. Basis of Payment: Payment will be made at the Contract Lump Sum price for mobilization / demobilization.

B. Bid Item B2: AVEC Tank Farm Civil Site Work

1. The unit price Bid for AVEC Tank Farm Civil Site Work shall include full payment for all labor, material, transportation, freight, and equipment required to:
 - a. Complete all Earthwork Related to the AVEC Facilities as shown on the design drawings: Activities to complete this task include all clearing and grubbing, waste disposal, removal/relocation of construction debris, building materials that would interfere with construction, dewatering, surface preparation, stockpiling, excavation, erosion control, placement, compaction and finish grading of classified fill as required to construct foundation pads for the AVEC bulk fuel tank farm and related facilities, in accordance with the Contract Drawings and Specifications.
 - b. **The Base Bid assumes classified materials (gravel) will be provided for Contractor use in stockpiles located in the old gravel pit (adjacent to the proposed collocated tank farm).**
2. Items which are not to be included in this bid item are listed below:
 - c. Any portion of the Work covered by separate Bid item or incidental work.
 - d. Fence, containment system, tank farm membrane liner systems and classified fill within containment system.
3. Measurement for payment shall be lump sum complete in-place.

C. Bid Item B3: AVEC Bulk Fuel Tank Farm

1. The unit price Bid for the AVEC Bulk Fuel Tank Farm shall include full payment for all labor, material and equipment required to:

- d. Construct Secondary Containment System: Activities to complete this task include furnishing and installing pre-engineered steel containment dike, geotextile and liner, drainage piping and sumps, stairways and platforms, and placement, compaction and finish grading of classified fill as required to construct a fully functional lined secondary containment system in accordance with the Contract Drawings and Specifications.
- e. **The Base Bid assumes classified materials (gravel) will be provided for Contractor use in stockpiles located in the old gravel pit (adjacent to the proposed collocated tank farm).**
- f. Install Tanks, Tank Foundations, and Mechanical Equipment: Activities to complete this task include procuring, transporting and installing above ground storage tanks, tank venting, gauging, water draw, pressure relief, and other appurtenances, timber foundations, piping, valves, fittings, tags, and related appurtenances, all fencing, and mechanical systems and controls, fire extinguishers, signs and placards, and other components as required to provide a complete, fully functional bulk fuel tank farm and dispensing facility in accordance with the Contract Drawings and Specifications.

2. Measurement for payment shall be lump sum complete in-place.

D. Bid Item B4: Electrical Systems

1. The unit price Bid shall include but not be limited to full payment for all labor, material and equipment required to:
 - a. Construct electrical systems and controls including conductors, conduit, lighting, fence & system grounding, and tank level monitoring system. Contractor to coordinate electrical tie-in with existing system with AVEC. Complete electrical systems as required to provide a complete, fully functional bulk fuel facility in accordance with the Contract Drawings and Specifications.
2. Measurement for payment shall be lump sum complete in-place

E. Bid Item B5: AVEC Spill Response Equipment:

1. The unit price Bid for Spill Response Equipment shall include but not be limited to full payment for all labor, material and equipment required to:
 - a. Provide spill response gear: Activities to complete this task include, all required spill response equipment listed in the Contract Documents, packaging of the spill response equipment within the existing AVEC connex van in accordance with the Contract Drawings and Specifications.
2. Measurement for payment shall be lump sum complete in-place

F. Bid Item B6: AVEC Temporary Fuel Supply & Decommission Existing AVEC Tank Farm

1. The unit price Bid for AVEC Temporary Fuel Supply & Decommission Existing AVEC Tank Farm shall include full payment for all labor, material and equipment required to:
 - a. AVEC temporary fuel supply: The Contractor shall supply temporary fuel storage and fuel transfer pipeline to the AVEC power plant until the new AVEC tank farm is fully operational. See Section 01 51 19 Temporary Fuel Storage & Dispensing for more information. Contractor shall coordinate tank farm decommissioning and scheduling of fuel deliveries with AVEC.
 - b. Decommission existing tanks: Activities to complete this task shall include visual inspection, filtering (particulate and water removal) and transferring all useable product from the tanks to be decommissioned to the appropriate new tanks, removing, filtering, and properly disposing of any accumulated oily water in the tanks, transfer of any accumulated sludge into 55-gallon steel barrels, cleaning the inside of the tanks, proper disposal of all rinsate and other waste materials generated during cleaning of the tanks, disconnecting and blanking off all piping connected to the tanks to be decommissioned, closing all penetrations with the exception of a vent, relocating the tanks as required to allow construction of new facilities, cutting a rectangular hole in the tank and welding the removed piece back on at a 90 degree angle, and posting a sign on each tank stating that the tank is permanently closed and noting the date of closure in accordance with the Contract Drawings and Specifications.
 - c. Important Note: Contractor to coordinate with tank farm Owner to minimize amount of fuel transfer required and to follow all code mandated procedures and regulations relating to fuel transfers. See Decommissioning Sheets for additional information on existing tank farm.
 - d. Decommission existing above grade pipelines: Activities to complete this task include disconnecting piping from all tanks and appliances, purging piping and properly disposing of all liquids and sludges, removing and disposing of all valves unless tagged for salvage, cutting of all piping into maximum 10 ft lengths and transporting and neatly stacking the cut pieces to a location within the existing tank farm as directed by the Owner and in accordance with the Contract Drawings and Specifications.

2. Measurement for payment shall be lump sum complete in-place.

G. Bid Item B7: Manifesting, Transport and Disposal of RCRA Hazardous Waste

3. The unit price Bid for Manifesting, Transport and Disposal of RCRA Hazardous Waste shall include full payment for all labor, material and equipment required to:
 - a. Test, Label, Manifest, Transport and Dispose of sludge removed from the tanks and confirmed by certified testing lab to be a RCRA Hazardous Waste: Activities to complete this task shall include all sample collection, transport and laboratory testing costs, sealing the steel 55 gallon drums containing RCRA hazardous waste in approved overpack drums, labelling each overpack drum with the name of the tank owner, completion of all required forms, manifests and other applicable documentation, transportation of sealed drums to an approved disposal facility and payment of all related handling and disposal fees in accordance with the Contract Drawings and Specifications. Sludge from tanks with differing owners shall not be mixed. The volume of each drum shall be utilized to the fullest practical extent. Partially full drums shall be avoided whenever possible.
4. Measurement for payment shall be per full 55-gallon drum sealed within appropriate over pack drum and delivered to an approved disposal site.

H. Bid Item B8: Transport and Disposal of State Regulated Non-Hazardous Waste

3. The unit price Bid for Transport and Disposal of State Regulated Non-Hazardous Waste shall include full payment for all labor, material and equipment required to:
 - b. Test, label, transport and dispose of sludge removed from the tanks and confirmed by certified testing lab to be State Regulated Non-RCRA Hazardous Waste: Activities to complete this task shall include all sample collection, transport and laboratory testing costs, completion of all required forms, manifests and other applicable documentation, transportation to an approved disposal facility and payment of all related handling and disposal fees in accordance with the Contract Drawings and Specifications. Sludge from tanks with differing owners shall not be mixed. The volume of each drum shall be utilized to the fullest practical extent. Partially full drums shall be avoided whenever possible.
4. Measurement for payment shall be per full 55-gallon drum delivered to an approved disposal site.

1.3.3 Additive Alternates – Shageluk Bulk Fuel Upgrades

- A. Additive Alternate 1 – 50% Classified Material (Gravel) Located 1-mile North of Bridge
 1. Additive Alternate 1: 50% of the classified materials will be provided in the

old community gravel pit (same as base bid) and 50% will be located approx. 1-mile to the North of the community along the airport access road.

2. Additive Alternate 1: The Lump Sum Bid shall include full payment for all labor, material, transportation, surveying, and equipment required to excavate, load, haul, and stockpile at the new site 50% of the Classified Material for the project.
3. Measurement for payment shall be Lump Sum complete in place stockpiled at the project location based on volumetric measurement and/or truck count by Owner and Contractor.

B. Additive Alternate 2 – Cut-up Decommissioned Tanks & Stack

1. Activities to complete this task include cutting all decommissioned tanks at the existing tank farms into maximum 8-ft by 10-ft flattened pieces. Transport and neatly stack the cut pieces at a location within the existing tank farm as directed by the Owner in accordance with the Contract Drawings and Specifications.
2. Payment for this Bid Item shall be per tank as indicated on the Bid Schedule.

B. Additive Alternate 3 – Disposal of Cut-up Decommissioned Tanks

1. Activities to complete this task include transporting the cut pieces to an existing landfill (if approved by local solid waste authority) or to an alternative, Contractor Provided, Owner approved, offsite disposal area in accordance with the Contract Drawings and Specifications.
2. Payment for this Bid Item shall be per tank transported and disposed of at an approved landfill as indicated on the Bid Schedule.

1.4 CONTRACT METHOD

A. This contract is composed of lump sum and unit bid items as shown on the bid schedule.

1.5 WORK BY OTHERS

A. Other projects may run concurrently with the work. Cooperate with other contractors, force account construction crews and superintendents, agencies and the Owner to minimize conflicts.

B. Notify the Engineer immediately if conflicts will interfere with the progress of the work.

1.6 SHUTOFFS / DISRUPTIONS TO SERVICE

- A. No disruptions in fuel supply or electric power generation will be allowed.
- B. Work with the Owner to schedule any other disruptions for a time which minimizes impact on facility operations. Provide not less than 72 hours notice to Owner of activities that will affect Owner operations.

1.7 CONTRACTOR'S USE OF PREMISES

- A. Coordinate with Owner prior to placing equipment or supplies at the staging area(s) identified on the Contract Drawings. Do not disturb areas outside of project boundaries.
- B. Do not disrupt access to adjacent areas unaffected by the Work. Keep driveways and entrances serving premises clear and available for use at all times. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner operations.
- C. Assume full responsibility for protection and safekeeping of products under this Contract.
- D. Assume full responsibility for the protection of existing facilities and contents, from damage due to construction operations.

1.8 COORDINATION

- A. Coordinate Work to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items to be installed later.
- B. Sequence Work to maximize worker efficiency and minimize construction time.
- C. Prior to procurement verify that characteristics of interrelated equipment are compatible.
- D. Coordinate space requirements and installation of components. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

1.9 ACCESS FOR TESTING AND INSPECTION

- A. Provide access for Owner and Engineer to the site. Provide on-site transportation, ladders, lifts, eye and ear protection, hard hats, appropriate and clean respiratory protection, etc., for inspections and testing of the work.

PART 2 – PRODUCTS

Not Used

Part 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 11 17

INTENT OF DOCUMENTS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

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

1.2 RELATED REQUIREMENTS

- A. Section 00 70 00 General Conditions: Article 1 Definitions relating to 'Drawings' and 'Specifications'.
- B. Section 00 70 00 General Conditions: Article 3 Contract Documents relating to Intent, Amending, and Reuse.

1.3 SPECIFICATION FORMAT AND COMPOSITION

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

1.4 DRAWINGS: CONTENT EXPLANATION

- A. Drawings, Dimensions, and Measurements.

1. Contract Documents do not purport to describe in detail, absolute and complete construction information. Drawings are diagrammatic. Contractor shall provide verification of actual site conditions and shall provide complete and operational systems as specified when drawings do not provide full detail.

1.5 COMMON TERMINOLOGY

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

1.6 CONFLICTS

- A. Report any conflicts to the Project Manager for clarification.

PART 2 – PRODUCTS

Not Used

Part 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 11 21

CONTRACTOR'S CERTIFICATION OF SUBCONTRACTORS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Procedures for preparing, submitting, and accepting subcontracts.

1.2 RELATED REQUIREMENTS

- A. Document 00 10 00 Information to Bidders
- B. Document 00 43 00 Subcontractor List
- C. Document 00 70 00 General Conditions
- D. Section 01 33 00 Submittals: Procedures

1.3 PREPARATION

- A. Certification Forms: Use forms provided by AUTHORITY.
- B. CONTRACTOR to prepare certification form and submit to the AUTHORITY prior to the start of work. Multiple subcontracts may be included under a single submittal. Where required, attach additional information (cross-referenced to the appropriate subcontract) to the certification form.
- C. Substitute certification forms will not be considered.

1.4 SUBMITTAL OF CERTIFICATION

- A. CONTRACTOR shall submit the initial and all subsequent certification forms in accordance with the submittal requirements identified under paragraph 1.2 of this Section.

1.5 CONSIDERATION OF CERTIFICATION

- A. Following receipt of submittal and within a reasonable period of time AUTHORITY shall review for each of the following:
 1. Completeness of forms and attachments.
 2. Proper execution (signatures) of forms and attachments.
- B. Submittals which are not complete or not properly executed will be returned to the CONTRACTOR under a transmittal letter denoting the deficiencies found. CONTRACTOR shall correct and resubmit per paragraph 1.4 of this Section.
 1. Subcontractors will be required to leave the project site until properly executed subcontract is in place.

2. Payment will not be made for work performed by a non-certified subcontractor.

1.6 ACKNOWLEDGMENT OF CERTIFICATION

- A. Submittals which have been examined by AUTHORITY and are determined to be complete and properly executed shall be acknowledged as such by signature of designated AUTHORITY representative on the face of each certification form.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

ALASKA ENERGY AUTHORITY	SUBCONTRACTOR CERTIFICATION	 ALASKA ENERGY AUTHORITY
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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: Shageluk Bulk Fuel Upgrades PROJ. #: _____

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
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
Does the Subcontract specifically bind the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of the Department and does it contain waiver provisions and termination provisions as required by the Contract Documents? Yes No
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

c. Does the evidence of insurance list the Department as an "Additional Insured" or "Certificate Holder"?

Yes No

d. Does the evidence of insurance commit to providing 30 day written notice of cancellation or reduction of any coverage?

Yes No

e. Insurance Expiration dates:

Comprehensive or Commercial General Liability: _____

Automobile: _____ Workers' Compensation: _____

(Other): _____

9. Copies of the following professional certifications, licenses, and registrations are attached (circle all that apply):

Business License (mandatory)

Contractor License (mandatory)

Land Surveyor's License

Electrical Administrator's License (mandatory for electrical subs)

Mechanical Administrator's License (mandatory for mechanical subs)

Engineer/Architect

Other: _____

10. Exceptions to any of the above are explained as follows: _____

CERTIFICATION (to be completed and signed by PRIME CONTRACTOR): I certify all the above to be true and correct.

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 20 13

APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

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

1.2 RELATED REQUIREMENTS

- A. Section 00 72 13 General Conditions
- B. Section 01 33 00 Submittal
- C. Section 01 29 73 Schedule of Values.
- D. Section 01 77 19 Closeout Requirements.
- E. Section 01 78 39 Project Record Documents.

1.3 FORMAT

- A. Application for Payment form as provided by AUTHORITY or Contractor's form containing same information.

1.4 PREPARATION OF APPLICATIONS

- A. Type required information on Application for Payment form approved by AUTHORITY.
- B. Execute certification by original signature of authorized officer upon each copy of the Application for Payment.
- C. Submit names of individuals authorized to be responsible for information submitted on Application for Payment.
- D. Indicate breakdown of costs for each item of the Work on accepted schedule of values. Provide dollar value in each column for each line item for portion of Work performed and for stored products.
- E. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.
- F. Include 10% retainage on each pay request. Retainage shall be eligible for payment on Contractor's final pay request.
- G. Prepare Application for Final Payment as specified in Section 01 77 19 Closeout Requirements.

1.5 SUBMITTAL PROCEDURES

- A. Submit one copy of each Application for Payment at times stipulated in Contract.

B. Submit under AUTHORITY accepted transmittal letter. See Section 01 29 73 Schedule of Values. Identify Contract by the AUTHORITY contract number.

1.6 SUBSTANTIATING DATA

A. When 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 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 with each Application for Payment.

1. Updated construction schedule as required by Section 01 33 00 Submittals.
2. Updated Schedule of Values as required by Section 01 29 73 Schedule of Values.
3. Evidence of transmittal of certified payrolls, if required, to the Labor Department.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 25 13

PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Requests for substitution of products.

1.2 RELATED REQUIREMENTS

- A. Section 00 02 00 Invitation For Bids: Substantial Completion Date.
- B. Section 00 70 00 General Conditions
- C. Section 00 80 00 Supplementary Conditions
- D. Section 01 33 00 Submittals
- E. Section 01 33 23 Shop Drawings, Product Data, and Samples

1.3 SUBSTITUTION SUBMITTAL PERIOD

- A. All product substitution requests will be considered only within 15 days after date established in Notice to Proceed. Subsequent requests will be considered only in case of product unavailability or other conditions beyond control of CONTRACTOR. (Submit on Substitution Request Form approved by Project Manager)

1.4 OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards.
- B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not specifically named.
- C. Products Specified by Naming One or More Manufacturers followed by the term "No Substitutions": use only specified manufacturers, no substitutions allowed.

1.5 PRODUCTS LIST

- A. Within (15) days after date of Notice to Proceed, transmit an electronic copy of a list of products which are proposed for installation, including name of manufacturer.
- B. Tabulate products by Specifications section number, title, and Article number
- C. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
- D. AUTHORITY will reply in writing within fifteen days stating whether there is

reasonable objection to listed items. Failure to object to a listed item shall not constitute a waiver of requirements of Contract Documents.

E. AUTHORITY will contact Engineer to ascertain any extra Professional fees to assess the substitutions and shall so notify CONTRACTOR who will include payment for the professional review cost in the application for substitution.

1.6 LIMITATIONS ON SUBSTITUTIONS

- A. Substitutions will not be considered when indicated on Shop Drawings or product data submittals.
- B. Substitute products shall not be ordered or installed without written acceptance.
- C. AUTHORITY will contact the Engineer to determine acceptability of substitutions.

1.7 REQUESTS FOR SUBSTITUTIONS

- A. Submit separate request for each substitution. Document each request with complete data substantiating compliance of proposed substitution with requirements of Contract Documents.
- B. Identify product by Specification section and Article numbers. Provide manufacturer's name and address, trade name of product, and model or catalog number. List fabricators and Suppliers as appropriate.
- C. Attach product data as specified in Section 01 33 23.
- D. List similar projects using product, dates of installation, and names of design Engineer(s) and, name of the facility owner.
- E. Give itemized comparison of proposed substitution with specified product, listing variations, and reference to Specification sections and Article numbers.
- F. Give quality and performance comparison between proposed substitution and the specified product.
- G. Give cost data comparing proposed substitution with specified product, and amount of net change to Contract Price.
- H. List availability of maintenance services and replacement materials.
- I. State effect of substitution on construction schedule, and changes required in other Work or products.

1.8 CONTRACTOR REPRESENTATION

- A. Request for substitution constitutes a representation that CONTRACTOR has investigated proposed product and has determined that it is equal to or superior in all respects to specified product.
- B. CONTRACTOR will provide same warranty for substitution as for specified product.
- C. CONTRACTOR will coordinate installation of accepted substitute, making such

changes as may be required for Work to be complete in all respects.

- D. CONTRACTOR certifies that cost data presented is complete and includes all related costs under this Contract.
- E. CONTRACTOR waives claims for additional costs related to substitution which may later become apparent.

1.9 SUBMITTAL PROCEDURES

- A. Submit an electronic copy of complete request for substitution.
- B. Project Manager will review CONTRACTOR's requests for substitutions with reasonable promptness.
- C. During the bidding period, AUTHORITY will record acceptable substitutions in Addenda.
- D. After Award of Contract, AUTHORITY will notify CONTRACTOR, in writing, of decision to accept or reject requested substitution within 15 days.
- E. For accepted products, submit Shop Drawings, product data, and samples under provisions of Section 01 33 23.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

ALASKA ENERGY AUTHORITY

SUBSTITUTION REQUEST FORM
(AFTER AWARD)



ALASKA ENERGY AUTHORITY

Project: Shageluk Bulk Fuel Upgrades

Project No.: _____

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

Project Manager _____ Date: _____

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SECTION 01 26 57

CHANGE ORDER PROCEDURES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Procedures for processing Change Orders.

1.2 RELATED REQUIREMENTS

- A. Section 00 41 15 Bid Schedule
- B. Section 00 52 13 Construction Contract: Total amount of Contract Price, as awarded
- C. Section 00 70 00 General Conditions:
- D. Section 01 20 13 Application for Payment.
- E. Section 01 33 00 Submittals: Progress Schedules.
- F. Section 01 29 73 Schedule of Values.
- G. Section 01 77 19 Closeout Requirements

1.3 SUBMITTALS

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

1.4 DOCUMENTATION OF CHANGE IN CONTRACT PRICE AND CONTRACT TIME

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

- D. Support each claim for additional costs, and for work done on a Cost of the Work basis, with additional information:
 - 1. Origin and date of claim.
 - 2. Dates and times work was performed and by whom.
 - 3. Time records and wage rates paid.
 - 4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

1.5 PRELIMINARY PROCEDURES

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

1.6 CONSTRUCTION CHANGE AUTHORIZATION

- A. Shall be in accordance with Article 9 - Changes: in Section 00 70 00 - General Conditions.

1.7 LUMP SUM CHANGE ORDER

- A. CONTRACTOR shall submit an itemized price proposal in sufficient detail to fully explain the basis for the proposal. CONTRACTOR and AUTHORITY shall then negotiate an equitable price (and time adjustment if appropriate) in good faith. The Change Order will reflect the results of those negotiations. If negotiations break down, CONTRACTOR may be directed to perform the subject Work under a COST OF THE WORK CHANGE ORDER.
- B. The maximum rates of cost markup (to cover both overhead and profit of the CONTRACTOR) shall be in accordance with Article 10- Contract Price, Computation and Change: in Section 00 70 00 – General Conditions.
- C. These terms shall also apply to the proposals of subcontracts and allowances.

1.8 UNIT PRICE CHANGE ORDER

- A. For pre-determined unit prices and quantities, Change Order will be executed on a lump sum basis.
- B. For pre-determined unit prices and undetermined quantities, Change Order will be

executed on an estimated quantity basis; payment will be based on actual quantities measured as specified.

1.9 COST OF THE WORK CHANGE ORDER

- A. CONTRACTOR shall submit documentation required in Paragraph 1.4 of this Section on a daily basis for certification by AUTHORITY. AUTHORITY will indicate by signature that the submitted documentation is acceptable. If it is not acceptable, CONTRACTOR and AUTHORITY shall immediately meet to discuss resolution.
- B. After completion of the change and within 14 calendar days, unless extended by AUTHORITY, the CONTRACTOR shall submit in final form an itemized account with support data of all costs. Support data shall have been certified by AUTHORITY, as required above in paragraph A.
- C. AUTHORITY will determine the change allowable in Contract Price and Contract Time as provided in provisions of the Contract Documents.

1.10 EXECUTION OF CHANGE ORDERS

- A. AUTHORITY will issue Change Orders for signatures of parties as provided in Conditions of the Contract.

1.11 CORRELATION OF CONTRACTOR SUBMITTALS

- A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Price as shown on Change Order.
- B. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of Work affected by the change, and resubmit.
 - 1. Progress Schedule shall be updated to reflect the changed condition. It shall be identified as a unique single or multiple task activity and shall be linked to its predecessor and successor activities from the base schedule set of activities. An update to the cash flow schedule shall be made as well and to the extent possible, operational tasks shall be cross referenced to schedule of values categories
- C. Promptly enter changes in Project Record Documents.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION



CHANGE ORDER REQUEST (PROPOSAL)

Project: Shageluk Bulk Fuel Upgrades

Change Order Request Number: _____

To: _____

From (Contractor): _____

Re: _____

Date: _____

11. *What is the primary purpose of the following statement?*

Contract For: _____

This Change Order Request (C.O.R.) contains an itemized quotation for changes in the Contract Sum or Contract Time in response to:

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: _____

Date:

This page is blank intentionally.

SECTION 01 29 73

SCHEDULE OF VALUES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Procedures for preparation and submittal of Schedule of Values.

1.2 RELATED REQUIREMENTS

- A. Section 00 70 00 General Conditions
- B. Section 01 20 13 Applications for Payment
- C. Section 01 33 00 Submittals

1.3 FORMAT

- A. Form and content must be acceptable to AUTHORITY.
- B. CONTRACTOR's standard form or media-driven printout will be considered on request.
- C. Follow the table of contents of Project Manual and the Bid Schedule for listing component parts. Identify each line item by number and title of listed Specification sections.

1.4 CONTENT

- A. List installed value of each major item of Work and each subcontracted item of Work as a separate line item to serve as a basis for computing values for progress payments. Round off values to nearest dollar.
- B. For each major subcontract, list products and operations of that subcontract as separate line items.
- C. Coordinate listings with progress schedule.
- D. Component listings shall each include a directly proportional amount of CONTRACTOR's overhead and profit.
- E. For items on which payments will be requested for stored products, list sub-values for cost of stored products with taxes paid.
- F. Specific line item Values as indicated below shall be minimum acceptable amounts and must be included on all approved Schedules of Values and Applications for Payment:

1. Bid Items in Section 01 11 13 – Work Covered by Contract.
2. Section 01 77 19 – Closeout Requirements. Value of all required Substantial Completion Submittals and Closeout Submittals shall be \$25,000.
3. No progress payments will be made for Substantial Completion Submittals and Closeout Submittals until all submittal have been submitted to, and accepted by the AUTHORITY.

G. The sum of values listed shall equal total Contract Price.

1.5 SUBMITTAL

- A. Submit a copy of Schedule in electronic format within 15 days after the Notice to Proceed. Subsequent updated Schedule of Values shall be presented for review ten days prior to each Application for Payment.
- B. Transmit on an AUTHORITY accepted form transmittal letter. Identify Project by AUTHORITY's title and Project number; identify Contract by AUTHORITY's Contract number.

1.6 SUBSTANTIATING DATA

- A. When AUTHORITY requires substantiating information, submit data justifying line item amounts in question.
- B. Provide an electronic 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 31 19

PROJECT MEETINGS

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

- A. CONTRACTOR participation in preconstruction conferences.
- B. CONTRACTOR administration of progress meetings and pre-installation conferences.

1.2 RELATED REQUIREMENTS

- A. Section 01 11 13 – Work Covered By Contract Documents.
- B. Section 01 33 00 – Submittal Procedures.
- C. Section 01 45 00 - Quality Control.
- D. Section 01 77 19 – Closeout Requirements.
- E. Section 01 78 39 – Project Record Documents.

1.3 PRECONSTRUCTION CONFERENCES.

- A. AUTHORITY will administer a preconstruction conference (to be held at AUTHORITY's main office located in Anchorage) for execution of Contract and exchange of preliminary submittals.
- B. AUTHORITY will administer site mobilization conference at Project site for clarification of CONTRACTOR responsibilities in use of site and for review of administrative procedures.

1.4 PROGRESS MEETINGS

- A. CONTRACTOR shall schedule and administer weekly Project meetings throughout progress of the work (unless this requirement is waived by Authority).
- B. Attendance: Job superintendent, major Subcontractors and Suppliers; AUTHORITY and Engineers as appropriate to agenda topics for each meeting.
- C. Suggested Agenda: Review of Work progress, status of progress schedule and adjustments thereto, delivery schedules, submittals, maintenance of quality standards, pending changes and substitutions, and other items affecting progress of Work.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Procedures.
- B. Construction Progress Schedules.
- C. Manufacturer's Instructions.
- D. Manufacturer's Certificates.

1.2 RELATED REQUIREMENTS

- A. Section 01 11 21 CONTRACTOR's Certification of Subcontractors
- B. Section 01 20 13 Applications for Payment
- C. Section 01 25 13 Product Options and Substitutions
- D. Section 01 26 57 Change Order Procedures
- E. Section 01 29 73 Schedule of Values
- F. Section 01 33 23 Shop Drawings, Product Data, and Samples
- G. Section 01 45 00 Quality Control
- H. Section 01 50 00 Construction Facilities and Temporary Controls
- I. Section 01 71 23 Construction Surveying
- J. Section 01 77 19 Closeout Requirements
- K. Section 01 78 39 Project Record Documents
- L. Division 02 Existing Conditions
- M. Division 03 Concrete
- N. Division 05 Metals
- O. Division 10 Specialties

- P. Division 11 Spill Response Equipment
- Q. Division 26 Electrical
- R. Division 31 Earthwork
- S. Division 32 Exterior Improvements
- T. Division 33 Utilities

1.3 PROCEDURES

- A. Delivery of Submittals:
 - 1. Within 10 days following Notice to Proceed, CONTRACTOR shall submit to Project Manager & Engineer in electronic format, a Submittal Register (Section 01 33 23 1.12A) as required by the Contract (by Section Number, Paragraph Number, Page Number, and time criteria if required). The schedule must be approved by the Project Manager or Engineer before any submittals required by the Contract will be accepted.
 - 2. A sample submittal register will be provided to the successful bidder upon request.
 - 3. Electronically transfer submittals directly to the Project Manager & Engineer.
 - 4. Minimize the number of submittals. Full divisions must be submitted together (no partial submittals will be accepted).
- B. Transmit each item on an AUTHORITY accepted form. Identify Project, CONTRACTOR, Subcontractor, and major Supplier. Identify pertinent Drawing sheet and detail number, and Specification section number, as appropriate. Identify deviations from Contract Documents by submitting a separate Substitution Request Form. Provide a minimum of 8 1/2" x 5 1/2" blank space on the front page for CONTRACTOR, and Engineer review stamps.
- C. Submit initial progress schedules and Schedule of Values in electronic format as directed by the Project Manager or Engineer, in accordance with Document 00 72 13 - General Conditions. Form and content shall be reviewed by Engineer, revise and resubmit as required. Submit subsequent updated schedules with each Application for Payment.
- D. Comply with progress schedule for submittals related to Work progress. Coordinate submittal of related items.
- E. After Project Manager & Engineer Review of submittal, revise and resubmit as required, identifying changes made since previous submittal. The Project Manager will not return the first or revised copies of rejected submittals for re-use. DO NOT submit partial copies of submittals for incorporation into rejected submittal packages which have been kept by the Project Manager. Provide COMPLETE copies for each review.

- F. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.
- G. If drawings, product submittals, samples, mock-ups, or other required submittals are incomplete or not properly submitted, Project Manager will not review the submittal and will immediately return submittal to CONTRACTOR. Project Manager will review a submittal no more than two times (incomplete or improper submittals count as one). CONTRACTOR shall pay all review costs associated with more than two reviews, unless a re-submittal is required due to new comments addressing previously submitted information.

1.4 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit horizontal bar Gantt chart. Schedule shall show:
 1. Separate bar for each major trade or operation, identifying the duration of each activity and precedent activities.
 2. Complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Show each work plan and separate work area as a separate activity or group of activities.
 3. Submittal dates for Shop Drawings, product data, and samples, and product delivery dates, including any furnished by AUTHORITY and those under allowances.
 4. All required submittals and indicating the date for each required submittal.
 5. Show projected percentages of completion for each item of Work and submittal as of time of each Application for Progress Payment.
 6. Schedule shall be computer generated; (MS Projects, Sure-Trac, or Primavera); Gantt format with preceding and succeeding operational tasks indicated by relationship arrows. An accompanying cash flow chart shall reflect estimated monthly draw amounts. To the extent possible, operational tasks shall be cross referenced to schedule of values categories.

1.5 SCHEDULE OF VALUES

- A. Submit in accordance with Section 01 29 73 Schedule of Values.

1.6 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

- A. Submit in accordance with Section 01 33 23 Shop Drawings, Product Data and Samples.
- B. Submit signed and sealed engineering design calculations performed by a Professional Engineer licensed in the State of Alaska where the CONTRACTOR is responsible for design as required in the Contract Documents.

1.7 MANUFACTURER'S INSTRUCTIONS

- A. When required in individual Specification Section, submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and

1.8 QUALITY CONTROL DATA

- A. Submit in accordance with Section 01 45 00 Quality Control and individual specification sections.

1.9 CONSTRUCTION PHOTOGRAPHS

- A. Provide photographs of construction throughout progress of Work.
- B. Submit photographs with daily work reports via email to the Engineer, Owner and Owner's representatives, not less than daily. Photographs may be sent as separate file from daily report.
- C. Photographs: Digital color photographs, minimum size 2 megapixels.
- D. Take site photographs from differing directions indicating relative progress of the Work on a daily basis.
- E. Take photographs as evidence of daily project conditions including but not limited to:
 - a. Demolition of structures & Utilities
 - b. Limits of excavation & placement of geotextile
 - c. Placement and compaction of classified fill
 - d. Culverts & Drainage Structures
 - e. Sump placement & connections
 - f. Pipe bedding
 - g. Containment liner
 - h. Finished grading & RipRap slope protection
 - i. Tank foundations
 - j. Tank placement
 - k. Mechanical & Electrical work
 - l. Fencing

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

Project: Shageluk Bulk Fuel Upgrades

To: Alaska Energy Authority

From:

A/E Project Number:

Submittal Description:

Submittal Tracking Number:

Submittal File Name(s):

Submittal Type: Electronic Hard Copy Initial Submittal Re-Submittal

No Exceptions	Approved as Noted	Exceptions Noted	Exceptions Noted
<input type="checkbox"/> Noted	<input type="checkbox"/> See Comments	<input type="checkbox"/> Partial Resubmittal Required	<input type="checkbox"/> Full Resubmittal Required
Authority review is for general conformance with the design concept and Contract Documents. Markings or comments shall not be construed as relieving the Contractor from compliance with the Contract Documents, nor departures therefrom. The Contractor remains responsible for details and accuracy, for confirming and correlating all quantities and dimensions, for selecting fabrications processes, for techniques of assembly and for performing his work in a safe manner. Contractor to verify all dimensions at job site before ordering materials and equipment. Any deviations from the Contract requirements must be specifically brought to the attention of the Authority in writing and upon the Contract Documents, or by appropriate Change Order.			

As requested, we have reviewed the above noted electronic submittal file which we [downloaded from submittal exchange] [received via email on x/x/xx] and [accept the information as submitted.] [accept the information submitted with the following exceptions:] [have the following comments:]

Attachments:

Response From:

Date Received:

Date Reviewed:

SECTION 01 33 23

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Procedures for submittals.

1.2 RELATED REQUIREMENTS

- A. Section 00 70 00 General Conditions
- B. Section 01 25 13 Product Options and Substitutions
- C. Section 01 33 00 Submittals
- D. Section 01 45 00 Quality Control
- E. Section 01 77 19 Closeout Requirements

1.3 SHOP DRAWINGS

- A. Present drawings in a clear and thorough manner. Label each Shop Drawing with AUTHORITY's Project name and Project number; identify each element of the Shop Drawings by reference to sheet number and detail, or schedule.
- B. Identify field dimensions; show relation to adjacent or critical features or Work or products.
- C. Minimum Sheet Size: 8-1/2"x11". Larger sheets may be submitted in multiples of 8-1/2"x11".

1.4 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, capacities, wiring and piping diagrams and controls, 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.

1.5 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.

- 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.

1.6 MANUFACTURER'S INSTRUCTIONS

- A. Manufacturer's instructions for storage, preparation, assembly, installation, start-up, adjusting, balancing, and finishing under provisions of Section 01 45 00.

1.7 CONTRACTOR REVIEW

- A. Review submittals prior to transmittal; determine and verify field measurements, field construction criteria, manufacturer's catalog numbers, and conformance of submittal with requirements of Contract Documents.
- B. Coordinate submittals with requirements of Work and of Contract Documents.
- C. Notify the Project Manager in writing at time of submittal, of any deviations from requirements of Contract Documents.
- D. Do not fabricate products or begin Work which requires submittals until return of submittal with Authority acceptance.

1.8 SUBMITTAL REQUIREMENTS

- A. Each submittal to be numbered by Specification Section and Paragraph. Revisions shall be identified by a hyphen after the paragraph, with a number designator. Example: 1st submittal "01 33 23.01" 2nd submittal "01 33 23.02".
- B. Transmit submittals in accordance with the required submittal schedule and in such sequence to avoid delay in the Work.
- C. Provide 8 1/2" x 5 1/2" blank space on each submittal for Contractor and Engineer stamps.
- D. Apply Contractor's stamp, signed or initialed, certifying to review, verification of products, field dimensions and field construction criteria, and coordination of information with requirements of Work and Contract Documents.
- E. Coordinate submittals into logical groupings to facilitate interrelation of the items.
- F. Submit electronic copies of shop drawings required in the Contract. Contractor may be required to submit, to the Project Manager, four opaque reproductions of full-size

shop drawings at no additional cost to the Owner.

- G. Submit electronic copies of product data and manufacturer's instructions required by the contract.
- H. Submit number of samples specified in individual Specifications sections.
- I. Submit under AUTHORITY's accepted transmittal form letter. Identify Project by title and AUTHORITY's Project number; identify Contract by AUTHORITY's contract number. Identify Work and product by Specification section and Article number.
- J. Each submittal shall have as its face document a completed, AUTHORITY furnished, Submittal Summary form.

1.9 RESUBMITTALS

- A. After AUTHORITY review of submittal, revise and resubmit as required, identifying changes made since previous submittal. Provide total number of submittals as required for the first submission; if 6 are required and 4 were returned for revisions, submit 6 again. The AUTHORITY and Engineers will not return the first or revised copies of rejected submittals for re-use. DO NOT submit partial copies of submittals for incorporation into rejected submittal packages which have been kept by the AUTHORITY and/or Engineers. Provide COMPLETE copies for each review.

1.10 REVIEW

- A. AUTHORITY or authorized agent will review Shop Drawings, product data, and samples and return submittals within (14) working days.
- B. AUTHORITY or authorized agent will examine shop drawings for general arrangement, overall dimensions and suitability, and will return to the Contractor marked as follows:

"Submit Specified Item" - denotes that the item specified in the contract documents is required and substitutions are not acceptable.

"Approved" - denotes acceptance of the submittal.

"Approved With Corrections Noted" - denotes review is conditional on compliance with notes made on the submittal.

"Revise and Resubmit" - denotes that revisions are required in the submittal in order for the submittal to be generally consistent with the requirements of the Contract Documents. Required revisions will be identified to the Contractor. 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. Reasons for rejection will be identified to the Contractor. Resubmittal is required.

- C. Review by AUTHORITY or authorized agent of shop drawings shall not be construed as a complete check, but will indicate only that the general method of construction and detailing is consistent with the requirements of the Contract Documents. Review

of such drawings shall not relieve the Contractor of the responsibility for errors, dimensions, and detail design.

D. AUTHORITY or authorized agent review will not extend to means, methods, techniques, sequences or procedures of construction (except in the case of construction specific submittals, such as erection plans) 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 with the item functions.

1.11 DISTRIBUTION

A. Duplicate and distribute reproductions of Shop Drawings, copies of product data, and samples, which bear Engineer's stamp, to job site file, record documents file, Subcontractors, Suppliers, and other entities requiring information.

1.12 SCHEDULE OF SUBMITTALS

A. Submittal Register Form to be completed by Contractor and approved by AUTHORITY prior to submittal of any items.

B. Submit shop drawings, product data and samples as required for each specification section.

C. Format.

1. Submittal schedule form as provided by AUTHORITY as outlined in Section 01 45 00 1.7.

Part 2 – PRODUCTS

Not Used

Part 3 – EXECUTION

Not used

END OF SECTION

SECTION 01 42 19

REFERENCE STANDARDS

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Quality assurance.

1.2 RELATED REQUIREMENTS

- A. Section 00 72 13 General Conditions: Paragraph 3.4.2.

1.3 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date for receiving bids, unless otherwise stated in the Contract Documents.
- C. Obtain copies of standards when required by the Contract Documents.
- D. Maintain copy at Project Site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from the Project Manager before proceeding. Local code requirements, where more stringent than referenced standards, shall govern.
- F. Neither the contractual relationship, duties, nor responsibilities of the parties in Contract nor those of the Project Manager shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Quality Control Program Requirements
- B. Workmanship.
- C. Manufacturer's Instructions.
- D. Manufacturer's Certificates.
- E. Manufacturers' Field Services

1.2 RELATED REQUIREMENTS

- A. Section 00 70 00 General Conditions: Article 12, inspection and testing required by governing authorities.
- B. Section 01 33 00 Submittals: Submittal of Manufacturer's Instructions.
- C. Section 01 78 39 Project Record Documents: Shop Drawings, Product Data, and Samples: Submittal of Manufacturer's Instructions.
- D. Individual Specification Sections: Quality Control Requirements.

1.3 QUALITY CONTROL, GENERAL

- A. The CONTRACTOR shall assure that all materials and completed construction conform to contract Plans, technical specifications and other requirements, whether manufactured by the CONTRACTOR, or procured from subcontractors or vendors. When required, the CONTRACTOR shall establish, provide, and maintain an effective Quality Control Program that details the methods and procedures that will be used. Although guidelines are established and certain minimum requirements are specified herein and elsewhere in the contract technical specifications, the CONTRACTOR shall assume full responsibility for accomplishing the stated purpose.

1.4 WORKMANSHIP

- A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Perform Work by persons qualified to produce workmanship of specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking

1.5 MANUFACTURER'S INSTRUCTIONS

- A. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from AUTHORITY before proceeding.

1.6 MANUFACTURE'S CERTIFICATES

- A. When required by individual Specifications section, submit manufacturer's certificate, in duplicate, that products meet or exceed specified requirements.

1.7 MOCKUPS

- A. When required by individual Specifications section, erect complete, full-scale mockup of assembly at site, perform required tests, and remove mockup at completion, when approved by AUTHORITY.

1.8 MANUFACTURER'S FIELD SERVICES

- A. When required by manufacturer or when specified in respective Specification sections, require manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start up of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.
- B. Require manufacturer's representative to submit written report to AUTHORITY listing observations and recommendations.

1.9 TESTING REPORTS

- A. When required by individual Specification sections, provide a qualified third-party testing agency to test the work. Test reports shall be submitted to Authority upon receipt.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01 50 00

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Temporary Utilities: water, sanitation, electrical, heating and communication systems.
- B. Temporary Construction Facilities: Field office for the use of CONTRACTOR personnel, storage yards and buildings, worker shelters and access roads.
- C. Temporary Controls: air/water pollution controls, erosion control and traffic control.
- D. Temporary Fuel Storage and Dispensing: fuel storage, secondary containment and dispensing facilities.

1.2 RELATED REQUIREMENTS

- A. Section 01 11 13 Work Covered by Contract Documents
- B. Section 01 33 00 Submittals
- C. Section 01 57 13 Temporary Erosion & Sediment Control

1.3 DELIVERY, STORAGE AND HANDLING OF TEMPORARY FACILITIES

- A. Protect temporary facilities during delivery and storage operations.
- B. Maintain temporary facilities in proper and safe condition throughout progress of the work.

1.4 SUBMITTALS

- A. Submit an electronic copy of written Plan for providing temporary facilities. Submit plan a minimum of 60 days from receipt of the "Intent to Award letter".
 - 1. Plan shall include written description of CONTRACTOR's proposed methods and means of providing temporary utilities during construction activities, as described in the Specifications.
 - 2. Contractor shall receive written approval of the plan by the Engineer prior to beginning any work that could interfere with existing fuel handling and sales operations

PART 2 - PRODUCTS

2.1 TEMPORARY UTILITIES - CONTRACTOR FURNISHED ITEMS

A. Temporary Sanitation Systems

1. CONTRACTOR shall furnish and install all necessary components and systems to provide sewer and solid waste collection services at the field office. Temporary outhouses shall be self-contained units, pit privies are not acceptable.
2. CONTRACTOR furnished items include, but are not limited to, all piping, valves, fittings, structures, insulation, pumps, tanks, fixtures, tie-ins, trash receptacles, hauling operations and service agreements.
3. CONTRACTOR to provide and pay for all temporary sanitation system related components and fees.

B. Temporary Electrical Systems

1. CONTRACTOR shall coordinate with local utility to provide all electrical service necessary for completion of the work. Complete necessary utility paperwork and provide minimum 60 days' notice to local utility for hookup.
2. CONTRACTOR furnished items include, but are not limited to, all conductor, transformers, service meters and masts, distribution panels, controls, electrical and lighting fixtures, tie-ins, and service agreements.
3. CONTRACTOR shall be responsible for providing temporary power to all electrical control panels to ensure that they remain heated from the time of installation to substantial completion.
4. CONTRACTOR to provide and pay for all temporary electrical system related components and fees including hookup.

C. Temporary Heating Systems

1. CONTRACTOR shall furnish and install all necessary components and systems to provide heat at the field office and worker shelters as required.
2. CONTRACTOR furnished items include, but are not limited to, all heaters, fuel tanks, piping, valves, fittings, meters, insulation, pumps, fixtures, tie-ins, and fuel hauling.
3. CONTRACTOR to provide and pay for all temporary heating system related components and fees.

D. Temporary Communication Systems (Telephone, Fax, and Internet)

1. CONTRACTOR shall furnish and install all necessary components and systems to provide telephone, fax and internet service to the field office.
2. CONTRACTOR furnished items include, but are not limited to, all phone lines, phones, fax machines, tie-ins, and service agreements.

3. CONTRACTOR to provide and pay for all temporary communication system related components and fees.

2.2 TEMPORARY CONSTRUCTION FACILITIES CONTRACTOR FURNISHED ITEMS

- A. Temporary Construction Facilities (Field Office, Storage Facilities, Worker Shelters)
 1. Temporary field office: Furnish field office building for use of CONTRACTOR personnel. Field office structure shall meet all requirements of the most current version of the IBC. Provide temporary electrical, heating, telephone, fax and internet services at the field office.
 2. Temporary storage facilities: CONTRACTOR shall furnish temporary storage facilities as required to protect materials and equipment during the course of the work. Facilities shall be structurally sound and sufficiently weather tight to protect stored items in accordance with the manufacturer's recommendations.
 3. Worker shelters: Worker shelters shall be provided in accordance with applicable laws and regulations.
 4. CONTRACTOR to provide and pay for all temporary construction facility related components and fees.

2.3 TEMPORARY CONTROLS CONTRACTOR FURNISHED ITEMS

- A. Temporary Controls
 1. Furnish all gates, barricades, fences, handrails, guardrails, and security systems required for safe execution and protection of the work.
 2. Furnish all Guards, markers, shields, protective clothing, hard hats, hearing protection and other equipment required by health and safety regulations for workers.
 3. Furnish erosion controls in accordance with industry accepted Best Management Practices and in accordance with Section 01 57 13.
 4. Furnish all required first aid and fire suppression equipment required by laws and regulations.
 5. CONTRACTOR to provide and pay for all temporary controls related components and fees.

PART 3 – EXECUTION

3.1 TEMPORARY UTILITIES

- A. All work relating to temporary utilities shall be arranged and implemented by the CONTRACTOR.

- B. All costs associated with providing temporary utilities shall be borne solely by the CONTRACTOR including hookup.
- C. CONTRACTOR shall not connect to any existing utility system unless specific written authorization from the applicable utility company is given.
 - 1. CONTRACTOR shall provide individuals who are qualified to connect to the existing utility system and provide all necessary equipment and materials required for the connection.
 - 2. CONTRACTOR shall at no time exceed the usage allowed by AUTHORITY or other entity governing the utility.
 - 3. CONTRACTOR shall remove all temporary materials and equipment upon completion of construction and repair any damage caused by installation, and restore to like new condition.
- D. Water: Provide temporary water for all construction requirements and CONTRACTOR's crews. CONTRACTOR shall maintain sanitary conditions at all times and shall not violate requirements of applicable codes.
- E. Sanitation Facilities: Provide and maintain facilities for CONTRACTOR's employees, SubCONTRACTORs and all other onsite employer's employees. Service, clean, and maintain facilities and enclosures.
- F. Electricity and Lighting: Provide temporary power for all construction requirements including CONTRACTOR's field office and to ensure safe work conditions and security of site. Provide temporary lighting as required to meet all applicable safety requirements to allow erection, application or installation of materials and equipment, and observation or inspection of the work.
- G. Heating: Provide temporary heating systems at the field office and other temporary construction facilities as required by laws and regulations.
- H. Communication Systems: Provide temporary communication systems at the field office including telephone, fax, and internet service.

3.2 TEMPORARY CONSTRUCTION FACILITIES

- A. Field Office: Contractor shall maintain an on-site field office
 - 1. Field office shall provide sufficient working space and sanitary facilities for Contractor personnel. Provide temporary electrical, heating, water, sewer, telephone, fax and internet services at the field office.
- B. Temporary Storage Yard:
 - 1. A temporary storage yard within the community shall be provided by the Contractor for storage of products, equipment, and materials used in the construction of the project.
- C. Temporary Storage Buildings:
 - 1. Environmental control systems shall be provided that meet recommendations of

manufacturers of equipment and materials stored.

2. Contractor shall arrange or partition to provide security of contents and ready access for inspection and inventory.
3. Combustible materials (paints, solvents, fuels, etc.) shall be stored in a well-ventilated and remote building meeting applicable safety standards.

D. Access roads:

1. Access roads, if required, shall be constructed within easements, rights-of-way, or Project limits. Alignments for new routes shall be approved by Project Manager.
2. Ground surface disturbed by access road construction shall be restored to original grade upon completion of construction.

3.3 TEMPORARY CONTROLS

A. Air Pollution Controls:

1. Minimize air pollution from construction operations.
2. Burning of waste materials, rubbish, or other debris will not be permitted on or adjacent to the site.

B. Water Pollution Controls:

1. CONTRACTOR shall not cause or permit action to occur which would cause a discharge to an existing waterway. See Section 01 57 13.

C. Erosion Control:

1. As specified in Section 01 57 13.

D. Vehicular and Pedestrian Traffic Controls

1. Comply with Laws and Regulations regarding closing or restricting the use of public thoroughfares. No public or private road or boardwalk shall be closed or impacted, except by written permission of the proper authority. Assure the least possible obstruction to traffic and normal commercial pursuits.
2. Work shall be conducted to interfere as little as possible with public travel.
3. If for any reason it is necessary to cross, close, or obstruct roads, driveways, and walks, whether public or private, Contractor shall provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.
4. Closures: Contractor shall maintain satisfactory means of exit for persons residing or having occasion to transact business along the route of the Work. If it is necessary to close off a thoroughfare or other access providing sole vehicular access to property for periods greater than 2 hours, provide written

notice to each owner so affected 3 days prior to such closure.

5. Maintenance of traffic is not required if Contractor obtains written permission from owner and tenant of private property, or from the authority having jurisdiction over public property involved, to obstruct traffic at the designated point.
6. Contractor shall not block more than one-half the thoroughfare at any time during crossings.
7. Flaggers and guards, when required by regulation or when deemed necessary for safety, shall be furnished with approved orange wearing apparel and other regulation traffic control devices.
8. Contractor shall not block off emergency vehicle access without written permission from the Owner. Operations shall be conducted with the least interference to fire equipment access, and at no time prevent such access. Contractor shall furnish night emergency contact numbers to Authority.

3.4 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain work areas free of waste materials, debris, and rubbish. Maintain work site in a clean, orderly and organized condition. Materials should be clearly identified, with products covered and labeled. Materials should be identified with generator (CONTRACTOR) name.
- B. Collect and remove waste materials, debris, and rubbish from site periodically and dispose of in accordance with all Federal, State and local regulations.
- C. CONTRACTOR shall not dispose of hazardous materials such as mineral spirits, oil, chemicals, or paint thinner at the local land fill. Provide acceptable containers for collection and disposal of waste materials, debris and rubbish.

3.5 REMOVAL OF TEMPORARY FACILITIES

- A. Remove temporary materials, equipment, services, and construction prior to Substantial Completion inspection, with the exception of temporary bulk fuel storage.
- B. Clean and repair damage caused by installation or use of temporary facilities. Restore permanent facilities used during construction to pre-construction condition.

END OF SECTION

SECTION 01 51 19

TEMPORARY FUEL STORAGE AND DISPENSING

PART 1 – GENERAL

1.1 SCOPE OF WORK

- A. Requirements for maintaining temporary fuel storage and dispensing during the construction of the new facility.

1.2 RELATED REQUIREMENTS

- A. Section 01 33 00 – Submittals
- B. Section 01 50 00 – Construction Facilities and Temporary Controls
- C. Section 02 80 10 – Decommissioning of Fuel Storage Tanks and Piping.

1.3 REFERENCES

- A. 18 ACC 75 Article 075 Secondary Containment Requirements for Aboveground Oil Storage and Surge Tanks.
- B. 2012 International Fire Code
- C. API 2015 Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks.
- D. 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response

1.4 SUBMITTALS

- A. The contractor shall submit a work plan for approval detailing the location and capacity of storage facilities, demonstrating code-compliance and describing procedure for dispensing and metering.

1.5 PROCEDURES

- A. Contractor shall establish and maintain code compliant temporary retail dispensing and bulk fuel storage and transfer equipment as required for the uninterrupted operation of the AVEC power plant, City fuel facility, and Corporation bulk fuel & retail fuel sales facility. Where practical, existing facilities can be left in operation until the new fuel facilities are operational, then temporary fuel storage and dispensing may not be necessary for those facilities.
 - 1. AVEC Temporary Bulk Fuel Storage: Contractor provided temporary AVEC fuel storage shall consist of a minimum of 30,000 gallons of gross bulk fuel storage within a lined secondary containment area. Contractor may utilize vertical AVEC tanks scheduled for decommissioning to meet this purpose. Note that four of the existing AVEC tanks will provide adequate temporary fuel storage for summer supply. The temporary storage shall be located within the immediate vicinity of the power plant

with a temporary piped connection to the existing plant day tank. The Contractor shall initially fill the temporary fuel storage from the existing AVEC tank farm via transfer pump and filter. AVEC will periodically order fuel via barge delivery to maintain adequate fuel storage in the temporary fuel storage facility. The Contractor shall provide temporary fuel piping or rated hose to connect to the temporary fuel storage facility. AVEC will provide notice of scheduled fuel deliveries.

IMPORTANT NOTE: Contractor shall provide qualified personnel to assist AVEC with transfer of fuel deliveries to temporary storage including constant tank level monitoring during all transfers. The Contractor shall maintain a presence in the community for the entire duration that the temporary fuel facility is in-place. Temporary fuel supply is permitted only during the active summer construction season. **Permanent bulk fuel storage facility must be online before winter shutdown.**

- B. Contractor shall be responsible for obtaining all temporary storage location permits, permissions and all associated fees in accordance with local, State and Federal Regulations, Statutes and Laws. If the temporary storage site is located on private land, the Contractor shall obtain written permission from the property owner or owners for such temporary storage site(s) and shall furnish AEA with a copy of this permission. The written permission shall specifically provide that the property owner will not hold AEA, the City or Corporation, its employees, agents, or engineers liable for use of or damage to this property.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Secondary containment and spill response equipment and materials shall be provided and stored in accordance with 33 CFR.
- B. Liners must withstand 80 mile per hour winds, petroleum emersion, direct sunlight, and -40° F temperatures.

PART 2 – MATERIALS

2.1 LINERS

- A. All liners must meet 18 AAC Section 370 requirements.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. The temporary facilities shall be adequately protected from vandalism and unauthorized access by installing temporary fencing and appropriate signage and lighting as necessary and required by code.
- B. Removal of temporary storage facility shall be in accordance Section 01 50 00 3.5 – Removal of Temporary Facilities.

END OF SECTION

SECTION 01 57 13

TEMPORARY EROSION & SEDIMENT CONTROL

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- A. General Conditions and Supplementary Conditions.
- B. Division 31 Specifications.
- C. Requirements of Federal, State, and local statutes and regulations dealing with stormwater, pollution and erosion shall be strictly adhered to by the CONTRACTOR.

1.2 GENERAL

- A. CONTRACTOR shall comply with the storm water construction general permit APDES. If required, the CONTRACTOR shall provide all labor, equipment, materials, and services to prepare, implement, and maintain a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the APDES.
- B. CONTRACTOR shall implement erosion control as soon as practicable to limit the potential for sediment transport and rilling of disturbed slopes and/or embankment slopes.
- C. CONTRACTOR shall implement and comply with all conditions of the US Army Corps of Engineers Permit. (Available upon written request to the Owner).

1.3 ENVIRONMENTAL PROTECTION

The CONTRACTOR shall comply with the provisions of Federal, State and local statutes, ordinances and regulations dealing with the prevention of environmental pollution and the preservation of public natural resources that may affect or may be affected by the Project. The CONTRACTOR shall familiarize himself with all such statutes, ordinances and regulations, whether listed or not.

1.4 DEFINITIONS

Repair. Mending or replacement of erosion and control measures to a degree as to meet the intended function as outlined in the ESCP, as determined by the Project Manager.

Repairs to erosion control measure can result from, but is not limited to, any degradation to the items from flooding, sediment deposition, wind, and construction activities.

1.5 SUBMITTALS

- A. Hazardous Material Control Plan.

Submit an electronic copy of the HMCP, to the Project Manager for approval. Submit these documents to the Project Manager at least 21 days before beginning

Construction Activity. After the HMCP is approved by the Owner, the CONTRACTOR must sign and certify the approved HMCP.

B. Inspection Reports

The CONTRACTOR shall submit an electronic copy of the routine inspection reports as defined in the Erosion and Sediment Control Plan. Reports shall be submitted to the Project Manager within 24 hours after the report is recorded.

C. Approved SWPPP, if required under section 1.2 above.

PART 2 - EROSION, SEDIMENT, AND POLLUTION CONTROL

2.1 TEMPORARY AND PERMINENT EROSION CONTROL

- A. Temporary erosion and pollution control measures that are required at CONTRACTOR-furnished sites are subsidiary.
- B. Perform temporary erosion and pollution control measures that are required due to your negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or ordered by the Engineer, or for your convenience, at your own expense.
- C. Permanent erosion and pollution control measures will be measured and paid for under other contract items, when shown on the bid schedule.

PART 3 - EXECUTION

3.01 EROSION CONTROL

Best management practices for erosion control shall be observed to prevent construction related erosion impacts to receiving waters.

END OF SECTION

SECTION 01 60 13

MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Products.
- B. Transportation and Handling.
- C. Storage and Protection.

1.2 RELATED REQUIREMENTS

- A. Section 01 45 00 Quality Control: Submittal of manufacturers' certificates.
- B. Section 01 42 19 Reference Standards.
- C. Section 01 64 00 Owner Furnished Materials

1.3 PRODUCTS

- A. Products include material, equipment, and systems.
- B. Comply with Specifications and referenced standards as minimum requirements.
- C. Components required to be supplied in quantity within a Specification section shall be the same, and shall be interchangeable.
- D. Do not use materials and equipment removed from existing structure, except as specifically required, or allowed, by Contract Documents.

1.4 TRANSPORTATION AND HANDLING

- A. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
- C. Immediately on delivery, inspect shipment to assure:
 1. Product complies with requirements of Contract Documents and reviewed submittals.
 2. Quantities are correct.
 3. Accessories and installation hardware are correct.
 4. Containers and packages are intact and labels legible.
 5. Products are protected and undamaged.

1.5 STORAGE AND PROTECTION

- A. Handle and store materials for construction, products of demolition, and other items to avoid damage to adjacent facilities and equipment.
- 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. 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 away.
- D. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.
- E. Provide Material Safety Data Sheets (MSDS) for all products which may produce unpleasant or noxious odors. CONTRACTOR shall provide for adequate venting if needed.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01 64 00
RECEIPT OF OWNER FURNISHED MATERIALS

PART 1 - GENERAL

1.1 SUMMARY

A. This section describes receipt, unloading, transportation, storage, and handling of materials furnished by the Owner for this project. This includes the following:

TABLE 1

ITEM NUMBER	MATERIAL DESCRIPTION	QTY	UNIT	APPROX. VALUE (EA UNIT)	APPROXIMATE WEIGHT/ DIMENSIONS	FOB POINT & AVAILABILITY DATE
1	30,000-gal Tank	3	EA	\$95,000	12' Ø x 36'	Port of Seattle, Spring 2026 (See Note 3)
2	30,000-gal dual Compartment Tank	2	EA	\$100,000	12' Ø x 36'	Port of Seattle, Spring 2026 (See Note 3)
3	Classified Materials (gravel)	1	LS	NA	NA	Shageluk (see Work Covered by Contract Documents)

Table Notes:

1. All other material required for the proper execution and construction of the project shall be provided by the Contractor including tank appurtenances and the dual & single product dispensing tanks.
2. Tank shop drawings are available upon request.
3. Coordinate delivery schedule with AEA & Engineer.

1.2 DELIVERY OF OWNER FURNISHED MATERIAL

- A. Material furnished by the Owner shall be delivered and transferred to the Contractor at FOB points specified in the Table above.
- B. Coordinate with supplier for storage and acceptance receipt.

1.3 ACCEPTANCE OF OWNER FURNISHED MATERIAL

- A. The Contractor shall (1) receive and accept the materials at the delivery point 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 Owner. Delinquency in signing material receipts may result in delayed progress payments.
- B. All material furnished by the OWNER 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 OWNER and Engineer within 5-days of receipt of material as to the number culled and reason for culling.

C. If the OWNER fails to deliver the materials set forth in Table 1, 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.

1.4 RECEIPT, TRANSPORTING AND STORING OWNER FURNISHED MATERIAL

A. The Contractor shall receive, transport, and protect all material in accordance with the manufacturer's instructions. All material, which is not installed immediately upon receipt, shall be stored in accordance with the manufacturer's instructions in a temperature controlled environment (above freezing).

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 of 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 OWNER 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.

1.5 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 received 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 OWNER and shall meet the material purchase specifications.

1.6 STORAGE OF OWNER FURNISHED MATERIAL

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

1.7 EXCESS MATERIALS

All materials furnished by the OWNER in excess of those actually used in the construction of the project shall be stored in accordance with the manufacturer's instructions until the OWNER collects them. The Contractor shall provide a complete list of excess materials to the Owner and Engineer.

PART 2 - PRODUCT (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 71 23

CONSTRUCTION SURVEYING

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. This section is intended to establish a standard minimum level of acceptable field survey specifications and procedures to properly control the construction project.
- B. The Contractor shall furnish all labor and materials necessary to perform all surveying and construction staking essential for the completion of construction in conformance with the drawings, specifications, and other Contract Documents. The Contractor shall perform all the necessary calculations required to accomplish the work.
- C. It is the Contractor's responsibility to ensure proper survey methods and procedures are followed. The Contractor, at no additional expense to the Owner, shall correct any errors resulting from the survey. Any method conflicting with these survey specifications shall be approved by the Project Manager prior to its use.
- D. All survey work performed shall be under the direct supervision of a Professional Land Surveyor registered in the State of Alaska.

1.2 RELATED SECTIONS

- A. Section 01 78 39 Project Record Documents

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PROJECT CONTROL

- A. General: The Owner will provide reference horizontal and vertical control data to facilitate construction staking. It is the Contractor's responsibility to establish and check all survey control prior to any staking activity to ensure that the Project is properly located and constructed according to the Contract Documents. If discrepancies are found, the Project Manager shall be notified separately and immediately. The Contractor is responsible for preserving and protecting all line stakes, grade stakes, hubs, and reference points to include survey control and property corner monuments. In the event of their loss or destruction the Contractor shall pay all costs for their replacement. The Contractor shall replace any monument that exists within the construction limits if it is disturbed or removed due to construction project activity.
 - 1. All monumentation disturbed or removed shall be replaced with the same type of monument or a monument approved by the Project Manager. Alaska Statutes AS 34.65.030 Records of Survey and AS 34.65.040 Records of Monument shall be followed for perpetuating existing monuments and accessories before and after construction activities that may disturb or destroy said monumentation.
- B. Horizontal Control Accuracy: The maximum permissible linear error allowed in establishing horizontal control is 1:5000 feet. The maximum error allowed in

unadjusted angular closure shall be calculated by the formula "30 multiplied by the square root of N" where the term "N" equals the number of total station instrument setups in the traverse and "30" represents 30 seconds. Similar linear error of closure is required at a minimum for static and RTK (Real Time Kinematic) GNSS (Global Navigation Satellite System) control loops.

2. GNSS derived coordinate closures on control points will be inverted from the check point to the known control point to compute the X, Y, Z differences (reported as Northing, Easting, Elevation). Differences greater than 0.10' from Record control will be verified.

A. Vertical Control

1. Elevations shall originate from the datum provided in the Contract Drawings. All level circuits run to establish temporary benchmarks (TBM) shall have an accuracy no less than the value computed by the equation $e = 0.05\sqrt{M}$, where e is the maximum misclosure in feet, M is the length of the level circuit/loop in miles. For example, with a 0.5 mile level loop, 0.05 ft. multiplied by the square root of the distance in miles, equals 0.035 ft. of allowable error misclosure. Foresights and backsights shall be balanced. The maximum sighting distance shall not exceed 300 feet. All leveling circuits establishing TBMs shall be adjusted using recognized standard surveying adjustment methods. Side shots to establish elevations on TBMs shall not be allowed.
2. A minimum of two known benchmarks in a closed level circuit or loop shall be used when establishing TBMs to verify correct elevation information. Set a sufficient number of TBMs to control the Project with a maximum spacing of 800 feet. A TBM shall not be located further than 300 feet outside the construction limits of the Project. All TBMs must be comprised of suitable materials and positioned in locations that will ensure their integrity throughout the life of the Project.

3.2 FIELD NOTES

- A. The Contractor shall supply uniform, hard backed, *Rite in the Rain* or similar survey field books. The Project Manager has the right to inspect the field books at any time during the Project. All field books shall be identified on the outside spine. Each book shall be indexed and its contents referred to by page number. The date, weather condition, survey crew personnel, and instruments used shall be shown at the beginning of each day's notes. All field books containing survey field notes shall be sealed and signed by a Registered Professional Land Surveyor on the title page of each field book. Copies of all field books used in the process of work shall be submitted to the Project Manager upon completion of the work.
- B. Project and daily notes shall be recorded directly into project field books and daily digital job files. The digital job files will contain all observations unless noted otherwise. All field books shall be in pencil. All field notes and drawings shall be completed and reduced before acceptance by the Project Manager. Control sketches are required and will include project location(s), features, and measurement data to show relationships to measured and Record data and existing features. The source of Record shall be stated. Stationing shall increase from the bottom of the page to the top. Notes shall be neat, legible, precise and sufficiently detailed. The Project Manager may stop all survey work until the notes are brought into conformance with this specification. A copy of each day's field

notes shall be reduced and available to the Project Manager by 12:00 PM the following workday. The Project Manager may issue a stop work order at the Contractor's expense if the field notes are not delivered, when requested, within this time frame.

- C. Erasures of errors in field books will not be accepted. A line shall be drawn through those portions of notes in error, leaving the original note legible, and the correction shall be noted above the original entry. Corrections shall be initialed by the party chief and dated. Where appropriate, a note explaining the error shall be included.
- D. Failure on the part of the Contractor to keep and maintain complete and accurate field notes as required herein shall be sufficient reason to withhold payment for those items of work where survey is required. No final Project payment will be made to the Contractor until copies of the field books have been submitted to and approved by the Project Manager.

3.3 PARTY CHIEF'S DAILY DIARY

- A. The survey party chief shall keep a factual daily diary of all work performed by the survey crew on this Project, in addition the field notes. The diary shall contain the following information: date, crew, type and location of work performed, work accomplished, orders from the Project Manager and signature.
- B. This record shall be kept on the Project Site and submitted to the Project Manager upon request. A copy of the diary shall be submitted upon completion of the Project.

3.4 MISCELLANEOUS CONSTRUCTION STAKING

- A. The Contractor shall provide sufficient stakes for the adequate control of all structures and incidental construction not specifically covered above. A staking diagram with respect to fuel line stations and measurements for pay quantities shall be maintained in the field notes. Other items such as horizontal and vertical control shall be shown in the field book and shall be governed by procedures established in previous articles of this specification.

3.5 DATA COLLECTION FOR CONSTRUCTION STAKEOUT

- B. When staking out for construction using GNSS or total station (conventional or robotic), the following criteria shall be maintained and submitted:
 1. A standard field book containing: date, weather conditions, instrumentation used, crew, project description and sketch, control points used, check point shots with coordinate closure inverses, and other information needed to reconstruct the survey activity.
 2. A digital copy of the unedited (raw) output from the data collector or a copy of the field book entries with relevant fields such as: point numbers, rod/tripod heights, rod height changes, code descriptors, horizontal circle information, vertical circle information based on zenith angle, slope distance (US feet), or GNSS RTK coordinates. Also, a code descriptor sheet that shows the codes and attributes used to identify the various shots.
 3. A digital copy of the reduced and adjusted (ratios of error and magnitude of misclosure shown) data represented by X, Y, and Z coordinates, plus

necessary descriptive information.

4. Cross-sectional data that is collected by radial methods a printout/plot of the following data is required:
 - a. Each point identified as it relates to the fuel line centerline station.
 - b. The distance offset from centerline of the fuel line.
 - c. The elevation and description of the shot.
 - d. A cross section line plot of each station with the individual shots averaged out to produce the final interpolated cross section.
 - e. The vertical angle and distance to the TBM's used for control and the instrument height, and the height of the prisms.

3.6 AS-BUILT SURVEYS, FIELD NOTES AND PROJECT RECORD DOCUMENTS

- A. As-built survey measurements shall be recorded on a clean set of design drawings deemed the Project Record Documents and shall show changes and improvements which vary from the dimensions, lines, grades, locations and materials as shown on the Contract Drawings. The as-builts shall also include swing ties to all pertinent existing structures, in accordance with Section 01 78 39.
- B. Survey measurements shall be taken, field notes shall be kept, and accuracies shall be attained in accordance with the specifications of this section.
- C. Provide a digital file, suitable for insertion into AutoCAD, with as-built features indicated by horizontal position, description, and elevation, based on Project coordinates. Electronic data collection used to obtain as-built information does not relieve the Contractor's obligation to maintain Project Record Documents or the obligation to obtain swing ties.
- D. A copy of all survey field notes shall be submitted with each pay request. Pay requests shall not be processed until the survey notes are received by the Project Manager and the Project Manager is provided evidence that the Project Record Documents are current and in the required condition.
- E. Project Record Documents shall be redlined and kept current. They shall be kept ready for review when the Project Manager, at his/her option, requests that the Project Record Documents be submitted with the survey field notes for the pay request.
- F. Project Record Documents shall be submitted along with a copy of the field notes to the Project Manager at the completion of construction activity, in accordance with Section 01720 Project Record Documents, of these Specifications.
- G. A completed FEMA Elevation Certificate (EC) FEMA form 086-0-33 shall be submitted prior to the substantial completion inspection.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.1 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.2 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Civil Site Work bid

END OF SECTION

SECTION 01 77 19

CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Administrative provisions for Substantial Completion and for Final Acceptance.
- B. Closeout Procedures.
- C. Final Cleaning.
- D. Project Record Documents.
- E. Warranties and Bonds.
- F. Spare Parts and Maintenance Materials.

1.2 RELATED REQUIREMENTS

- A. Division 00 Bidding and Contract Requirements
- B. Document 00 70 00 General Conditions: Fiscal provisions, and additional administrative requirements.
- C. Section 01 78 39 Project Record Documents

1.3 SUBSTANTIAL COMPLETION SUBMITTALS

- A. Submit the following prior to requesting a Substantial Completion Inspection:
 - 1. Project Record Documents:
 - 2. Complete and Owner Approved Operation & Maintenance Data (O&M Manual).
 - 3. Spare Parts and Maintenance Materials

1.4 SUBSTANTIAL COMPLETION

- A. Substantial Completion shall be considered by AUTHORITY when:
 - 1. Written notice is provided 7 days in advance of inspection date.
 - 2. List of items to be completed or corrected is submitted.
 - 3. Equipment and systems have been tested, adjusted, balanced and are fully operational.
 - 4. Operation of system has been demonstrated to AUTHORITY Personnel.
 - 5. Certificates of Inspection for required inspections have been submitted.

6. Project Record Documents for the Work or the portion of the Work being accepted are submitted and approved.
7. Spare parts and maintenance materials are turned over to AUTHORITY.

B. Should AUTHORITY inspection find Work is not substantially complete, Agency will notify CONTRACTOR in writing, listing observed deficiencies.

C. CONTRACTOR shall remedy deficiencies and send a second written notice of Substantial Completion.

D. When AUTHORITY finds Work is substantially complete AUTHORITY will prepare a certificate of Substantial Completion in accordance with provisions of General Conditions.

1.5 FINAL COMPLETION

- A. When CONTRACTOR considers Work is complete, submit written certification:
 1. Contract Documents have been reviewed.
 2. Work has been inspected for compliance with Contract Documents.
 3. Work has been completed in accordance with Contract Documents, and deficiencies listed with certificate of Substantial Completion have been corrected.
 4. Work is complete and ready for final inspection.
- B. Should AUTHORITY inspection find Work incomplete, AUTHORITY will promptly notify CONTRACTOR in writing listing observed deficiencies.
- C. CONTRACTOR shall remedy deficiencies and send a second certification of Final Completion.
- D. When AUTHORITY finds Work is complete, AUTHORITY will consider closeout submittals.

1.6 REINSPECTION FEES

- A. Should status of completion of Work require more than two reinspection's by AUTHORITY due to failure of Work to comply with CONTRACTOR's responsibility, AUTHORITY will deduct the cost of reinspection from final payment to CONTRACTOR as provided in the Contract Documents.
- B. Reinspection fees shall not exceed \$5,000 for any one reinspection.

1.7 CLOSEOUT SUBMITTALS

- A. Project Record Documents:
- B. Warranties and Bonds:
- C. Operations and Maintenance Manuals:
- D. Evidence of Payment: In accordance with Conditions of the Contract.
- E. Consent of Surety to Final Payment.

1.8 STATEMENT OF ADJUSTMENT OF ACCOUNTS

- A. Submit final statement reflecting adjustments to Contract Price indicating:
 - 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 reinspection fees.
 - 9. Other adjustments to Contract Price.
 - 10. Total Contract Price as adjusted.
 - 11. Previous payments.
 - 12. Sum remaining due.
- B. AUTHORITY will issue a final Change Order reflecting all remaining adjustments to Contract Price not previously made by Change Orders.

1.9 APPLICATION FOR FINAL PAYMENT

- A. Submit application for final payment in accordance with provisions of the General Conditions of the Contract.

1.10 FINAL CLEANING

- A. Execute final cleaning prior to Substantial Completion inspection.
- B. Use materials which will not create hazards to health or property, and which will not damage surfaces. Follow manufacturer's recommendations.
- C. Remove waste, debris and surplus materials from the site.

1.11 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

1.12 PROJECT RECORD DOCUMENTS

- A. Comply fully with the requirements of Section 01 78 39 Project Record Documents.

1.13 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual Specification Sections & Design Drawings.

B. Deliver to Project site and place in location as directed, obtain receipt prior to final payment.

1.14 WARRANTIES

A. As a condition precedent to Final Payment, all guarantees and warranties as specified under various sections of the Contract Documents shall be obtained by the CONTRACTOR and delivered to the AUTHORITY, in duplicate giving a summary of guarantees attached and stating the following in respect to each:

1. Character of Work affected.
2. Name of Subcontractors.
3. Period of Guarantee.
4. Conditions of Guarantee.

B. Delivery of said guarantees and/or warranties shall not relieve the CONTRACTOR from any obligations assumed under any other provision of the Contract.

C. If, within any guarantee period, repairs or changes are required in connection with the guaranteed Work, which in the opinion of the AUTHORITY is rendered necessary as the result of the use of materials, equipment or workmanship, which are defective, or inferior, or not in accordance with the terms of the Contract, the CONTRACTOR shall, upon receipt of notice from the AUTHORITY, and without expense to the AUTHORITY, proceed within seven (7) calendar days to:

1. Place in satisfactory conditions in every particular all of such guaranteed Work, correct all defects therein, and make good all damages to the structure or site.
2. Make good all Work or materials, or the equipment and contents of structures or site disturbed in fulfilling any such guarantee.
3. If the CONTRACTOR, after notice, fails to comply without the terms of the guarantee, the AUTHORITY may have the defects corrected and the CONTRACTOR and CONTRACTOR's Surety shall be liable for all expenses incurred in connection therewith, including Engineer's fees.

1.15 OPERATIONS AND MAINTENANCE DATA (O&M MANUALS)

A. Provide two final O&M manuals specific to each facility.

B. Prior to O&M manual development, contact the Authority for a sample O&M. The submitted O&M manual must follow the Authority provided draft format.

C. Submit data in bound 8-1/2 x 11 inch text pages, ring binders with durable plastic covers. Include an electronic copy with all submittals.

- D. Prepare binder cover with printed title "OPERATIONS AND MAINTENANCE DATA", title of project, and subject matter of binder.
- E. Binder contents shall be divided with plastic page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- F. Contents: Prepare a table of contents for each volume, with each Product or system description identified, enclosed in a plastic text sheet sleeve, in three parts as follows:
 - 1. Part 1: Directory, listing names, addressees and telephone numbers of A/E, Contractor, subcontractors, and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by system process flow and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and Product data.
 - b. Pressure test reports.
 - c. Certificates.
 - d. Copies of Warranties and Bonds.
- G. Submit one (1) draft copy of completed volumes five (5) working days prior to Substantial Completion inspection. Revise and resubmit as necessary.
- H. Submit two (2) sets of revised final approved manuals within 15 days of Substantial Completion inspection or date of approval of draft operations and maintenance manuals.

END OF SECTION

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project: Shageluk Bulk Fuel Upgrade

A/E Project Number:

To:

Community:

From: Alaska Energy Authority

Contract Number:

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 designate portion thereof for the use for which it is intended, as expressed in the Contract Documents.

1. Operating manuals and procedures were completed and instructions of operating personnel performed on _____.
2. Record drawings are completed and delivered to the Authority.
3. Emergency systems tested and fully operational.
4. All other tests required by Specifications have been performed.
5. All systems are fully operational.

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

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Maintenance of Record Documents and Samples.
- B. Submittal of Record Documents and Samples.

1.2 RELATED REQUIREMENTS

- A. Section 00 70 00 General Conditions: Record Documents.
- B. Section 01 33 00 Submittals
- C. Section 01 33 23 Shop Drawings, Product Data, and Samples
- D. Section 01 77 19 Contract Closeout Procedures

1.3 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. In addition to requirements in General Conditions, maintain at the site for the Owner one accurate record copy of:
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, product data, and samples.
 - 6. Survey and field records.
 - 7. Field test records.
 - 8. Inspection certificates.
 - 9. Manufacturer's certificates.
- B. Prior to Substantial Completion, provide original or legible copies of each item maintained by CONTRACTOR as listed in 1.3 A above.
- C. Delegate responsibility for maintenance of Record Documents to one person on CONTRACTOR's staff.

- D. Promptly following award of Contract, secure from 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 AUTHORITY.
- J. Keep record documents and samples available for inspection by AUTHORITY.
- K. Upon request by AUTHORITY and at time of each Application for Payment submit complete collection of record documents to AUTHORITY for review and duplication as desired.
- L. AUTHORITY's approval of current status of Record Documents will be prerequisite to AUTHORITY's approval of requests for progress payments and request for final payment.
 - 1. Prior to submitting each request for progress payment, secure AUTHORITY's approval of Record Documents as currently maintained.
 - 2. Prior to submitting request for Final Payment, obtain AUTHORITY's approval of final Record Documents.
- M. Do not use job set for any purpose except entry of new data and for review and copying by AUTHORITY.

1.4 RECORDING

- A. Record information on a set of black line opaque Drawings, and in a copy of a Project manual.
- 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 DC/VR, 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 depths of elements of foundation in relation to finish first floor datum, accurate to the nearest inch.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements, accurate to the nearest inch.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.
 - 4. Field changes of dimension and detail.
 - 5. Changes made by modifications.
 - 6. Details not on original Contract Drawings.
 - 7. References to related Shop Drawings and modifications.
 - 8. Clearly label all changes and show dimensions to establish size and location. All identifications shall be sufficiently descriptive to relate reliably to Specifications.
- F. Specifications: Legibly mark each item to record actual construction, including:
 - 1. Manufacturer, trade name, and catalog number of each product actually installed, particularly optional items and substitute items.
 - 2. Changes made by Addenda and modifications.
- G. Other Documents: Maintain manufacturer's certifications, inspection certifications, and field test records required by individual Specifications sections.

1.5 SUBMITTALS

- A. Upon submittal of the completed Record Documents, make changes in Record Documents as required by AUTHORITY.
- B. Transmit with cover letter in duplicate, listing:
 - 1. Date.
 - 2. 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 CONTRACTOR or authorized representative.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 02 32 00

GEOTECHNICAL INVESTIGATIONS

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- A. Section 00 73 13 Supplementary Conditions.
- B. Section 31 23 00 Excavation and Fill.

1.2 SOIL REPORTS & SITE-SPECIFIC OBSERVATIONS

- A. Existing Geotechnical Conditions - Collocated Tank Farm Site:

1. The proposed collocated tank farm is sited within a former gravel pit. In the past the pit was excavated to a lower depth than it is currently which caused periodic water ponding. In the past 5 years the pit was reworked, and material was imported by barge resulting in a compacted base beneath the proposed tank farm site. Seasonal frost is likely to result in saturated ground conditions during the spring/early summer melt.
2. The inclined slopes surrounding the gravel pit are subject to erosion when saturated, especially the eastern quadrant. The east floor of the gravel pit can become infiltrated in 6-12 inches of saturated silt that flows down from the slope. Any silt buildup that encroaches on the tank farm site should be pushed back to the east prior to fill placement.
3. There are several imported stockpiles of gravel located within the gravel pit, two of which are shown on Sheet C1.6 & C1.7 of the design drawings. Some of this gravel was utilized for road construction in 2024. See Section 01 11 13 Work Covered by Contract Drawings for further discussion on material availability for this project.
4. There is a vegetated monofil site located south of the proposed tank farm project. See Sheet C1.6 which shows the northern corner of the monofil.

- B. Existing Geotechnical Conditions - AVEC Tank Farm Site:

1. The existing tank farm pad will be reused for the new AVEC tank farm. See AVEC PAD CONSTRUCTION SEQUENCE on the AVEC Grading Plan and AVEC Typical Sections.
- C. Contractors are encouraged to visit the site and acquaint themselves with site conditions before submitting a Bid, and the submission of a Bid shall be *prima facie* evidence that he has done so.
- D. Prior to bidding, Contractor may make their own sub-surface investigations, as approved by the project manager and owner, to satisfy himself with site and subsurface conditions.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 02 42 00

REMOVAL AND SALVAGE OF MATERIALS

PART 1 - GENERAL

1.1 SUMMARY

The Contractor shall furnish all labor, material, equipment, and incidentals for all work required to remove, salvage, and transport materials from the proposed and existing tank farm sites and other related tasks described in this Section and as shown on the Drawings. Work under this Section includes:

- A. Prior to beginning demolition work, Contractor shall coordinate an onsite walkthrough of all sites with an AVEC, Corporation & City representative to identify and confirm all materials to be salvaged and relocated to a location designated by the Owner.
- B. All materials, equipment, and debris located within the project site, except as specified otherwise or directed by the Owner, shall be disposed of by the Contractor and in accordance with applicable federal, state and local regulations.

1.2 RELATED WORK

Related work specified in other sections includes, but is not limited to:

- A. Section 01 11 13 Work Covered by Contract Documents
- B. Section 01 60 13 Materials and Equipment
- C. Section 02 41 16 Structure Demolition
- D. Section 31 11 00 Clearing and Grubbing

1.3 SUBMITTALS

- A. None

1.4 RECEIPT, TRANSPORTING AND STORING OF SALVAGED MATERIALS

- A. The Contractor shall receive, transport, and protect all material identified by the Owner for salvage.
- B. The Contractor shall provide proper equipment as necessary to collect and transport salvaged material. The equipment shall be rated as required to properly handle the material.

1.5 DAMAGE TO SALVAGED MATERIAL

- A. Upon receipt of the materials as specified above, the Contractor shall become solely responsible for their care, transportation, and protection. In the event materials are damaged, lost, stolen, or destroyed by any cause whatsoever, their repair or replacement shall be entirely at the Contractor's expense.
- B. All material replaced by the Contractor shall be equal to the salvaged material.

PART 2 - PRODUCT (NOT USED)

PART 3 – EXECUTION

3.1 SEQUENCE OF WORK

A. Salvage operations shall be coordinated with temporary access, clearing and grubbing, excavation and fill, and structure demolition work to minimize conflicts.

END OF SECTION

SECTION 02 61 13

EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The contractor shall not perform any unauthorized excavations. Any contaminated soils exposed as the result of unauthorized excavation shall be stockpiled and dealt with in accordance with this specification at Contractor's expense.
- B. The Contractor is hereby notified that petroleum-contaminated soils may be encountered during excavation required to complete this project.
- C. If the Contractor smells or observes contaminated soils during excavation, they shall immediately notify the Engineer.
- D. The discovery of contaminated soils shall not be cause for Contractor delay of work or equipment/worker standby time claims.
- E. The Contractor will separate contaminated soils from non-contaminated soils using visual/olfactory indicators.
- F. Suspected contaminated soils will be stockpiled on approved liners at a designated area determined by the Contractor and approved by the Owner. Cover suspected contaminated soils in accordance with 18 AAC 75 Section 370.
- G. Owner will dispatch a qualified technician to the site as soon as practical to use a photo-ionization detector (PID) to screen suspected contaminated soils and collect soil samples.
- H. After completing laboratory analysis to verify levels of contamination (if any) the Engineer will coordinate with the Alaska Department of Environmental Conservation (ADEC), Division of Spill Prevention and Response as required.
- I. Any required final remediation of stockpiled contaminated soils will be coordinated with the ADEC.

1.2 RELATED REQUIREMENTS

- A. Not applicable.

1.3 REFERENCES

- A. 18 AAC 75 Article 3 Discharge, Reporting, Cleanup, & Disposal of Oil and other Hazardous Substances.
- B. 18 AAC 75 Section 355 Sampling and Analysis

- C. 18 AAC 75 Section 370 Soil Storage.
- D. ADEC Field Sample Guidance (August 2017)

1.4 ENVIRONMENTAL REQUIREMENTS

- A. All contaminated soil stockpiles must be covered in accordance with 18 AAC 75 Section 370.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All liners must meet 18 AAC Section 370 requirements and must have a minimum 20mil nominal thickness and be rated for hydrocarbon and ultraviolet light exposure. Liners shall be rated for -60° F temperatures.
- B. Personal Protection Equipment must be appropriate for hazardous conditions encountered on the work site and meet requirements in 29 CFR Subpart I, Sections 1910.132- 1910.139.

2.2 LINER SEAMING

- A. Field seaming is prohibited unless specifically approved in writing by the Owner. If field seaming is approved by the Owner, then all seams and joints must be bonded by a technician certified by the liner manufacturer.

PART 3 - EXECUTION

3.1 EXCAVATION AND HANDLING

- A. Appropriate Personal Protection Equipment will be used to protect workers from work site hazards.
- B. All stockpiled soils confirmed by Owners Representative as contaminated shall be contained and covered by the Contractor in accordance with the long-term stockpile requirement of 18 AAC 75 Section 370.
- C. Stockpile location shall be approved in writing by the land owner and by the Owner.

END OF SECTION

SECTION 02 80 10

DECOMMISSION FUEL STORAGE TANKS AND PIPING

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Procedures for Cleaning and Decommissioning Aboveground Fuel Storage Tanks.
- B. Procedures for containing tank contents.
- C. Procedures for Inspecting Aboveground Storage Tanks.

1.2 RELATED REQUIREMENTS

- A. Section 01 11 13 Work Covered by Contract Documents.
- B. Section 01 33 00 Submittals.
- C. Section 02 61 13 Excavation and Handling of Contaminated Material.

1.3 REFERENCES

- A. 18 ACC 75 Article 3 Discharge, Reporting, Cleanup, & Disposal of Oil and other Hazardous Substances.
- B. 18 AAC 75 Section 370 Soil Storage.
- C. API 2015 Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks.
- D. API 653 Tank Inspection, Repair, Alteration, and Reconstruction.
- E. 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response
- F. 40 CFR Chapter I, Subchapter I – Solid Wastes, Parts 260 through 265
- G. 49 CFR Subtitle B, Chapter I, Subchapter A – Hazardous Materials and Oil Transportation, and Subchapter C – Hazardous Material Regulations

1.4 SUBMITTALS

- A. Health and Safety Plan which includes the Work Plan for decommissioning and disposal of fuel storage tanks and piping as required by this Section and Section 01 11 13.
- B. Manifests for disposal of all RCRA and non-RCRA Hazardous Wastes.
- C. Test results from composite testing of the drums of sludge to determine sludge characterization.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. All tank sludge that test hazardous under 40 CFR Part 261 will be contained, stored transported and disposed of in accordance with all Federal, State and local Regulations, Statutes and Laws and the Specifications.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Containment liners and over-pack drums used for this project must withstand 80 mile per hour winds, petroleum emulsion, direct sunlight, and -40° F temperatures.

1.7 DECOMMISSIONING AND DISPOSAL REQUIREMENTS

- A. The existing fuel storage tanks identified in the Drawings shall be decommissioned by the Contractor. The Drawings indicate approximate location and owner of the tanks. See also Section 01 11 13 Work Covered by Contract Documents. Relocate decommissioned tanks to an area designated by the Owner. If disposal of the tanks is required by the Contract, the Contractor shall take ownership of the tanks and dispose of them IAW all applicable regulations.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All liners must meet 18 AAC Section 370 requirements.
- B. Over-pack drums for storing tank sludge must meet US DOT and US EPA requirements for transportation.
- C. Personal Protection Equipment must be appropriate for hazardous materials encountered on the work site and meet requirements in 29 CFR Subpart I, Sections 1910.132-1910.139.
- D. Equipment to Monitor Hazardous Atmosphere – The contractor shall use oxygen meters, combustible gas indicators, colorimetric indicator tubes, or organic vapor monitors to determine if a toxic, anoxic, or explosive environment exists.
- E. Contractor shall maintain a site-specific Health and Safety Plan that includes, but is not limited to:
 1. List of key personnel.
 2. Health and Safety Risk Analysis that meets 29 CFR Subpart I, Section 1910.120(c).
 3. Comprehensive Work Plan.

4. Confined Space Entry Plan.
5. Site Control Measures.
6. Health and Safety Training Requirements.
7. Standard Operating Procedures.
8. Emergency Response Procedures.

PART 3 - EXECUTION

3.1 TANK DECOMMISSIONING AND DISPOSAL

- A. The Contractor shall visually inspect all aboveground tanks designated on the Contract Drawings for decommissioning. Contractor shall determine if product exists within each tank. If product exists, Contractor shall pump, filter, and transfer all useable product to the tank owners new tank(s) being constructed to replace the existing ones, or if the tank farm is not complete, to Contractor provided temporary storage. Contractor is responsible for all permits, coordination, and approvals associated with the transfer of fuel. Fuel transfer shall be in accordance with the most current version of the International Fire Code. After all useable product and any accumulated water have been removed, Contractor shall measure the inside diameter of the tank and depth of sludge, if any. From these measurements, the approximate volume of sludge in each tank will be calculated.
- B. The Contractor shall clean the interior of each tank in accordance to API 2015 or other approved method.
- C. If sludge is removed from the tank, the Contractor shall place the sludge in an appropriate container and attach a label that contains the following information:
 1. Container Identification number.
 2. Tank ID#s.
 3. Owner of tank.
 4. Date of Removal.
- D. The consolidation of sludge from tanks containing different products or owned by different entities will not be allowed without prior written approval of both Tank Owners. Should this occur without prior approval, the Contractor shall take immediate ownership of the combined waste and be fully responsible for all cost associated with the manifesting, transport and proper disposal of it.
- E. Appropriate Personal Protection Equipment will be used to protect workers from work site hazards.

F. All tanks shall be rendered unusable by the Contractor at the time of decommissioning unless instructed by the Owner to salvage.

3.2 PIPE DECOMMISSIONING AND DISPOSAL

A. All fuel and residual liquid shall be completely removed from existing piping as follows, or by alternate means and method submitted by the Contractor. If alternate means and methods will be used by the Contractor this shall be described in the Work Plan required by this section.

1. Piping 2-inch nominal diameter and smaller: Remove fuel by disconnecting each end of the piping system and blowing fuel out of the pipe with a compressed gas. The velocity of the compressed gas in the pipe shall be sufficient to remove essentially all residual liquid from the pipe.
2. Piping larger than 2-inch nominal diameter: Remove fuel by disconnecting each end of the piping system and propelling a foam pig through the pipeline at a sufficient velocity to remove essentially all remaining liquid. Pig shall be propelled by a compressed gas. At least three (3) pigs shall be propelled through each pipe segment.

B. The Contractor shall contain, filter and transfer all useable fuel removed from piping to the respective entities tanks. Any unusable fuel or sludge shall be assumed to be hazardous waste and disposed of by the Contractor in accordance with this Specification.

C. After fuel is removed from the piping, all above grade pipe shall be cut into maximum 10 foot lengths and transported to the Contractor provided final disposal site or other approved location. Below grade piping shall be capped and abandoned in place or removed as required to install new below grade piping.

3.3 HAZARDOUS WASTES

A. The hazardous nature of containerized sludge will be based upon composite testing performed by the Contractor in accordance with 40 CFR 261.

B. All waste that is deemed hazardous in accordance with 40 CFR 261 shall be manifested in accordance with 40 CFR 262 and shipped in accordance with US DOT 49 CFR parts 100-199 regulations. The Contractor shall use EPA Uniform Hazardous Waste Manifest, OMB No. 2050-0039, EPA form 8700-22.

END OF SECTION

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture.
- C. Shop Drawings: For steel reinforcement.
- D. Material test reports.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5 and Section 7.
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- C. Pre-installation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another

approved material. Provide lumber dressed on at least two edges and one side for tight fit.

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.
- C. Galvanized-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from galvanized steel wire into flat sheets.
- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - 1. Portland Cement: ASTM C 150, Type IA, II, IIIA.
- B. Aggregates: All aggregates shall be provided from an approved source.
 - 1. Normal-Weight Aggregates: ASTM C 33, graded, 1-inch nominal maximum coarse-aggregate size.
 - 2. Fine Aggregate: ASTM C 33, Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M and potable.
- D. Air-Entraining Admixture: ASTM C 260.
- E. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.

2.4 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap polyethylene sheet.
- C. Water: Potable.

2.5 CONCRETE MIXTURES

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
- B. Proportion normal-weight concrete mixture as follows:
 - 1. Minimum Compressive Strength: 4000 psi at 28 days.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 - 3. Slump Limit: 4 inches, plus or minus 1 inch.
 - 4. Air Content: 4-7 percent.

2.6 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork according to ACI 301 to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Chamfer exterior corners and edges of permanently exposed concrete.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.4 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- C. Cold-Weather Placement: Comply with ACI 306.1.
- D. Hot-Weather Placement: Comply with ACI 301.

3.5 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 1. Apply to concrete surfaces not exposed to public view.

3.6 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screening, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.

3.7 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3.8 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.

3.9 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Contractor will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
 1. Testing Services: Tests shall be performed according to ACI 301 & the Design Drawings.

END OF SECTION

SECTION 05 50 00

STRUCTURAL STEEL & METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes fabrication and erection of structural steel work, as shown on Contract Drawings including schedules, notes, and details showing size and location of members, typical connections, and types of steel required.
 1. Structural steel is that work defined in American Institute of Steel Construction (AISC) "Code of Standard Practice" and as otherwise shown on Contract Drawings.
 2. This section applies, but is not limited to, stairways, railings, hose reel & dispenser enclosures pump boxes, steel secondary containment, truck fill containment areas, and other miscellaneous steel fabrications.

1.3 SUBMITTALS

- A. Product data or manufacturer's specifications and installation instructions for all products. Include laboratory test reports and other data to show compliance with specifications (including specified standards). No work shall commence on any item until the required submittals have been approved.
- B. Steel Secondary Containment Shop Drawings: The Contractor shall submit Shop Drawings in electronic PDF format showing all principle dimensions of the steel containment structure, details and locations of all accessories and appurtenances, thicknesses of sheets and plates, and details of joints, stairs, cables, connections, and welds.
 1. Shop Drawings shall include a description of the protective coating system and a general plan of the structure showing a layout of the containment panels & supports.
 2. Complete details, dimensions, and schedules of fabrication and assembly of steel components.
 3. Submit product data on all gaskets and sealants confirming proposed products are rated for exposure to design temperatures and fluids contained within the bulk tanks (gasoline & diesel).
 4. Shop Drawings shall be stamped and signed by a professional civil engineer demonstrating that the containment design complies with

minimum design criteria for the site.

5. Erection Manuals: Contractor shall submit a PDF copy of field erection manuals illustrating the erection and installation procedures for the steel containment system, liner system and all other appurtenances.
6. Inspection and Maintenance Instructions: Contractor shall provide PDF copy of operation manuals with written instructions for periodic inspection and maintenance of the containment system.

C. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
3. Complete details, dimensions, and schedules of fabrication and assembly of steel components.

1.4 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code-Steel."
- B. Comply with applicable provisions of the following specifications and documents:
 1. AISC's "Code of Standard Practice for Steel Buildings and Bridges."
 2. AISC's "Seismic Provisions for Structural Steel Buildings" and "Supplement No. 2."
 3. AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design and Load and Resistance Factor Design Specification for Structural Steel Buildings."
 4. AISC's "Specification for the Design of Steel Hollow Structural Sections."
 5. AISC's "Specification for Load and Resistance Factor Design of Single-Angle Members."
 6. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from

erosion and deterioration.

1. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use.
2. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

1.6 COORDINATION

- A. Furnish anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

- A. W-Shapes: ASTM A 992
- B. Channels, Angles: ASTM A 36
- C. Plate and Bar: ASTM A 36
- D. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.
- E. Welding Electrodes: Comply with AWS requirements.

2.2 STEEL SECONDARY CONTAINMENT SYSTEM

- A. Provide pre-engineered rectangular steel containment systems. All components shall be galvanized with 10-gauge (minimum) corrugated containment panels 33" in height. The system shall be designed for zero ground disturbance with no required excavation or driving for installation of support hardware. Designed and manufactured by Dura Life CONTAINMENT Systems – Sioux Steel Company, OAE.
- B. Provide containment dike cross over stairs at the quantity shown in the design drawings. Provide elevation threshold as required to clear containment dike and hand railings meeting OSHA requirements. Fabricate from minimum 14-gauge steel with anti-slip treads. Minimum load rating of 1,000 lbs. Designed and manufactured by Dura Life CONTAINMENT Systems – Sioux Steel Company, OAE.
- C. See specification section GEOTEXTILE FABRICS for containment liner and geotextile protective layer specifications.

2.3 BOLTS, CONNECTORS, AND ANCHORS

- A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex

steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.

1. Finish: Galvanized.
- B. Galvanizing Repair Paint: MPI#18, MPI#19, or SSPC-Paint 20, ASTM A 780.

2.4 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design and Load and Resistance Factor Design Specification for Structural Steel Buildings."
 1. Identify high-strength structural steel according to ASTM A6 and maintain markings until structural steel has been erected.
 2. Mark and match-mark materials for field assembly.
- B. Architecturally Exposed Structural Steel: Comply with fabrication requirements, including tolerance limits, of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for structural steel identified as architecturally exposed structural steel.
 1. Fabricate with exposed surfaces smooth, square, and free of surface blemishes including pitting, rust, scale, and roughness.
 2. Remove blemishes by filling or grinding or by welding and grinding, before cleaning, and treating.
- C. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
 1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.
- D. Bolt Holes: Cut, drill, mechanically thermal cut, or punch standard bolt holes perpendicular to metal surfaces.
- E. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- F. Cleaning: Clean and prepare steel surfaces according to either:
 1. Caustic cleaning and cleaning according to SSPC-SP8, or
 2. Cleaning according to SSPC-SP1 and SSPC-SP6
- G. Welded Door Frames: Build up welded door frames attached to structural steel. Weld exposed joints continuously and grind smooth. Plug-weld fixed steel bar stops to frames. Secure removable stops to frames with countersunk, cross-recessed head machine screws, uniformly spaced not more than 10 inches o.c., unless otherwise indicated.
- H. Holes: Provide holes required for securing other work to structural steel and for passage of other work through steel framing members.

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Base-Plate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.5 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.
 1. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
 2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.
 3. Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. Prevent weld show-through on exposed steel surfaces.
 - a. Grind butt welds flush.
 - b. Grind or fill exposed fillet welds to smooth profile. Dress exposed welds.

2.6 STEEL COATING

- A. Hot-Dip Galvanized Finish: Galvanize in accordance with ASTM A123, G90. This includes, but is not limited to the following: grip strut; bar grate; pipe supports, clamps, hardware; gate and fence components; ladders; and catwalks.
 1. Finish all cut ends, field welds and damaged surfaces of galvanized and zinc plated supports and fasteners with spray on cold galvanizing compound, ZRC, or approved equal.
- B. Coat Tanks IAW Section 33 56 13 Aboveground Fuel Storage Tanks.
- C. Coat Piping IAW Section 33 52 13 Liquid Fuel Piping.

2.7 SOURCE QUALITY CONTROL

- A. General: Materials and fabrication procedures are subject to inspection and tests in mill, shop, and field, conducted by a qualified inspection agency. Such inspections and tests will not relieve Contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements.
 - 1. At Contractor's expense, promptly remove and replace materials or fabricated components that do not comply.
- B. Design of Members and Connections: Details shown are typical; similar details apply to similar conditions, unless otherwise indicated. Verify dimensions at site whenever possible without causing delay in the work.
 - 1. Promptly notify Project Manager whenever design of members and connections for any portion of structure are not clearly indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify elevations of concrete-bearing surfaces and locations of bearing plates, and other embedments, with steel erector present, for compliance with requirements.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.

3.3 ERECTION

- A. Temporary Shoring and Bracing: Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds.
- B. Field Assembly: Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming part of complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces that will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
- C. Level and plumb individual members of structure within specified AISC tolerances.
- D. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in primary structural framing. Cutting will be permitted only on secondary

members that are not under stress, as acceptable to Project Manager. Finish gas-cut sections equal to a sheared appearance when permitted.

E. Touch-Up Repairs: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint or galvanizing.

1. Galvanizing Repair: Galvanized coating at damaged areas shall be repaired according to ASTM A 780 (Annex A1) using zinc-based alloy repair sticks commonly known as "hot sticks".
2. Coating Repair: If underlying metal surface is exposed, wheel abrade or sandblast to clean metal and re-coat same as tanks. If damage does not fully penetrate coating then reapply top coat only to minimum DFT.

3.2 QUALITY CONTROL

A. Authority will engage an independent testing and inspection agency to inspect welded connections and to perform tests and prepare test reports.

B. Testing agency shall conduct and interpret tests, state in each report whether test specimens comply with requirements, and specifically state any deviations therefrom.

C. Provide access for testing agency to places where structural steel work is being fabricated or produced so that required inspection and testing can be accomplished.

D. Testing agency may inspect structural steel at plant before shipment.

E. Correct deficiencies in structural steel work that inspection and laboratory test reports have indicated to be not in compliance with requirements. Perform additional tests, at Contractor's expense, as necessary to reconfirm any noncompliance of original work and to show compliance of corrected work.

F. Shop Welding: Inspect and test during fabrication of structural steel assemblies, as follows:

1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
2. Perform visual inspection of all welds.
3. Perform tests of full penetration welds as follows:
 - a. Ultrasonic Inspection: ASTM E 164.

G. Field Welding: Inspect and test during erection of structural steel as follows:

1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
2. Perform visual inspection of all welds.

3. Perform tests of full penetration welds as follows:
 - a. Ultrasonic Inspection: ASTM E 164.

END OF SECTION

SECTION 05 53 00

METAL GRATINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Metal bar gratings.
2. Formed-metal plank gratings.
3. Metal frames and supports for gratings.
4. Metal bar grating stair treads.

1.2 PERFORMANCE REQUIREMENTS

A. Structural Performance of Gratings: Provide gratings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Floors: Uniform load of 100lbf/sq. ft. or concentrated load of 2000 lbf, whichever produces the greater stress.
2. Walkways and Elevated Platforms: Uniform load of 100 lbf/sq. ft.
3. Sidewalks and Vehicular Driveways: Uniform load of 250 lbf/sq. ft. or concentrated load of 8000 lbf, whichever produces the greater stress.
4. Stair Treads: Uniform load of 100 lbf/sq. ft. or concentrated load of 300 lbf.

B. Seismic Performance: Provide gratings capable of withstanding the effects of earthquake motions determined according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads" and shown in structural construction documents.

1.3 SUBMITTALS

A. Product Data: For the following:

1. Metal bar gratings.
2. Formed-metal plank gratings.
3. Clips and anchorage devices for gratings.
4. Paint products.

B. Shop Drawings: Detail fabrication and installation of gratings.

1.4 QUALITY ASSURANCE

A. Metal Bar Grating Standards: Comply with NAAMM MBG 531, "Metal Bar Grating Manual" and NAAMM MBG 532, "Heavy-Duty Metal Bar Grating Manual."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Metal Bar Gratings:
 - a. Alabama Metal Industries Corporation.
 - b. All American Grating, Inc.
 - c. Barnett/Bates Corp.
 - d. Borden Metal Products (Canada) Limited.
 - e. Fisher & Ludlow.
 - f. Grupo Metelmex, S.A. de C.V.
 - g. IKG Industries; a Harsco Company.
 - h. Marwas Steel Co.; Laurel Steel Products Division.
 - i. Ohio Gratings, Inc.
 - j. Seidelhuber Metal Products, Inc.
 - k. Tru-Weld.
 - l. Or Approved Equivalent Product.

2.02 METALS

A. Ferrous Metals:

1. Steel Plates, Shapes, and Bars: ASTM A 36.
2. Wire Rod for Grating Crossbars: ASTM A 510.
3. Uncoated Steel Sheet: ASTM A 1011, structural steel, Grade 30.
4. Galvanized Steel Sheet: ASTM A 653, structural quality, Grade 33, with G90 coating.

2.3 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

2.4 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

2.5 FABRICATION

- A. Cut, drill, and punch material cleanly and accurately. Remove burrs and ease edges. Remove sharp or rough areas on exposed surfaces.
- B. Form from materials of size, thickness, and shapes indicated, but not less than that needed to support indicated loads.
- C. Fit exposed connections accurately together to form hairline joints.
- D. Fabricate toeplates for attaching in the field.

2.6 METAL BAR GRATINGS

- A. Welded Steel Grating:
 1. Bearing Bar Spacing: 2"inch max (1/2" clear, max) o.c.
 2. Bearing Bar Depth: 1-1/4 inches.
 3. Bearing Bar Thickness: 3/16 inch.
 4. Crossbar Spacing: 4 inches o.c.
 5. Traffic Surface: **Serrated**.
 6. Steel Finish: Hot-dip galvanized with a coating weight of not less than 1.8 oz./sq. ft. of coated surface.
- B. Removable Grating Sections: Fabricate with banding bars attached by welding to entire perimeter of each section. Include anchors and fasteners of type indicated or, if not indicated, as recommended by manufacturer for attaching to supports.
- C. Fabricate cutouts in grating sections for penetrations indicated. Edge-band openings in grating that interrupt four or more bearing bars with bars of same size and material as bearing bars.
- D. Do not notch bearing bars at supports to maintain elevation.

2.7 GRATING FRAMES AND SUPPORTS

- A. Frames and Supports for Metal Gratings: Fabricate from metal shapes, plates, and bars of welded construction to sizes, shapes, and profiles indicated and as necessary to receive gratings. Grating may be supported on treated timbers where indicated in the Design Drawings. Miter and weld connections for perimeter angle frames. Cut, drill, and tap units to receive

hardware and similar items.

1. Unless otherwise indicated, fabricate from same basic metal as gratings.
- B. Galvanize steel frames and supports at all locations.

2.8 STEEL FINISHES

- A. Finish gratings, frames, and supports after assembly.
- B. Galvanizing: Apply zinc coating by the hot-dip process complying with ASTM A 123.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Perform cutting, drilling, and fitting required for installing gratings. Set units accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
- B. Fit exposed connections accurately together to form hairline joints.
 1. Weld connections that are not to be left as exposed joints but cannot be shop welded. Do not weld, cut, or abrade the surfaces of units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Attach toeplates to gratings by welding at locations indicated.
- D. Metal Bar Gratings: Comply with recommendations of referenced metal bar grating standards, including installation clearances and standard anchoring details.
 1. Attach removable units to supporting members with type and size of clips and fasteners indicated or, if not indicated, as recommended by grating manufacturer for type of installation conditions shown.
 2. Attach nonremovable units to supporting members by welding where both materials are same; otherwise, fasten by bolting as indicated above.
- E. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Framing with dimension lumber.
2. Framing with engineered wood products.
3. Wood blocking and nailers.
4. Wood furring.
5. Wood sleepers.
6. Plywood backing panels.

B. Related Sections include the following:

1. Division 06 Section "Sheathing."
2. Division 06 Section "Timber Construction"

1.3 DEFINITIONS

A. Exposed Framing: Framing not concealed by other construction.

B. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.

C. Timber: Lumber of 5 inches nominal or greater in least dimension.

D. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NeLMA: Northeastern Lumber Manufacturers' Association.
2. RIS: Redwood Inspection Service.
3. SPIB: The Southern Pine Inspection Bureau.

4. WCLIB: West Coast Lumber Inspection Bureau.
5. WWPA: Western Wood Products Association.

1.4 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
- B. Fastener Patterns: Full-size templates for fasteners in exposed framing.
- C. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- D. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:
 1. Wood-preservative-treated wood.
 2. Power-driven fasteners.
 3. Powder-actuated fasteners.
 4. Metal framing anchors.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of

Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
4. Provide dressed lumber, S4S, unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWPA C2, except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWPA C31 with inorganic boron (SBX).
 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
 1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.
- D. Application: Treat lumber as indicated on Drawings and the following:
 1. All, exposed framing, wood cants, nailers, curbs, equipment support bases, blocking, pipe supports, stripping, wood sills, foundations, sleepers, blocking, furring, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 2. Treat all dimensional lumber unless approved in writing by Owner.

2.3 DIMENSION LUMBER FRAMING

- A. Maximum Moisture Content: 19 percent
- B. Non-Load-Bearing Interior Partitions: Construction or No. 2 of any of the following species:
 1. Hem-fir.

- C. Joists, Rafters, and Other Framing Not Listed Above: No. 2 grade and any of the following species:
 - 1. Hem-fir.
- D. Joists, Rafters, and Other Framing Not Listed Above: Any species of machine stress-rated dimension lumber with a grade of not less than 2400F-2.0E
- E. Joists, Rafters, and Other Framing Not Listed Above: Any species and grade with a modulus of elasticity of at least 1,500,000 psi and an extreme fiber stress in bending of at least 850 psi for 2-inch nominal thickness and 12-inch nominal width for single-member use.

2.4 TIMBER FRAMING

- A. See Section 06 13 00 Timber Construction.

2.5 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
 - 3. Rooftop equipment bases and support curbs.
 - 4. Cants.
 - 5. Furring.
 - 6. Grounds.
 - 7. Utility shelving.
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber with 19 percent maximum moisture content of any species.
- C. For items of dimension lumber size, provide Construction or No. 2 grade lumber with 19 percent maximum moisture content and any of the following species:
 - 1. Hem-fir.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.6 PLYWOOD BACKING PANELS

A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C- D Plugged, in thickness indicated or, if not indicated, not less than 1/2-inch nominal thickness.

2.7 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preserved treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

E. Lag Bolts: ASME B18.2.1.

F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

2.8 METAL FRAMING ANCHORS

A. Basis-of-Design Products: Subject to compliance with requirements, provide products indicated on Drawings or comparable products by one of the following:

1. Simpson Strong-Tie Co., Inc.
2. USP Structural Connectors.

B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer that meet or exceed those of products of manufacturers listed. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

C. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653, G60 coating designation.

1. Use for interior locations where stainless steel is not indicated.

D. Stainless-Steel Sheet: ASTM A 666, Type 316.

1. Use for exterior locations and where indicated.

- E. Joist Hangers: U-shaped joist hangers with 2-inch- long seat and 1-1/4-inch- wide nailing flanges at least 85 percent of joist depth.
 - 1. Thickness: 0.062 inch.
- F. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.
 - 1. Strap Width: 2 inches.
 - 2. Thickness: 0.062 inch.
- G. Bridging: Rigid, V-section, nailless type, 0.050 inch thick, length to suit joist size and spacing.
- H. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch above base and with 2-inch- minimum side cover, socket 0.062 inch thick, and standoff and adjustment plates 0.108 inch thick.
- I. Joist Ties: Flat straps, with holes for fasteners, for tying joists together over supports.
 - 1. Width: 1-1/4 inches.
 - 2. Thickness: 0.062 inch.
 - 3. Length: 24 inches minimum and as indicated.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- D. Metal Framing Anchors: Install metal framing to comply with manufacturer's written instructions.
- E. Do not splice structural members between supports, unless otherwise indicated.
- F. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

- G. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- H. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.
- I. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
 - 3. Table 23-II-B-1, "Nailing Schedule," and Table 23-II-B-2, "Wood Structural Panel Roof Sheathing Nailing Schedule," in ICBO's Uniform Building Code.
- J. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.
- K. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
 - 1. Comply with indicated fastener patterns where applicable.
 - 2. Use finishing nails, unless otherwise indicated.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.
- C. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to

bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 TIMBER FRAMING INSTALLATION

- A. Install timber with crown edge up and provide not less than 4 inches of bearing on supports. Provide continuous members, unless otherwise indicated; tie together over supports as indicated if not continuous.
- B. Install wood posts using metal anchors indicated.
- C. Treat ends of timber beams and posts exposed to weather by dipping in water- repellent preservative for 15 minutes.

3.4 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION

SECTION 06 13 00
TIMBER CONSTRUCTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section applies to construction using timbers including, but not limited to, above ground pipe supports, tank supports, and timber foundation systems where shown on the drawings.

Related Sections include the following:

1. Division 06 Section "Sheathing" & "Rough Carpentry"

1.3 DEFINITIONS

A. Timbers: Lumber of 5 inches nominal or greater in least dimension.

B. Inspection agencies, and the abbreviations used to reference them, include the following:

1. NELMA - Northeastern Lumber Manufacturers Association.
2. NLGA - National Lumber Grades Authority.
3. WCLIB - West Coast Lumber Inspection Bureau.
4. WWPA - Western Wood Products Association.

1.4 SUBMITTALS

A. Product Data: For each type of process indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
- B. Fastener Patterns: Full-size templates for fasteners in exposed framing.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Schedule delivery of heavy timber construction to avoid extended on-site storage and to avoid delaying the Work.
- B. Store materials under cover and protected from weather and contact with damp or wet surfaces. Provide for air circulation within and around stacks and under temporary coverings.

PART 2 - PRODUCTS

2.1 TIMBER, GENERAL

- A. A. General: Comply with DOC PS 20 and grading rules of lumber grading agencies certified by American Lumber Standards Committee Board of Review, as applicable.
 1. Factory mark each item of timber with grade stamp of grading agency.
 2. Provide dressed lumber, S4S, unless otherwise indicated.
- B. Preservative Treatment:
 1. Pressure treatment in accordance with AWPA standard C22, 0.60 minimum retention, rated for ground contact.
 2. Preservative Chemicals: Acceptable to authorities having jurisdiction and one of the following:
 - a. Copper Naphthenate
 - b. Chromated Copper Arsenate (CCA)
 - c. Ammoniacal copper zinc arsenate (ACZA).
 3. Use process that includes water-repellent treatment.
 4. **Application: Treat all timber construction, unless otherwise indicated.**
- C. Timber Species and Grade: Hem-fir or hem-fir (North); No. 2 or better, NLGA, WCLIB, or WWPA.

2.2 TIMBER CONNECTORS

- A. Fabricate tie rods from galvanized round steel bars with upset threads connected with forged-steel turnbuckles complying with ASTM A 668/A 668M.
- B. Fasteners: Stainless steel fasteners shall be provided for connections in all pressure-treated wood, unless the following requirements` are met:
 - 1. Approval letters are submitted from both the wood treatment manufacturer and the fastener manufacturer, stating the proposed fasteners are suitable for permanent installations in exterior, exposed, wet locations.
 - 2. Steel fasteners, if approved shall be as a minimum ASTM A307 lags or bolts with a triple plate galvanized finish of an equivalent thickness to G185.
- C. Seal Coat: After fabricating and surfacing each unit, apply a saturation coat of penetrating sealer on surfaces of each unit except for treated wood where the treatment included a water repellent. Galvanized fasteners and assemblies do NOT require seal coating.

2.3 WOOD PRESERVATIVE

- A. Chemical solution for the treatment of field cuts and bore holes in accordance with the requirements of AWPA standard M4.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Erect heavy timber construction true and plumb. Provide temporary bracing to maintain lines and levels until permanent supporting members are in place.
- B. Fit members by cutting and restoring exposed surfaces to match specified surfacing. Pre-drill for fasteners and assembly of units.
- C. Install timber connectors as indicated.
 - 1. Unless otherwise indicated, install lag bolts with same orientation within each connection and in similar connections.
 - 2. Pre-drill lead holes for lag screws:
 - a. The clearance hole for the shank shall have the same diameter as the shank, and the same depth of penetration as the length of unthreaded shank. Shank clearance hole shall be increased as required for countersinking.

- b. The lead hole for the threaded portion shall have a diameter equal to 40% to 70% of the shank diameter and a length equal to at least the length of the threaded portion.
- c. The threaded portion of the lag screw shall be inserted in its lead hole by turning with a wrench, not by driving with a hammer.
- d. Soap or other lubricant shall be used on the lag screws or in the lead holes to facilitate insertion and prevent damage to the lag screw.

D. Field treat all cuts and bore holes in accordance with AWPA standard M4.

3.2 ADJUSTING AND CLEANING

- A. Repair damaged surfaces and finishes after completing erection. Replace damaged heavy timber construction if repairs are not approved by Project Manager.

END OF SECTION

SECTION 06 16 00
SHEATHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Wall sheathing.
2. Roof sheathing.
3. Subflooring.
4. Underlayment.
5. Building paper.
6. Building wrap.
7. Sheathing joint-and-penetration treatment.
8. Flexible flashing at openings in sheathing.

B. Related Sections include the following:

1. Division 06 Section "Rough Carpentry" for plywood backing panels.

1.3 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.
2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
4. For building wrap, include data on air-/moisture-infiltration protection based on testing according to referenced standards.

B. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:

1. Preservative-treated plywood.
2. Building wrap.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Stack plywood and other panels flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PANEL PRODUCTS, GENERAL

- A. Plywood: DOC PS 1.
- B. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.
- C. Factory mark panels to indicate compliance with applicable standard.

2.2 PRESERVATIVE-TREATED PLYWOOD

- A. Preservative Treatment by Pressure Process: AWPA C9.
 1. Preservative Chemicals: Acceptable to authorities having jurisdiction.
- B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.
- C. Application: Treat items indicated on Drawings and plywood in contact with the ground, roofing, flashing, vapor barriers, and waterproofing. Treat all exterior plywood unless an alternate coating system is indicated.

2.3 WALL SHEATHING

- A. Wall Sheathing: Grade CD interior-APA with exterior glue for the size and span rating shown on the drawings.

2.4 FLOOR SHEATHING

- A. Plywood Floor Sheathing: APA rated Sturd-I-Floor, meeting requirements of

Doc PS1 for the sizes and span rating shown on the drawings.

2.5 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction, unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."
 - 3. Table 23-II-B-1, "Nailing Schedule," and Table 23-II-B-2, "Wood Structural Panel Roof Sheathing Nailing Schedule," in ICBO's "Uniform Building Code."
- D. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.
- E. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- F. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

- A. General: Comply with applicable recommendations in APA Form No. E30S, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.
- B. Fastening Methods: Fasten panels as indicated below:
 1. Combination Subfloor-Underlayment:
 - a. Glue and nail to wood framing.
 - b. Space panels 1/8 inch apart at edges and ends.
 2. Subflooring:
 - a. Glue and nail to wood framing.
 - b. Space panels 1/8 inch apart at edges and ends.
 3. Wall and Roof Sheathing:
 - a. Nail to wood framing. Apply a continuous bead of glue to framing members at edges of wall sheathing panels.
 - b. Space panels 1/8 inch apart at edges and ends.

END OF SECTION

SECTION 09 90 00

PAINTING

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A.** Painting of exterior surfaces.
- B.** Surface preparation, priming, and coats of paint are in addition to shop priming.

1.2 RELATED REQUIREMENTS

1.3 DELIVERY, HANDLING, AND STORAGE

- A.** All materials shall be new and be delivered to the project site in unopened containers. Paints shall be stored in a suitable protected area that is heated or cooled as required to maintain temperatures within the range recommended by the paint manufacturer.
- B.** Paint containers shall bear labels that plainly show the following:
 1. Name or title of material.
 2. Federal Specification number, if applicable.
 3. Manufacturer's name.
 4. Manufacturer's stock number and date of manufacture.
 5. Color name and number.
 6. Contents by volume, for major pigment and vehicle constituents.
 7. Thinning instructions.
 8. Application instructions.

1.4 SUBMITTALS

- A.** Submit product data and samples.
- B.** The following specific information shall be provided:
 1. Data: For each paint system used, Supplier shall obtain from each manufacturer, a Paint System Data Sheet, Technical Data Sheets, and paint colors available (where applicable) for each product used in the paint system, except for products applied by equipment manufacturers. Required information shall be submitted on a system-by-system basis. Supplier shall also provide copies of the paint system submittals to the

coating applicator.

- 2.** Shop Drawings: Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
- C.** Color samples.
 - 1.** Color wheel of manufacturer's complete color line including standard white colors.
- D.** Colors:
 - 1.** As selected by the AEA Project Manager.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A.** Standard Paint: Manufacturers offering products complying with the requirements of these specifications include the following: Alternate suppliers will be considered, subject to review of the Engineer.
 - 1.** Paints:
 - a.** Devoe Coatings
 - b.** Sherwin Williams

2.2 MATERIALS

- A.** General: All products submitted shall conform to federal, state, and local requirements limiting the emission of volatile organic compounds. Specific information may be secured through the local office of the Air Pollution Control Officer.
- B.** Color Pigments: Pure, non-fading, applicable types to suit the substrates and service indicated.
- C.** Paint Coordination: Provide finish coats that are compatible with prime paints used. Review other sections of these Specifications in which prime paints are to be provided to ensure compatibility. Provide barrier coats over incompatible primers or remove and re-prime as required. Notify the Engineer in writing of any anticipated problems arising from using specified coating systems with substrates primed by others.
- D.** Material Quality:
 - 1.** Provide the best quality grade of the various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying the manufacturer's identification as a standard, best grade product will not be acceptable. Proprietary names used to designate colors or materials are not intended to imply that products of the named manufacturers are required to the exclusion of equivalent products of other manufacturers, but are used to establish the intended

finish type and quality. Equivalent products of other manufacturers may be used upon proper submittal and acceptance; however, proof of replacement materials being readily available at future dates from established, nationally-recognized sources is required.

2. Provide undercoat paint produced by the same manufacturer as the finish coats. Use only thinners approved by the paint manufacturer, and use only within recommended limits.

2.3 COLORS

- A. Colors shall be formulated with colorants free of lead and lead compounds.

2.4 EXTERIOR PAINT SYSTEMS

- A. Coatings:

1. Prime Coat- Devoe Catha-Coat 302H (3 mils minimum dry finish thickness (DFT))
2. Intermediate Coat – Devoe Bar-Rust 236 (5-6 mils minimum DFT)
3. Top Coat- Devoe Devthane 389 (2-3 mils DFT)

- B. Coat Colors: All coats shall be contrasting colors. Top coat color shall be white if not directed otherwise by AEA.
- C. Where field touch up of paint is required, wire brush area to bare metal and paint with prime, intermediate and top coats as indicated above.
- D. Touch-up Paint: Provide 5 gallons each (30 gallons total) of prime, intermediate, and top coat coatings. The touch-up coating shall be color matched to coatings applied.
- E. Coat miscellaneous steel as indicated in the drawings and Division 05.

PART 3 – EXECUTION

3.1 GENERAL

- A. All materials of a paint system, including primer and finish coats, shall be produced by the same paint manufacturer. Thinners, cleaners, driers, and other additives shall be as recommended by the paint manufacturer of the particular coating.
- B. Paint all exposed surfaces, whether or not designated in "Schedules", except where the natural finish of the material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint these the same as adjacent or similar materials or areas, or as directed by the Engineer. If color or finish is not designated, Contractor shall notify the Engineer of these items. Engineer will select the color or finish from standard colors available for the materials systems specified.

3.2 EXAMINATION

- A.** It is the intent of these Specifications that Contractors and their subcontractors employed on the jobsite will leave the surfaces of their work in such a condition that only minor cleaning, sanding, and filling is required prior to surface preparation and painting. It is the responsibility of the Contractor to inspect and provide substrate surfaces that are prepared in accordance with these Specifications and the printed directions and recommendations of the paint manufacturer whose product is to be applied.

3.3 PROTECTION OF MATERIALS NOT TO BE PAINTED

- A.** Remove, mask, or otherwise protect hardware, lighting fixtures, switch plates, aluminum surfaces, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not intended to be painted. Provide drop cloths to prevent paint materials from falling on or marring adjacent surfaces. Protect working parts of mechanical and electrical equipment from damage during surface preparation and painting process. Openings in motors shall be masked to prevent paint and other materials from entering the motors.

3.4 INSTALLATION

- A.** Paint shall not be applied in temperatures exceeding the manufacturer's recommended maximum and minimum allowable, nor in dust, smoke-laden atmosphere, damp or humid weather.
- B.** Apply water-based paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 50 degrees F and 90 degrees F, unless otherwise permitted by the paint manufacturer's printed instructions.
- C.** Apply solvent-thinned paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 45 degrees F and 95 degrees F, unless otherwise permitted by the paint manufacturer's printed instructions.
- D.** Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or to damp or wet surfaces; unless otherwise permitted by the paint manufacturer's printed instructions.
- E.** Painting may be continued during inclement weather, only if the areas and surfaces to be painted are enclosed and heated within the temperature limits specified by the paint manufacturer during application and drying periods.
- F.** Do not apply paint materials when temperature and humidity conditions can reasonably be predicted to change from manufacturer's application limitations prior to the elapse of adequate drying time.

3.5 SAFETY

- A.** Painting shall be performed in strict accordance with the safety recommendations of the paint manufacturer; with the safety recommendations of the National Association of Corrosion Engineers contained in the publication, Manual for Painter Safety; federal, state, and local agencies having jurisdiction.

3.6 PAINT MIXING

- A.** Multiple-component coatings shall be prepared using all of the contents of the container for each component as packaged by the paint manufacturer. No partial batches will be permitted. Multiple-component coatings that have been mixed shall not be used beyond their pot life. Contractor shall provide small quantity kits for touch-up painting and for painting other small areas. Only the components specified and furnished by the paint manufacturer shall be mixed. No intermixing of additional components for reasons of color or otherwise, even within the same generic type of coating, will be permitted.
- B.** Paint materials shall be kept sealed when not in use.

3.7 LOCATION WHERE PAINTING IS PERFORMED

- A.** Surface preparation and painting shall be done at the project site, or in the fabrication facility.

3.8 PREPARATION OF SURFACES

- A.** General:
 - 1.** Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified for each particular substrate condition.
 - 2.** Remove all hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish painted; or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary for the complete painting of the items and adjacent surfaces. Following completion of painting of each space or area, reinstall the removed items by workmen skilled in the trades involved.
 - 3.** Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program the cleaning and painting so that contaminants from the cleaning process will not fall onto wet, newly-painted surfaces.
- B.** Preparation of Structural Steel Surfaces:
 - 1.** Minimum surface preparation shall be Commercial Blast Cleaned per SSPC-SP6. Remove all oil and grease in accordance with the Solvent Cleaning requirements outlined in this section.
 - 2.** Coating Time: Coat any bare steel within 8 hours or before flash rusting occurs.
 - 3.** Sharp edges, surface defects, or protrusions shall be ground flat and smooth. Any welded areas shall be sanded before painting.
- C.** Preparation of Existing Coated Surfaces:

1. Existing coated or primed surfaces to be repainted or final coated shall be detergent washed and freshwater rinsed. Loose, abraded, or damaged coatings shall be cleaned to substrate by Hand or Power Tool, SSPC-SP2 or SSPC-SP3. Surrounding intact coating shall be feathered. One spot coat of the specified primer shall be applied to bar areas overlapping the prepared existing coating. One full finish coat of the specified primer or finish coat(s) shall be applied overall. If an aged, plural-component material is to be top coated, contact the coating manufacturer concerned for additional surface preparation requirements.
2. In the case of an application of a cosmetic coat the exact nature of the existing coatings is not known in all cases; and, while it is assumed that they have oxidized sufficiently to prevent lifting or peeling when over coated with the paints specified, the compatibility shall be checked by application to a small area prior to starting the painting. If lifting or other problems occur, request disposition from the Engineer.

D. Solvent Cleaning: Solvent cleaning shall consist of removal of foreign matter such as oil, grease, soil, drawing and cutting compounds, and any other surface contaminants by the use of solvents, emulsions, cleaning compounds, steam cleaning, or similar materials and methods which involve a solvent or cleaning action. This method conforms with SSPC-SP1.

3.9 APPLICATION OF PAINT

A. General:

1. Manufacturer's written instructions for applying each type of paint or protective coating shall be furnished to the Engineer prior to application. Cleaned surfaces and all coats shall be inspected prior to the succeeding coat. Schedule such inspection with the Engineer in advance. Apply all coatings in strict accordance with the paint manufacturer's recommendations, as reviewed by the Engineer. Sufficient time shall be allowed between coats to assure thorough drying of previously applied paint.
2. Apply additional coats when undercoats, stains, or other conditions show through the final coat of paint until the paint film is of uniform finish, color, and appearance. Give special attention to ensure that all surfaces including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

B. Application:

1. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.
2. Paint the back sides of access panels and removable or hinged covers, locker doors, etc., to match the exposed surfaces.
3. Finish exterior doors and frames, on tops, bottoms, and side edges, the

same as the exterior faces, unless otherwise indicated.

4. Sand lightly between each succeeding enamel or varnish coat.
5. Omit the first coat (primer) on metal surfaces that have been shop primed and touch-up painted, unless otherwise indicated.
6. Use foam brushes or rollers on metal doors and frames and similar surfaces to achieve finishes that are completely void of brush stroke tracks and marks.
7. Back-brush inside surfaces of siding, trim, and miscellaneous wood prior to installation and painting when necessary to avoid material cupping or warping.
8. Units to be bolted together and to structures shall be painted prior to assembly or installation.

C. Film Thickness:

1. Coverage is listed as either total minimum dry film thickness in mils (MDFT) or the spreading rate in square feet per gallon (SFPG). Per coat determinations are listed as MDFTPC or SFPGPC. The number of coats is the minimum required irrespective of the coating thickness. Additional coats may be required to obtain the minimum required paint thickness, depending on method of application, differences in manufacturers; products, and atmospheric conditions. Maximum film build per coat shall not exceed the coating manufacturer's recommendations.
2. Metal and wood surfaces shall be visually inspected to ensure proper and complete coverage has been attained.
3. Particular attention shall be given edges, angles, flanges, etc. Where insufficient film thicknesses are likely to be present, ensure proper millage in these areas.

D. Damaged Coatings:

1. Damaged coatings, pinholes, and holidays shall have the edges feathered and repaired in accordance with the recommendations of the paint manufacturer, as reviewed by the Engineer.
2. Repair of fusion bonded coatings to be as recommended by the original applicator. Liquid repair kits to be provided for this purpose by the applicator, as recommended by the coating manufacturer.
3. All finish coats, including touch-up and damage-repair coats shall be applied in a manner which will present a uniform texture and color-matched appearance.

E. Unsatisfactory Application:

1. If the item has an improper finish color, or insufficient film thickness, the surface shall be cleaned and top coated with the specified paint material

to obtain the specified color and coverage. Specific surface preparation information to be secured from the coating manufacturer and the Engineer.

2. All visible areas of chipped, peeled, or abraded paint shall be hand- or power-sanded feathering the edges. The areas shall then be primed and finish coated in accordance with the Specifications. Depending on the extent of repair and its appearance, a finish sanding and topcoat may be required by the Engineer.
3. Work shall be free of runs, bridges, shiners, laps, or other imperfections. Evidence of these conditions shall be cause for rejection.
4. Any defects in the coating system shall be repaired by the Contractor per written recommendations of the coating manufacturer.
5. Leave all staging up until the Engineer has inspected the surface or coating. Staging removed prior to approval by Engineer shall be replaced.

3.10 SHIPPING

- A. In all cases where pre-coated items are to be shipped to the jobsite, all efforts will be made to protect the coating from damage. Coated items shall be battened to prevent abrasion. Contractor shall use non-metallic or padded slings and straps in handling. Items will be rejected for excessive damage, in the opinion of the Engineer.

3.11 SCHEDULING PAINTING

- A. Apply the first coat material to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
- B. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

3.12 MINIMUM COAT THICKNESS

- A. Apply each material at not less than the manufacturer's recommended spreading rate to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.

3.13 PRIME COATS

- A. Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat to assure a finish coat with no burn-through or other defects due to insufficient sealing.

3.14 CLEANUP

- A.** All cloths and waste that might constitute a fire hazard shall be placed in closed metal containers or destroyed at the end of each day. Upon completion of the work, all staging, scaffolding, and containers shall be removed from the site or destroyed in a legal manner. Paint spots, oil, or stains upon adjacent surfaces and floors shall be completely removed, from the site or destroyed in a legal manner. Paint spots, oil, or stains upon adjacent surfaces and floors shall be completely removed, and the entire job left clean and acceptable to the Engineer.
- B.** Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

3.15 PROTECTION

- A.** Protect work of other trades, whether to be painted or not, against any damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting as acceptable to the Engineer.
- B.** At the completion of work of other trades, touch up and restore all damaged or defaced painted surfaces.

END OF SECTION

SECTION 09 97 00
HOT DIP GALVANIZED COATINGS

PART 1 – GENERAL

1.1 SCOPE OF WORK

- A.** Work includes providing all labor, equipment, plant, transportation, supplies, materials, and engineering to provide galvanized coatings on all steel members, sections, fabricated assemblies, and hardware specified on the Plans.
- B.** This specification applies to components indicated in the Contract Documents to be galvanized including but not limited to:
 - 1.** Pipe supports, clamps, and associated hardware.
 - 2.** Nuts, bolts, washers, and other hardware where specified.
 - 3.** All other components called out as galvanized in the Contract Documents.

1.2 RELATED REQUIREMENTS

- A.** Section 05 1200 Structural Steel
- B.** Section 09 9000 Painting and Coating

1.3 SUBMITTALS

- A.** General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B.** No later than 3 weeks prior to galvanizing, submit an electronic of a Certificate of Compliance which states that all galvanizing complies with ASTM A 123 or A 153 as appropriate, and the requirements set forth herein.

1.4 QUALITY ASSURANCE

- A.** Inspection shall be carried out at the galvanizer's plant by a Contractor's representative, or at some other place as agreed between Contractor, fabricator and galvanizer. AEA reserves the right to reject unacceptable galvanizing at the Project site. Inspection rights and privileges, procedures, and acceptance or rejection of galvanized steel material shall conform to ASTM A 123 or A 153 as applicable. Inspections and tests shall include the following:
 - 1.** Visual examination of samples and finished products.
 - 2.** Tests to determine weight or mass of zinc coating per square foot of metal surface.

1.5 TRANSPORT, STORAGE, AND HANDLING

- A.** Galvanized articles shall be loaded and stored as follows to prevent the formation of wet storage stain:
 - 1.** The articles shall be stacked or bundled to allow air between the galvanized surfaces during transport from the supplier. Additionally, the material shall be loaded in such a manner that continuous drainage could occur.
 - 2.** In storage, the articles shall be raised from the ground and separated with strip spacers to provide free access of air to most parts of the surface. They shall also be inclined in a manner which will give continuous drainage. Under no circumstances shall galvanized steel be allowed to rest on cinders or clinkers; neither shall it be stored on wet soil or decaying vegetation.

PART 2 – PRODUCTS

2.1 STEEL MATERIALS

- A.** Structural steel to be galvanized shall conform to Section 05 1200 Structural Steel.

2.2 ZINC FOR GALVANIZING

- A.** Zinc for galvanizing shall conform to ASTM B 6.

PART 3 – EXECUTION

3.1 FABRICATION

- A.** Structural steel shall be fabricated generally in accordance with Class (I, II, or III) guidelines as shown in Recommended Details for Galvanized Structures as published by the American Hot Dip Galvanizers Association, Inc.
- B.** Fabrication practices for products to be galvanized shall be in accordance with the applicable portions of ASTM A 143, A 384 and A 385, except as specified herein. Care shall be taken to avoid fabrication techniques which could cause distortion or embrittlement of the steel. Before fabrication proceeds, the Project Manager shall be notified of potential warpage problems which may require modification in design.
- C.** All welding slag and burrs shall be removed prior to delivery to the galvanizer.
- D.** Holes and/or lifting lugs to facilitate handling during the galvanizing process shall be provided at positions as agreed between the designer, fabricator and galvanizer.
- E.** Unsuitable marking paints shall be avoided and unwanted grease, oil, paint and other deleterious material shall be removed prior to fabrication.
- F.** Surface contaminants and coatings which would not be removable by the normal chemical cleaning process in the galvanizing operation shall be removed by the fabricator using blast cleaning or some other method.

3.2 SURFACE PREPARATION

- A.** Surfaces to be galvanized shall be pre-cleaned utilizing a caustic bath, acid pickle and flux. Alternatively, the steel shall be near white blast cleaned to SPCC – SP10 and fluxed.

3.3 GALVANIZING

- A.** Steel members, fabrications, and assemblies shall be galvanized after fabrication, but prior to shipment, by the hot dip process in accordance with ASTM A 123.
- B.** Bolts, nuts and washers and iron and steel hardware components shall be galvanized in accordance with ASTM A 153. Nuts and bolts shall be supplied in accordance with ASTM A 307, A 325, A 394 and A 563, as applicable.
- C.** Products shall be safeguarded against steel embrittlement in conformance with ASTM A 143.
- D.** All articles to be galvanized shall be handled in such a manner as to avoid any mechanical damage and to minimize distortion.
- E.** Design features which may lead to difficulties during galvanizing shall be pointed out prior to dipping.
- F.** The composition of metal in the galvanizing bath shall not be less than 98.0% zinc.

3.4 COATING REQUIREMENTS

- A.** Weight: The weight and thickness of the galvanized coating shall conform with paragraph 6.1 of ASTM A 123 or Table 1 of ASTM A 153, as appropriate.
- B.** Surface Finish: The galvanized coating shall be continuous, adherent, as smooth and evenly distributed as possible and free from any defect that is detrimental to the stated end use of the coated article.
- C.** The integrity of the coating shall be determined by visual inspection and coating thickness measurements.
- D.** Adhesion: The galvanized coating shall be sufficiently adherent to withstand normal handling during transport and erection.

3.6 WELDING

- A.** Where galvanized steel is to be welded, adequate ventilation shall be provided. If adequate ventilation is not available, supplementary air circulation shall be provided. In confined spaces a respirator shall be used.
- B.** Welding shall be performed in accordance with the American Welding Society publication D19.0-72, Welding Zinc Coated Steel.
- C.** All uncoated weld areas shall be touched up.

3.7 TOUCH UP AND REPAIR

A. Mechanical Damage

Areas damaged by welding, flame cutting, or during handling, transport or erection shall be repaired by one of the following methods whenever the damage exceeds 3/16" in width:

1. Cold Galvanizing Compound
 - a. Surfaces to be reconditioned with zinc-rich paint shall be clean, dry, and free of oil, grease and corrosion products.
 - b. Areas to be repaired shall be power disc sanded to bright metal. To ensure that a smooth reconditioned coating can be effected, surface preparation shall extend into the undamaged galvanized coating.
 - c. Touch-up paint shall be an organic cold galvanizing compound having a minimum of 94% zinc dust in the dry film.
 - d. The paint shall be spray or brush applied in multiple coats until a dry film thickness of 8 mils minimum has been achieved. A finish coat of aluminum paint shall be applied to provide a color blend with the surrounding galvanizing.
 - e. Coating thickness shall be verified by measurements with a magnetic or electromagnetic gauge.
2. Zinc Based Solder
 - a. Surfaces to be reconditioned with zinc-based solder shall be clean, dry and free of oil, grease and corrosion products.
 - b. Areas to be repaired shall be wire brushed.
 - c. Heat shall be applied slowly and broadly close to, but not directly onto the area to be repaired. The zinc-based solder rod shall be rubbed onto the heated metal until the rod begins to melt. A flexible blade or wire brush shall be used to spread the melt over the area to be covered. The zinc based solder shall be applied in a minimum thickness of 2 mils.
 - d. Coating thickness shall be verified by measurements with a magnetic or electromagnetic gauge.

B. Wet Storage Stain

Any wet storage stain shall be removed by the galvanizer if formed and discovered prior to leaving the galvanizer's plant. Wet storage stain shall be removed before installation so that premature failure of the coating will not occur. Wet storage stain shall be removed as follows:

1. The objects shall be arranged so that their surfaces dry rapidly.

2. Light deposits are to be removed by means of a stiff bristle (not wire) brush. Heavier deposits are to be removed by brushing with a 5% solution of sodium or potassium dichromate with the addition of 0.1% by volume of concentrated sulfuric acid. This is to be applied with a stiff bristle brush and left for about 30 seconds before thoroughly rinsing and drying. Alternatively a proprietary product such as Oakite Highlite, or equal, which is intended for this purpose may be used according to manufacturer's recommendations.
3. A coating thickness check must be made in the affected areas to ensure that the zinc coating remaining after the removal of wet storage stain is sufficient to meet or exceed the requirements of the specification.

END OF SECTION

SECTION 10 14 00

SIGNS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. This section covers the furnishing and installation of signs at the bulk tank farms, fenced area, bulk transfer area, dispenser, and marine header.
- B. The Contractor shall furnish all signs and fasteners.

1.2 RELATED REQUIREMENTS

- A. Section 01 33 00 Submittals.
- B. Section 32 31 13 Chain Link Fences and Gates.

1.3 REFERENCES

- A. International Fire Code (IFC), Section 3404.
- B. National Fire Protection Association, No. 704.
- C. State of Alaska, Department of Transportation, "Standard Specification for Highway Construction" and "Standard Drawings Manual".

1.4 SUBMITTALS

- A. Submit shop drawings of all signs, including height and width as well as sign thickness. Indicate background color and text color, text information (i.e. height and stroke) proposed for each sign.
- B. Submit manufacturer's data and standard colors for vinyl backgrounds and letters.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Signs shall be constructed of 0.08" minimum aluminum plate with either red reflective or black letters on a white non-reflective background, unless otherwise indicated.
- B. Size signs and lay out letters such that no letters touch or overlap, and all words are clearly readable.
- C. Size letters as indicated on the Contract Drawings and adjust size of sign accordingly, or make sign the dimensions indicated and size text appropriately to fit within the available space.

- D. Provide 3M series 255 High Performance vinyl letters on 3M 3650-10 white vinyl background, or Gerber thermal transfer film printed letters on Gerber High Performance vinyl background as indicated on the Drawings, or as appropriate for the application.

2.2 SIGNS

- A. Provide signs as indicated on the Contract Drawings.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install in accordance with IFC flammable and combustible liquid signage standards, and NFPA.
- B. Signs shall be conspicuously mounted and easily read.
- C. Where signs are fastened to fences, the fasteners used shall be galvanized steel hog rings or wire ties.

END OF SECTION

SECTION 11 95 13

SPILL RESPONSE EQUIPMENT

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. This section includes spill response equipment for the AVEC & Collocated bulk fuel facilities.
- B. Spill response equipment storage at the collocated facility is in Contractor provided connexes & overpack drums. Storage at AVEC is within existing AVEC connexes and storage space within Owner facilities. Coordinate with Facility Owner(s) to store and organize spill response equipment.

1.2 REFERENCES

- A. United States Department of Labor, Occupational Safety and Health Administration (OSHA):
 1. 29 Code of Federal Regulations (CFR) 1910

1.3 SUBMITTALS

- A. Submit under provisions of Division 01.
- B. Submit manufacturer's data for all spill response equipment and supplier for each item. Group item by each supplier.
- C. Unless otherwise indicated alternate manufacturers will be acceptable as long as they supply similar equipment with the same quality and performance.
- D. All equipment and materials shall be new unless indicated otherwise.

1.4 GENERAL

- A. Contractor is responsible for providing spill response equipment as specified and in accordance with this Section.
- B. The collocated Spill Response Connexs shall be placed on timber foundations in the locations shown on the drawings (verify final location with engineer prior to placement). Provide six (6) 8-inch x 8-inch x 10 foot pressure treated timbers equally spaced below each connex.
 1. Place all spill response equipment, including overpack drums, inside contractor provided Connex.
 2. Place and organize all spill response equipment as directed by the Owner.
 3. Contractor shall provide and install four steel shelving units approximately 6'x6'x30" to each facility operator as required to adequately store, organize and support the specified spill equipment,

extra facility parts and associated facility tools.

PART 2 - PRODUCTS

2.1 SPILL RESPONSE EQUIPMENT

- A. Provide all spill response equipment as specified in this section or as noted on the Contract Drawings.
- B. Contractor provided spill response Connex shall be standard 20-foot-long shipping containers, steel construction, not insulated. Connexes shall be in like new condition but need not be new. Connex doors shall operate freely without binding or excessive resistance, and connex exterior shall have minimal rust. Any rust shall be wire wheeled to clean metal, primed and painted.
- C. **Provide three sets of the following equipment and materials. Two for the collocated facility and the other for AVEC.**

Quantity	Item/Description
Absorbent Material and Containers	
5 EA	Overpack Drums, 95 Gallon Poly
1 EA	Open-top Drum, 55 Gallon, Metal
2 EA	Absorbent Roll, min. 30"x140', min. absorb 50 gal/bale
2 EA	Absorbent Pads, min. 16"x20", 100 Pieces Ea, min. absorb 24
6 EA	Absorbent Boom, min. 6" x 40', min. 100 gal/40'
2 EA	Absorbent Sweep, 19" x 100', min absorb 25 gal/bale
Personnel Protective Equipment	
4 Pair	Gloves, Nitrile AF18 Chem-Resist, Pairs
4 EA	Tyvek Suits, XL Polyethylene Coated, zipped front, elastic wrist and
4 EA	Goggles, UVEX Futura
4 EA	Hardhats, Bullard Traditional, with 6-point ratchet suspension, orange
Recovery Equipment	
1 EA	3500 gallon Fold-A-Tank
1 EA	2-inch portable centrifugal pump, gas-powered Gorman Rupp #82D1-8-X rated at 160 gpm with 2" camlocks. Pre-Approved Alternates: (Option #1: Marlow 2AM32-P rated at 140 gpm with 2" camlocks) (Option #2: Homelite #320 rated at 140 gpm with 2" camlocks)
1 EA	Discharge Hose with 2" camlocks, 100' total length
1 EA	Suction Hose with 2" camlocks, 50' total length
2 EA	Shovel, square point, wood handle
2 EA	Rake, 16-tine forged bow, wood handle
2 Roll	Garbage/Disposal Bags, heavy duty, 100ct./roll, 33-gal., 4-mil, printed "Oily Waste"
Miscellaneous	
1 EA	Smart Ash Incinerator
--	Fire Extinguishers, Portable, Type 4A-80BC (See Drawings for quantity)
1 EA	8x20 connex, lockable (2 connex at collocated, none at AVEC)

4 EA	6'x6'x30" steel shelving units
AS REQD	Padlocks, keyed-alike (for each gate, enclosure, etc. plus 2 spares)

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

SECTION 26 01 26 - MAINTENANCE TESTING OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Feeder Megohm Testing.
- B. Receptacle Branch Circuit Testing.
- C. Ground Fault Circuit Interrupter Testing.
- D. Electrical Service Ground Testing.

1.2 REFERENCES

- A. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- B. ANSI/IEEE Std 81-1983 Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System.
- C. ANSI/TIA/EIA - 568-B.1 and Addendums, General Cabling System Requirements.

1.3 SUBMITTALS

- A. Submit data under provisions of Division 01 and Section 26 05 00.
- B. Product Data: Submit technical information for each test instrument to include manufacturer, model number, serial number, ratings, accuracy, and National Institute of Standards and Technology (NIST) Traceable calibration certification.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit Test Reports per Section 26 05 00.

1.5 COORDINATION

- A. Provide written 72 hours advance notice of all tests to be performed to allow Owner's Representative to witness testing.

1.6 REQUIRED TEST INSTRUMENTS

A. MEGOHMMETER.

- 1. Product Description: 1000 Volt DC, portable, insulation and resistance test Megohmmeter.
- 2. Equipment Accuracy:

- a. 2000 Megohm Range - 3% of full Scale.

B. BRANCH CIRCUIT ANALYZER

1. Product Description: Branch circuit analyzer capable of receptacle testing of voltage drop under load, hot-neutral-ground conductor resistances, common mode (N-G) Voltage, and GFCI trip point.
2. Manufacturer: Ideal SureTest. Model: 61-156 ST-1THD Wiring/Harmonic Distortion Analyzer or approved equal.
3. Equipment Accuracy:
 - a. Accuracy 1% full scale \pm 1 digit True RMS.

C. GROUND RESISTANCE CLAMP-ON METER

1. Product Description: Digital, direct reading clamp-on resistance ground tester.
2. Manufacturer: AEMC. Model: 3711 or approved equal.
3. Equipment Accuracy:
 - a. 1.0 to 50.0 Ohms \pm (1.5% + 0.1 Ohm).
 - b. 50.0 to 100.0 Ohms \pm (2.0% + 0.1 Ohm).
 - c. 100 to 200 \pm (1.5% + 0.1 Ohm).
 - d. 200 to 400 Ohms \pm (1.5% + 0.1 Ohm).
 - e. 400 to 600 Ohms \pm (1.5% + 0.1 Ohm).

D. MULTIMETER

1. Product Description: Digital True RMS Multimeter.
2. Equipment Accuracy:
 - a. AC Voltage Range: 0.75% \pm 3 last single digits at 60 Hz.
 - b. AC Current Range: 0.90% \pm 3 last single digits at 60 Hz.
 - c. DC Voltage Range: 0.25% \pm 1 last single digit.
 - d. DC Current Range: 0.75% \pm 1 last single digit.
 - e. Resistance Ranges: 0.50% \pm 1 last single digit.
 - f. Frequency Range: 0.10% \pm 1 last single digit @ 60 Hz.

1.7 TEST INSTRUMENT CALIBRATION

- A. All test equipment shall be in good mechanical and electrical condition.
- B. Provide calibration for each test instrument directly traceable to the National Institute of Standards and Technology (NIST) of higher accuracy than that of the instrument tested.
- C. Provide calibration labels visible on all test equipment. Records, which show date and results of instruments calibrated or tested, shall be kept up-to-date.
- D. Calibrate instruments in accordance with the following frequency schedule:
 - 1. Field instruments: 12 months maximum.
 - 2. Up-to-date instrument calibration instructions and procedures shall be maintained for each test instrument with the equipment.

1.8 MINIMUM REPORT INFORMATION

- A. Report Criteria: After each test, promptly submit one copy of report to the Owner's Representative.
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Name and Model of Tester and witnesses.
 - 4. Date and time of sampling or inspection.
 - 5. Identification of product and specifications section.
 - 6. Type of inspection or test.
 - 7. Date of test.
 - 8. Results of tests.
 - 9. Indicate compliance or non-compliance with Contract Documents.
 - 10. Final adjustment setting values where applicable.
- B. Submit copy of all tests performed in the O&M manual.

1.9 GENERAL REQUIREMENTS

- A. Submit test results within 3 working days of each test and included in the O&M manual.
- B. Provide qualified personnel at site to perform all testing.

- C. Perform specified testing of products in accordance with specified standards or as denoted in this specification whichever is more stringent.
- D. Promptly notify Owner's Representative or Engineer of irregularities or non-conformance of Work or products.
- E. Perform additional tests when test is performed incorrectly, deemed inaccurate, or incorrectly documented.
- F. The Contractor shall provide all forms, instrumentation and test equipment, loads, and other consumables required to demonstrate the systems to Owner's Representative satisfaction.
- G. Perform and submit all testing prior to substantial completion and system acceptance.
- H. Reset all material, cables etc. that are disturbed after testing.
- I. Replace and retest all material installed which does not meet or exceed the minimum acceptable limits set forth in this specification in accordance with the contract original requirements at no additional charge to Contract Sum/Price.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 FEEDER CONDUCTOR TEST

- A. Test Criteria:
 - 1. Use Megohmmeter to test all conductors sized #6 AWG and larger.
 - 2. Perform insulation-resistance test on each conductor with respect to ground and adjacent conductors. Applied potential 1000 volts DC for 600 volt rated cable.
 - 3. Perform test immediately after installation.
 - 4. Clean exposed cable ends with clean cloth and alcohol.
 - 5. Disconnect conductors from all equipment.
 - 6. Test duration shall be one minute.
 - 7. Record the resistance of the insulated conductor under test with all other conductors connected together and to ground (metallic raceway, grounding conductor, etc.).
 - 8. Perform continuity test to verify correct cable connection.
 - a. Submit test results to Owner's Representative and Engineer.

B. Test Values:

1. Minimum insulation-resistance value: 50 megohms.
2. Investigate all deviations between adjacent phases and repeat test as necessary. Any deviations that are uncorrectable shall be reported to Owner's Representative and Engineer. Replace all conductors with uncorrectable deviations.

3.2 RECEPTACLE GROUND FAULT CIRCUIT INTERRUPTER TEST

A. Test Criteria:

1. Use Branch Circuit Analyzer to perform test of each GFCI protected receptacle.
2. Record trip level in mA for each receptacle tested.
3. Submit test results to Owner's Representative and Engineer.

B. Test Values:

1. Trip Range: Between 4-6 mA.

3.3 ELECTRICAL SERVICE GROUND TEST

A. Test Criteria:

1. Use ground resistance clamp-on meter to measure the resistance of service ground with meter clamped between system neutral bond and each grounding electrode. Perform this test on new or existing services and all separately derived systems.
2. Record resistance value in ohms.
3. Submit test results to Owner's Representative and Engineer.

B. Test Values:

1. Maximum ground resistance: 10 ohms.

END OF SECTION

SECTION 26 05 00 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. General Requirements specifically applicable to Division 26, in addition to Division 01 provisions.
- B. The electrical system equipment and installation shall comply with all provisions and requirements of this specification, as well as any and all applicable national, state and local codes and standards.

1.2 WORK SEQUENCE

- A. Construct Work in sequence under provisions of Division 01.

1.3 COORDINATION

- A. Coordinate the Work specified in this Division under provisions of Division 01.
- B. Prepare drawings showing proposed rearrangement of Work to meet job conditions, including changes to Work specified under other Sections. Obtain permission of Architect prior to proceeding.

1.4 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code, latest adopted edition including all state and local amendments.
- B. ANSI/NECA NEIS – National Electrical Installation Standards.
- C. ANSI/NETA ATS – Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- D. ANSI/IEEE C2 - National Electrical Safety Code latest adopted edition.
- E. Electrical Reference Symbols: The Electrical "Legend" on drawings is standardized version for this project. All symbols shown may not be used on drawings. Use legend as reference for symbols used on plans.
- F. Electrical Drawings: Drawings are diagrammatic; complimentary to the Civil Drawings; not intended to show all features of work. Install material not dimensioned on drawings in a manner to provide a symmetrical appearance. Do not scale drawings for exact equipment locations. Review Civil Drawings and adjust work to conform to conditions shown thereon. Field verification of dimensions, locations and levels is directed.

1.5 REGULATORY REQUIREMENTS

- A. Conform to ANSI/NFPA 70.

- B. Conform to ANSI/IEEE C2.
- C. Obtain electrical permits, plan review, and inspections from authority having jurisdiction.

1.6 SUBMITTALS

- A. Submittal review is for general design and arrangement only and does not relieve the Contractor from any requirements of Contract Documents. Submittal not checked for quantity, dimension, fit or proper operation. Where deviations of substitute product or system performance have not been specifically noted in the submittal by the Contractor, provisions of a complete and satisfactory working installation is the sole responsibility of the Contractor.
- B. In addition to requirements referenced in Division 01, the following is required for work provided under this division of the specification.
 1. Provide material and equipment submittals containing complete listings of material and equipment shown on Electrical Drawings and specified herein. Separate from work furnished under other divisions.
 2. Submittals shall be provided in PDF format with each section indexed in the PDF document. **Submittals for Division 26 shall be complete and submitted at one time.** Unless given prior approval, partial submittals will be returned unreviewed.
 3. Clearly identify all material and equipment by item, name or designation used on drawings and in specifications.
 4. **Submit only pages which are pertinent;** mark catalog sheets to identify pertinent products, referenced to Specification Section and Article number. Show reference standards, performance characteristics, and capacities; wiring diagrams and controls; component parts; finishes; dimensions; and required clearances.
 5. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the work. Delete information not applicable.
 6. Review submittals prior to transmittal; determine and verify field measurements, field construction criteria, manufacturer's catalog numbers, and conformance of submittal with requirements of Contract Documents.
 7. Coordinate submittals with requirements of work and of Contract Documents.
 8. Certify in writing that the submitted shop drawings and product data are in compliance with requirements of Contract Documents. Notify Architect/Engineer in writing at time of submittal, of any deviations from requirements of Contract Documents.
 9. Do not fabricate products or begin work which requires submittals until return of submittal with acceptance from Engineer.

10. Equipment scheduled by manufacturer's name and catalog designations, manufacturer's published data and/or specification for that item, in effect on bid date, are considered part of this specification. Approval of other manufacturer's item proposed is contingent upon compliance therewith.

1.7 SUBSTITUTIONS

- A. In accordance with the General Conditions and the General Requirements, Substitution and Product Options, all substitute items must fit in the available space, and be of equal or better quality including efficiency performance, size, and weight, and must be compatible with existing equipment.

1.8 PROJECT RECORD DRAWINGS

- A. Maintain project record drawings in accordance with Division 01.
- B. In addition to the other requirements, mark up a clean set of drawings as the work progresses to show the dimensioned location and routing of all electrical work which will become permanently concealed. Show routing of work in permanently concealed blind spaces within the building. Show complete routing and sizing of any significant revisions to the systems shown.
- C. Record Drawing field mark-ups shall be maintained on-site and shall be available for examination by the Owner's Representative at all times.

1.9 OPERATION AND MAINTENANCE MANUALS

- A. Provide operation and maintenance manuals for training of Owner's Representative in operation and maintenance of systems and related equipment. In addition to requirements referenced in Division 01, the following is required for work provided under this section of the specifications.
- B. Manuals shall be separate from work furnished under other divisions. Prepare a separate chapter for instruction of each class of equipment or system. Index and clearly identify each chapter and provide a table of contents.
- C. Unless otherwise noted in Division 01, provide one copy of all material for approval.
- D. The following is the suggested outline for operation and maintenance manuals and is presented to indicate the extent of items required in manuals.
 1. List chapters of information comprising the text. The following is a typical Table of Contents:
 - a. Electrical Power Distribution
 - b. Lighting
 - c. Control Systems
 - d. Other chapters as necessary.

2. Provide the following items in sequence for each chapter shown in Table of Contents:
 - a. Describe the procedures necessary for personnel to operate the system including start-up, operation, emergency operation, and shutdown.
 - 1) Give complete instructions for energizing equipment and making initial settings and adjustments whenever applicable.
 - 2) Give step-by-step instructions for shutdown procedure if a particular sequence is required.
 - 3) Include test results of all tests required by this and other sections of the specifications.
 - b. Maintenance Instructions:
 - 1) Provide instructions and a schedule of preventive maintenance, in tabular form, for all routine cleaning and inspection with recommended lubricants if required for the following:
 - a) Power distribution equipment
 - b) Light fixtures
 - c) Control systems and equipment
 - 2) Provide instructions for minor repair or adjustments required for preventive maintenance routines, limited to repairs and adjustments which may be performed without special tools or test equipment and which requires no special training or skills.
 - 3) Provide manufacturers' descriptive literature including approved shop drawings covering devices used in system, together with illustrations, exploded views, etc. Also include special devices provided by the Contractor.
 - 4) Provide any information of a maintenance nature covering warranty items, etc., which have not been discussed elsewhere.
 - 5) Include list of all equipment furnished for project, where purchased, technical representative if applicable and a local parts source with a tabulation of descriptive data of all electrical-electronic spare parts and all mechanical spare parts proposed for each type of equipment or system. Properly identify each part by part number and manufacturer.
 - c. Inspection Certificate: Include copy of certificate of final inspection and acceptance from the Authority Having Jurisdiction.

1.10 DEMONSTRATION OF ELECTRICAL SYSTEMS

- A. During substantial completion inspection:
 - 1. Conduct operating test for approval under provisions of Division 01.
 - 2. Demonstrate installation to operate satisfactorily in accordance with requirements of Contract Documents.
 - 3. Should any portion of installation fail to meet requirements of Contract Documents, repair or replace items failing to meet requirements until items can be demonstrated to comply.
 - 4. Have instruments available for measuring voltage values, current values, and for demonstration of continuity, grounds, or open circuit conditions.
 - 5. Provide personnel to assist in taking measurements and making tests.

1.11 CERTIFICATE OF COMPLETION

- A. Submit, at time of request for final inspection, a completed letter in the following format:
- B. I, (NAME), of (FIRM), certify that the electrical work is complete in accordance with Contract Plans and Specifications, and authorized change orders (copies attached) and will be ready for final inspection as of (DATE). I further certify that the following specification requirements have been fulfilled:
 - 1. Megger readings performed, copies of logs attached.
 - 2. Ground tests performed, copies of method used and results attached.
 - 3. Operating manuals complete.

(SIGNED)

Owner's Representative

- 4. As-built drawings up-to-date and ready to deliver to AVEC.
- 5. Emergency and alarm systems tested and fully operational:
- 6. Instruction of operating personnel completed DATE by: (NAME).
- 7. All other tests required by specifications have been performed.
- 8. All systems are fully operational. Project is ready for Final Inspection.

(SIGNED – AVEC)

1.12 WARRANTY

- A. In addition to the requirements of Division 01, or as specified in other sections. Warrant all materials, installation and workmanship for one (1) year from date of acceptance.
- B. Copies of manufacturer product warranties for all equipment shall be included in the operation and installation manuals.

1.13 INSTRUCTION OF OPERATING PERSONNEL

- A. In accordance with the requirements of Division 01 and this section provide services of qualified representative of supplier of each item or system listed below to instruct designated personnel of Owner in operation and maintenance of item or system.
- B. Make instruction when system is complete, of number of hours indicated, and performed at time mutually agreeable.

System or Equipment	Hours of Instruction
Power System	1
Lighting System	1
Controls – Normal Operation	4
Controls – Emergency Operation	2
Controls – Alarms and Troubleshooting	4
Modify/add other sections as necessary	

- C. Certify that an Anchorage, Fairbanks, or Bethel based authorized service organization regularly carries complete stock of repair parts for listed equipment or systems, that organization is available and will furnish service within 48 hours after request. Include name, address and telephone number of service organization.
- D. Have approved operation and maintenance manuals and parts lists for all equipment on hand at time of instruction.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. All Materials and Equipment shall be new.
- B. All Materials and Equipment shall be listed by Underwriter's Laboratories (UL Listed) or approved by the appropriate NRTL agency for the use intended.
- C. Materials and Equipment shall be acceptable to the authority having jurisdiction as suitable for the use intended when installed per listing and labeling instructions.

- D. No materials or equipment containing asbestos in any form shall be used. Where materials or equipment provided by this Contractor are found to contain asbestos such items shall be removed and replaced with non-asbestos containing materials and equipment at no cost to the Owner.
- E. In describing the various items of equipment, in general, each item will be described singularly, even though there may be numerous similar items.

PART 3 - EXECUTION

3.1 WORKMANSHIP

- A. Install Work using procedures defined in ANSI/NECA NEIS and/or the manufacturer's installation instructions.

3.2 TESTS

- A. Perform tests in accordance with Section 26 01 26 – Maintenance Testing of Electrical Systems.
- B. Notify the Owner's representative at least 72 hours prior to conducting any tests.
- C. Following completion of installation, test system ground in accordance with the requirements of ANSI/NETA ATS Section 7.13. and all feeders in accordance with ANSI/NETA ATS Section 7.3. Submit logs of values obtained, and nameplate data of instruments used prior to final inspection. Include a copy of all data in the power distribution section of the Operation and Maintenance Manuals.
- D. Perform additional tests required under other sections of these specifications.
- E. Perform all tests in the presence of the Owner's representative.

END OF SECTION

SECTION 26 05 19 – LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Building Wire.
- B. Cable.
- C. Wiring Connections and Terminations.

1.2 RELATED SECTIONS

- A. Section 26 01 26 – Maintenance Testing of Electrical Systems.
- B. Section 26 05 53 – Identification for Electrical Systems.
- C. Division 31 – Trenching.
- D. Division 31 – Backfill.

1.3 REFERENCES

- A. Federal Specification FS-A-A59544 – Cable and Wire, Electrical (Power, Fixed Installation).
- B. Federal Specification FS-J-C-30B – Cable Assembly, Power, Electrical.
- C. ANSI/NEMA WC 70-2009 – Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy.
- D. NETA ATS – Acceptance testing specifications for Electrical Power Distribution and Systems.
- E. NFPA 70 – National Electrical Code.
- F. NFPA 262 – Standard Method of test for flame travel and smoke of wires and cables for use in air-handling spaces.
- G. UL 62 – Flexible Cords and Cables.
- H. UL 83 – Thermoplastic Insulated Wire and Cable.
- I. UL 1063 – Standard for Machine and Tool Wire and Cable.
- J. UL 1424 – Standard for Cables for Power-Limited Fire Alarm.
- K. UL 1479 – Standard for Fire Tests of Through Wall Penetration Fire Stops.
- L. UL 1569 – Standard for Metal Clad Cable.
- M. UL 1581 – Reference Standard for Electrical Wires, Cables and Flexible Cords.

1.4 SUBMITTALS

- A. Submit data under provisions of Division 01 and Section 26 05 00.
- B. Product Data: Submit product data for all components provided which fall under this section showing configurations, finishes, and dimensions. Each catalog sheet should be clearly marked to indicate exact part number provided, including all options and accessories.

PART 2 - PRODUCTS

2.1 BUILDING WIRE

- A. Thermoplastic-insulated Building Wire: NEMA WC 70.
- B. Feeders and Branch Circuits Larger Than #6 AWG: Copper conductor, stranded, 600-volt insulation, THW, THHN/THWN, or XHHW-2 as indicated.
- C. Feeders and Branch Circuits #6 AWG and Smaller: Copper conductor, 600-volt insulation, THHN/THWN or XHHW-2. Conductors smaller than #8 AWG may be either solid or stranded; #6 AWG and #8 AWG conductors shall be stranded.
- D. Branch Circuit Wire Color Code:
 1. Color code wires by line or phase as follows:
 - a. Black, red and white for 120/240V systems.
 2. For conductors #6 AWG and smaller, insulation shall be colored. For conductors #4 AWG and larger, identify with colored phase tape at all terminals, splices, and boxes.
 3. Grounding conductors #6 AWG and smaller shall have green colored insulation. For #4 AWG and larger, use green tape at both ends and at all other visible points in between, including pull and junction boxes.
- E. Control Circuits: Copper, stranded conductor 600-volt insulation, THHN/THNN or XHHW-2.

2.2 NONMETALLIC SHEATHED CABLE

- A. Underground Feeder and Branch Circuit Cable Size #12 AWG through #6 AWG: Copper conductor, 600-volt insulation, rated 90° C in wet or dry locations, Type UF-B.
- B. Service Entrance Cable: Copper or aluminum conductor, 600-volt insulation, rated for 90°C in wet or dry locations, XHHW-2, Type SE.
- C. Underground Service Entrance Cable: Copper or aluminum conductor 600-volt insulation, rated for 90°C in wet or dry locations, XHHW-2, Type USE.

2.3 REMOTE CONTROL AND SIGNAL CABLE

- A. Control Cable for Class 1 Remote Control and Signal Circuits: Copper conductor, 600-volt insulation, rated 90° C, individual conductors twisted together, shielded, and covered with an overall PVC jacket; UL listed.
- B. Control Cable for Class 2 Remote Control and Signal Circuits: Copper conductor, 300-volt insulation, rated 90° C, individual conductors twisted together, shielded, and covered with an overall PVC jacket; UL listed.

2.4 WIRING CONNECTIONS AND TERMINATIONS

- A. For conductors #8 AWG and smaller:
 1. Dry interior areas: Spring wire connectors, pre-insulated "twist-on" rated 105 degrees C per UL 468C. Where stranded conductors are terminated on screw type terminals, install crimp insulated fork or ring terminals. Thomas & Betts Sta-Kon or equal.
 2. Motor connections: Spring wire connectors, pre-insulated "twist-on" rated 105 degrees C per UL 468C. Provide a minimum of 8 wraps of Scotch 33+ electrical tape around conductors and connector to eliminate connector back off.
 3. Wet or exterior: Spring wire connectors, pre-insulated "twist-on", resin filled rated for direct burial per UL 486D.
- B. For conductors #6 AWG and larger:
 1. Bus lugs and bolted connections: 600-v, 90 degrees C., two-hole, long barrel, irreversible compression, copper tin plated. Thomas & Betts or approved equal.
 2. Motor connection: 600-v, 90 degrees C., copper tin plated compression motor pigtail connector, quick connect/disconnect, slip on insulator. Thomas & Betts or approved equal.
 3. Two-way connector for splices or taps: 600-v, 90 degrees C., compression long barrel, copper tin plated. Thomas & Betts or approved equal. Insulate with Scotch 23 rubber insulating base covering and Scotch 33+ outer wrap.

PART 3 - EXECUTION

3.1 GENERAL WIRING METHODS

- A. Use no wire smaller than #12 AWG for power and lighting circuits, and no smaller than #18 AWG for control wiring.
- B. Use #10 AWG conductor for 20 ampere, 120 volt branch circuit home runs longer than 75 feet.
- C. Splice only in junction or outlet boxes.
- D. Neatly train and lace wiring inside boxes, equipment, and panelboards.

- E. Make Conductor lengths for parallel circuits equal.
- F. Wiring in lighting fixture channels shall be rated for 90° C minimum.
- G. Do not share neutral conductors. Provide a dedicated neutral conductor for each branch circuit that requires a neutral.

3.2 WIRING INSTALLATION IN RACEWAYS

- A. Pull all conductors into a raceway at the same time. Verify that raceway is complete and properly supported prior to pulling conductors. Use UL listed wire pulling lubricant for pulling #4 AWG and larger wires.
- B. Install wire in raceway after all other work likely to injure conductors has been completed.
- C. Do not install XHHW-2 conductors when ambient temperatures are below –5 degrees C and THHN/THWN conductors when ambient temperatures are below 0 degrees C.
- D. Conductors shall be carefully inspected for insulation defects and protected from damage as they are installed in the raceway. Where the insulation is defective or damaged, the cable section shall be repaired or replaced at the discretion of the Owner and at no additional cost to the Owner.
- E. Place an equal number of conductors for each phase of a circuit in same raceway or cable.
- F. Route conductors from each system in independent raceway system and not intermix in the same raceway, enclosure, junction box, wireway, or gutter as another system unless otherwise shown on the plans.
- G. No more than six current carrying conductors shall be installed in any homerun unless otherwise indicated on the drawings or without prior approval from the Engineer.
- H. Completely and thoroughly swab raceway system before installing conductors.
- I. When two or more neutrals are installed in one conduit, identify each with the proper circuit number in accordance with Section 26 05 53.

3.3 CABLE INSTALLATION

- A. Provide protection for exposed cables where subject to damage.
- B. Use spring metal clips or cable ties to support cables from structure. Include bridle rings or drive rings.
- C. Use suitable cable fittings and connectors.
- D. Trench and backfill for direct buried cables per Division 31. Install warning tape along entire length of direct burial cables.

3.4 WIRING CONNECTIONS AND TERMINATIONS

- A. Stranded wire shall not be wrapped around screw terminals.
- B. Splice only in accessible junction boxes.
- C. Thoroughly clean wires before installing lugs and connectors.
- D. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.
- E. Terminate spare conductors with twist on connectors or heat shrink insulation to the proper voltage rating.
- F. Control systems wiring in conjunction with mechanical, electrical, or miscellaneous equipment to be identified in accordance with wiring diagrams furnished with equipment.
- G. Do not exceed manufacturer's recommended pull tensions.
- H. Terminate aluminum wire in accordance with manufacturer's instructions.
- I. Terminate aluminum conductors with tin-plated aluminum-bodied compression connectors only or in accordance with manufacturer's instructions. Fill with anti-oxidant compound prior to installation of conductor.
- J. Use approved suitable reducing connectors or mechanical connector adapters for connecting aluminum conductor to copper conductors.

3.5 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Division 01 and Section 26 01 26.
- B. Inspect wire and cable for physical damage and proper connection.
- C. Torque conductor connections and terminations to manufacturer's recommended values.

END OF SECTION

SECTION 26 05 26 – GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Power System Grounding.
- B. Electronic Safety and Security System Grounding.
- C. Electrical Equipment and Raceway Grounding and Bonding.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements, and Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 01 26 – Maintenance Testing of Electrical Systems.
- C. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.

1.3 REFERENCE STANDARDS

- A. ANSI/NEMA GR-1, Ground Rod Electrodes and Ground Rod Electrode Couplings.
- B. ANSI/NFPA 70 – National Electrical Code.
- C. ASTM B 3 – Standard Specification for Soft or Annealed Copper Wire.
- D. AWS A5.8/A5.8M – Specification for Filler Metals for Brazing and Braze Welding.
- E. IEEE Std 81 – Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System.
- F. IEEE Std 142 – Recommended Practice for Grounding of Industrial and Commercial Power System.
- G. UL 467 – Standard for Grounding and Bonding Equipment.

1.4 SYSTEM DESCRIPTION

- A. Provide a complete grounding system for services and equipment as required by State and Local Codes, NEC, applicable portions of other NFPA codes, and as indicated on the Electrical Drawings and herein.

1.5 SUBMITTALS

- A. Product Data: Submit product data for all components provided, showing material type and dimensions. Each catalog sheet should be clearly marked to indicate exact part number provided, including all options and accessories.
- B. Shop Drawings: Submit shop drawings indicating layout of grounding system, location of main grounding bus, system grounding electrode connections (ground rods, concrete encased electrode, etc.), routing of grounding electrode conductor, and size/type of bonding conductors and termination locations of all major bonding connections (water, piping, steel, fuel tanks, etc.).

1.6 CLOSEOUT SUBMITTALS

- A. Project Record Drawings
 1. Show the actual installed layout of grounding system, routing of grounding electrode conductor, and size/type of bonding conductors and termination locations of all major bonding connections (water, piping, steel, fuel tanks, etc.).
- B. Test Reports
 1. See Section 26 01 26 - Maintenance Testing of Electrical Systems for Grounding System Tests.
 2. The results of the 3-point fall of potential ground resistance test, performed on the installed grounding system shall be submitted in accordance with the paragraph entitled "Field Quality Control" of this section.
 3. Each test report shall include:
 - a. Date of test, soil moisture content, and soil temperature.
 - b. Test operator.
 - c. Instrument or other test equipment used.
 - d. Electrode designation or location matching that shown on shop drawings.
 - e. Ground impedance in ohms.
 - f. Assumptions made - if required.

1.7 COORDINATION

- A. Division 01 – Administrative Requirements: Requirements for Coordination.
- B. Complete grounding and bonding of building reinforcing steel prior to concrete placement.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Solid Ground Rods: ANSI/NEMA GR-1, copper-encased steel, $\frac{3}{4}$ inch diameter, minimum length 10 feet. Ground rods shall be clean and smooth.
- B. Bonding Conductors: Solid bare copper wire for sizes #8 AWG and smaller diameter. Stranded bare copper wire for sizes #6 AWG and larger diameter. Conductors may be insulated conductors, if used provide green insulation.
- C. Grounding Conductors: Copper conductor bare or green insulated.
- D. Mechanical Grounding and Bonding Connectors: Non-reversible crimp type lugs only. Use factory made compression lug for all terminations.
- E. Exothermic Grounding and Bonding Connectors: AWS A5.8/A5.8M Exothermic welded type. Welding procedure shall include the proper mold and powder charge and shall conform to the manufacturer's recommendations.
- F. In external locations, clamping shall be used only where a disconnect type of connection is required. Connection device may utilize spring-loaded jaws or threaded fasteners. Device shall be constructed such that positive contact pressure shall be maintained at all times. Machine bolts with tooth-type or spring-type lock washers shall be used.
- G. Ground Ring: Stranded bare copper, size as shown on the drawings. Ground ring shall be continuous around the facility structures, as shown on the drawings. All splices in the ground ring and all connections to the ground ring shall be exothermically welded.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide a separate, insulated equipment-grounding conductor in all feeder and branch circuits. Terminate each end on a grounding lug, bus, or bushing. Multiple conductors on single lug not permitted. Each grounding conductor shall terminate on its own terminal lug.
- B. Connect grounding electrode conductors to metal water pipe using a suitable ground clamp. Make connections to flanged piping at street side of flange. Provide bonding jumper around water meter and back flow preventors.
- C. Provide grounding and bonding at Utility Company's metering equipment.
- D. Bond together system neutrals, service equipment enclosures, exposed non-current carrying metal parts of electrical equipment, metal raceway systems, grounding conductor in raceways and cables, receptacle ground connectors, and plumbing and fuel systems.
- E. Grounding conductors for branch circuits shall be sized in accordance with NEC, except minimum size grounding conductor shall be #12 AWG.

- F. Grounding conductor is in addition to neutral conductor and in no case shall neutral conductor serve as grounding means.
- G. Ground rods shall be installed so that the top of the rod is not less than 18 inches below finished grade. Conceal after inspection.

3.2 FIELD QUALITY CONTROL

- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.
- B. Perform system ground test as specified in Section 26 01 26 - Maintenance Testing of Electrical Systems.
- C. Upon completion of the ground installation and before connection to the permanent facility power the Contractor shall measure the ground resistance of the grounding electrode system. The testing shall utilize an earth resistance meter and be conducted in accordance with the IEEE Standard for 3-point fall of potential method. The Contractor shall notify the Owner's representatives a minimum of 5 business days prior to the scheduled ground testing date so they may be present at the time of testing. The Contractor shall immediately notify the Owner's representative if the measured ground resistance is above 10 ohms. The Contractor shall submit a copy of the test report to the Owner's representative within 10 days after testing and before the ground system becomes inaccessible.
- D. Ground Isolation Test: Ground systems shall be tested for isolation from other ground system.
- E. Continuity Test: Continuity test shall be performed on all power receptacles to ensure that the ground terminals are properly grounded to the facility ground system.

END OF SECTION

SECTION 26 05 29 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Section included hangers and supports for Power Systems and Control Systems.
- B. Conduit Supports.
- C. Formed Steel Channel.
- D. Spring Steel Clips.
- E. Equipment Bases and Supports.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, sections under Division 01 General Requirements, and Section 26 05 00 – Common Work Results for Electrical.

1.3 REFERENCES

- A. International Building Code (IBC), Chapter 16 – Structural Design.

1.4 SUBMITTALS

- A. Division 01: Requirements for submittals.
- B. Product Data: Submit product data for specialty supports.

1.5 QUALITY ASSURANCE

- A. Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry.

PART 2 - PRODUCTS

2.1 CONDUIT SUPPORTS

- A. Manufacturers:
 - 1. Allied Tube & Conduit Corp.
 - 2. Minerallac Fastening Systems.
 - 3. O-Z Gedney Co.

4. Substitutions: per Division 01.
- B. Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.
- C. Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.
- D. Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt to tighten.
- E. Conduit clamps - general purpose: One-hole malleable iron for surface mounted conduits.
- F. Cable Ties: High strength nylon temperature rated to 185 degrees F. self-locking.

2.2 FORMED STEEL CHANNEL

- A. Manufacturers:
 1. B-Line Systems.
 2. Allied Tube & Conduit Corp.
 3. Unistrut Corp.
4. Substitutions: per Division 01.
- B. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Division 01: Verification of existing conditions before starting work.
- B. Verify openings are ready to receive sleeves.

3.2 PREPARATION

- A. Obtain permission from Owner's Representative before using powder-actuated anchors.
- B. Obtain permission from Owner's Representative before drilling or cutting structural members.

3.3 INSTALLATION - GENERAL

- A. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using precast insert system, expansion anchors, preset inserts, beam clamps, or spring steel clips.

- B. Use toggle bolts or hollow wall fasteners in hollow masonry partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.
- C. Do not support raceways, low voltage pathways, cables, telecommunication pathways or boxes from suspension wires or suspended systems. Provide support from allowable structure independently to allow necessary access without removal of electrical system. If dedicated support wires are used, wires and wire clips must be painted or color-coded.
- D. Do not fasten supports to piping, ductwork, fueling equipment, conduit, or suspension system.
- E. Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.
- F. In wet locations install free-standing electrical equipment as shown on the Construction Drawings.
- G. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- H. Securely fasten fixtures and equipment to approved structures in accordance with manufacturer's recommendations and to provide necessary earthquake anchorage.

I. Earthquake Anchorages:

- 1. Equipment weighing more than 50 pounds shall be adequately anchored to the building structure to resist lateral earthquake forces.**
- 2. Total lateral (earthquake) forces shall be 1.5 times the equipment weight acting laterally in any direction through the equipment center of gravity. Provide adequate backing at structural attachment points to accept the forces involved.**
- J. Provide one seismic support wire for all fixtures weighing less than 10lbs. two minimum color-coded dedicated seismic support wires for each ceiling mounted light fixture weighing less than 50 pounds. Attach support wires to building structure independent from ceiling system and on opposing corners of the light fixtures to not allow fixture to drop more than 6 inches upon ceiling failure. Secure each end with three tight wraps within 1 inch at each end of the wire. Provide four supports on fixtures >50 lbs.**

END OF SECTION

SECTION 26 05 33 – RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Metal Conduit.
- B. Flexible Metal Conduit.
- C. Liquidtight Metal Conduit.
- D. Electrical Metallic Tubing.
- E. Nonmetallic Conduit.
- F. Surface Mounted Raceway.
- G. Auxiliary Gutter.
- H. Fittings and Conduit Bodies.
- I. Wall and Ceiling Outlet Boxes.
- J. Pull and Junction Boxes.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 - General Requirements and Section 26 05 00 – Common Work Results for Electrical.
- B. Division 07 - Thermal and Moisture Protection.
- C. Division 08 - Openings: Access Doors and Frames.
- D. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.
- E. Section 26 05 26 – Grounding and Bonding for Electrical Systems.
- F. Section 26 05 29 – Hangers and Supports for Electrical Systems.
- G. Section 26 05 53 – Identification for Electrical Systems.
- H. Section 26 27 16 – Electrical Cabinets and Enclosures.
- I. Section 26 27 26 – Wiring Devices.

1.3 REFERENCES

A. American National Standards Institute (ANSI):

1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
2. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.
3. ANSI C80.5 - Rigid Aluminum Conduit.

B. American Society for Testing and Materials (ASTM):

1. ASTM A 123 – Specification for Zinc Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strip.

C. National Electrical Manufacturers Association (NEMA):

1. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
2. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
3. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.
4. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
5. NEMA TC 2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).
6. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.
7. NEMA TC 7 - Smooth-Wall Coilable Polyethylene Electrical Plastic Conduit.
8. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

D. Underwriters Laboratory (UL):

1. UL 6 - Rigid Steel Conduit, Zinc Coated.
2. UL6A - Rigid Aluminum Conduit.
3. UL 514B – Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
4. UL651B – Continuous Length HDPE Conduit.

E. National Fire Protection Association (NFPA):

1. NFPA 70 - National Electrical Code.

F. International Building Code (IBC):

1. IBC chapters 16 and 17 seismic requirements.

1.4 RACEWAY AND BOX INSTALLATION SCHEDULE

- A. Underground more than 5 feet from foundation wall:
 1. Raceway: Provide galvanized rigid steel conduit or rigid schedule PVC conduit.
 - a. Provide detectable warning tape over all underground raceways per section 26 05 53.
 - b. Provide 3-inch minimum spacing between raceways.
 - c. Provide 3/4 inch minus material 6 inches above and below conduit. Backfill remaining trench free of debris or rocks greater than 1 inch in diameter.
 2. Boxes and Enclosures: Provide concrete type 1A handhole as needed.
- B. Under or in concrete slab, or underground within 5 feet of foundation wall:
 1. Raceway: All conduit in contact with concrete or block shall be rigid steel conduit half lapped wrapped with pipe wrap or be plastic-coated conduit. Provide transition to rigid steel conduit 12 inches prior to exit penetration through foundations, concrete walls, or block walls. Provide transition to rigid steel conduit elbow and riser for penetration through slab. Arrange raceway so the curved portion of bend is not visible above finished slab.
 2. Boxes and Enclosures: Provide concrete tight cast and sheet metal steel metal boxes.
- C. In or through CMU walls:
 1. Raceway: All conduit in contact with concrete or block shall be galvanized rigid steel conduit half lapped wrapped with pipe wrap or be plastic-coated conduit.
 2. Boxes and Enclosures: Provide concrete tight cast and sheet metal steel metal boxes.
- D. Outdoor Above Grade, Damp or Wet Interior Locations:
 1. Raceway: Provide galvanized rigid steel conduit.
 2. Boxes and Enclosures: Provide weatherproof malleable iron for branch circuit junction and outlet boxes. Provide weatherproof NEMA 3R sheet metal enclosures for safety and disconnect switches and NEMA 4 sheet metal enclosures with gaskets for motor controllers and control panels.
 3. Fittings: Provide galvanized malleable iron with gaskets. Provide Myers threaded hubs for all conduit entries into top and side of sheet metal enclosures.
- E. Concealed Dry Locations:

1. Raceway: Provide rigid steel conduit or intermediate metal conduit.
2. Boxes and Enclosures: Provide sheet-metal boxes.
3. Fittings: Provide galvanized malleable iron and steel.

F. Exposed Dry Locations:

1. Raceway: Provide rigid steel conduit or intermediate metal conduit.
2. Boxes and Enclosures: Provide sheet-metal boxes with raised steel covers.
3. Fittings: Provide galvanized malleable iron and steel.
4. Surface Raceway and Boxes. Where specifically noted on the Drawings, provide surface raceway and boxes.

G. Branch Circuits 60 Amperes or Larger and Feeders:

1. Raceway: Provide galvanized rigid steel conduit.
2. Boxes and Enclosures: Provide sheet-metal boxes.
3. Fittings: Provide galvanized malleable iron and steel.

H. Hazardous Locations (Classified Wiring):

1. Raceway: Provide galvanized rigid steel conduit.
2. Boxes and Enclosures: Provide galvanized malleable iron rated Class 1 Division 1, NEMA FB1.

I. Equipment Connections: Provide short extensions (three feet maximum) of Liquidtight flexible conduit for connections to motors, transformers, vibrating equipment, or equipment that requires removal for maintenance or replacement.

J. Electrical metallic tubing and electrical nonmetallic tubing are not approved raceway systems for this project.

1.5 DESIGN REQUIREMENTS

A. Raceway Minimum Size:

1. Below Grade: Provide 1 inch minimum, unless otherwise noted.
2. Above Grade or Slab on Grade: Provide 1/2 inch minimum, unless otherwise noted. Raceway may be reduced to 1/2 inch for final connection of raceway up to 6 feet for connection to fixture or device where maximum conduit entry size is 1/2 inch.

3. Line Voltage Circuits: Raceway is sized on the drawings for copper conductors with 600-Volt type XHHW insulation, unless otherwise noted. Where a raceway size is not shown on the drawings, it shall be calculated to not exceed the percentage fill specified in the NEC Table 1, Chapter 9 using the conduit dimensions of the NEC Table 4, Chapter 9 and conductor properties of the NEC Table 5, Chapter 9.
4. Low-Voltage Circuits: Where installed in raceways, the raceway size shall be calculated to not exceed the percentage fill specified in the NEC Table 1, Chapter 9, using the conduit dimensions of the NEC Table 4, Chapter 9, and cable diameter provided by the manufacturer.

B. Box Minimum Size: Provide all boxes sized and configured per NEC Article 370 and as specified in this section.

C. Seismic Support: Provide support in accordance with section 26 05 29 – Hangers and Supports for Electrical Systems [and 26 05 48 – Vibration and Seismic Support for Electrical Systems].

1.6 SUBMITTALS

A. Product Data: Submit data for products to be provided.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

B. Protect PVC conduit from sunlight.

PART 2 - PRODUCTS

2.1 RIGID METAL CONDUIT (RMC)

A. Rigid Steel Conduit: ANSI C80.1, UL 6.

B. Fittings and Conduit Bodies: NEMA FB 1, UL 514B; Galvanized malleable iron with threaded hubs for all conduit entries. Provide threaded connections and couplings only. Set Screw and running thread fittings are not permitted.

C. Provide insulated throat bushings at all conduit terminations.

2.2 PVC COATED RIGID METAL CONDUIT

A. Product Description: NEMA RN 1; rigid steel conduit with external 40-mil PVC coating and 2-mil urethane internal surface.

B. Fittings and Conduit Bodies: NEMA FB 1, UL 514B; steel fittings with insulated throat bushings and external PVC coating to match conduit.

2.3 INTERMEDIATE METAL CONDUIT (IMC)

- A. Product Description: ANSI C80.6, UL 1242; Galvanized Steel Conduit.
- B. Fittings and Conduit Bodies: NEMA FB 1, UL 514B; use fittings and conduit bodies specified above for rigid steel conduit.
- C. Provide insulated throat bushings at all conduit terminations.

2.4 FLEXIBLE METAL CONDUIT (FMC)

- A. Product Description: UL 1, FS WW-C-566; galvanized or zinc-coated flexible steel, full or reduced-wall thickness.
- B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel or malleable iron with insulated throat bushings. Die cast zinc or threaded inside throat fittings are not acceptable.

2.5 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

- A. Product Description: UL 360, flexible metal conduit with interlocked steel construction and PVC jacket.
- B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; liquid tight steel or malleable iron with insulated throat bushings. Die cast fittings are not acceptable.

2.6 ELECTRICAL METALLIC TUBING (EMT)

- A. Not approved for use on this project.

2.7 RIGID NONMETALLIC CONDUIT (RNC)

- A. Product Description: NEMA TC 2; Schedule 40 [80] PVC, rated for 90° C cable.
- B. Fittings and Conduit Bodies: NEMA TC 3.
- C. Provide PVC-coated rigid steel factory elbows for bends in all plastic conduit runs, regardless of length.

2.8 HIGH DENSITY POLYETHYLENE CONDUIT (HDPE)

- A. Not approved for use on this project.

2.9 ELECTRICAL NONMETALLIC TUBING (ENT)

- A. Not approved for use on this project.

2.10 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1, UL514A galvanized steel, with plaster ring where applicable.
 1. Minimum Size: 4 inches square or octagonal, 1-1/2 inches deep, unless otherwise noted.

2. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2 inch male fixture studs where required. Minimum Size: 4 inches square or octagonal, 2-1/8 inches deep.
3. Concrete and Masonry: Concrete type with field installed tape cover to prevent concrete entry to raceway system. Minimum Size: 4 inches square, 2-1/8 inches deep.
4. Low Voltage Systems: Minimum size 4-11/16 inches square, 2-1/8 inches deep.

B. Vapor Barrier Boxes: Airtight box with vapor barrier flange and integral wire entry seal. Lessco, Nutek, Enviroseal, or approved equal.

C. Cast Boxes: NEMA FB 1, Type FD, galvanized malleable iron. Furnish gasketed cover by box manufacturer. Furnish threaded hubs. "Bell" boxes are not acceptable.

D. Wall Plates: As specified in Section 26 27 26.

2.11 PULL AND JUNCTION BOXES

A. Sheet Metal Pull and Junction Boxes: ANSI/NEMA OS 1, UL514A galvanized steel.

1. Minimum Size: 4 inches square or octagonal, 1-1/2 inches deep, unless otherwise noted.

B. Nonmetallic Pull and Junction Boxes: ANSI/NEMA OS 2, thermoset, phenolic with 150°C fire rating.

1. Minimum Size: 6 inches square, 4 inches deep, unless otherwise noted.

C. Sheet Metal Boxes Larger Than 12 Inches in Any Dimension: Hinged enclosure. Hoffman or approved equal.

D. Cast Metal Boxes for Outdoor and Wet Location Installations: NEMA 250, Type 4X; flat-flanged, surface mounted junction box, UL listed as raintight:

1. Material: Galvanized cast iron.
2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover and screws.

E. Cast Metal Boxes for Underground Installations: NEMA 250, Type 4; flat-flanged, flush-mounted junction box, UL listed as raintight:

1. Material: Galvanized cast iron.
2. Cover: Furnish with outside flange, neoprene gasket, and recessed stainless steel cover and screws.

- F. Fiberglass Concrete composite Type 1A Handholes: Die-molded glass-fiber concrete composite hand holes with pre-cut 6 x 6 inch cable entrance at center bottom of each side:
 - 1. Cover: Glass-fiber concrete composite, weatherproof cover with non-skid finish.
 - 2. Cover Legend: "ELECTRIC".
- G. Polymer Concrete Junction Boxes for Underground Installations: Polymer concrete consisting of sand and aggregate bound together with a polymer resin. Internal reinforcement shall be provided by means of steel, fiberglass or a combination of the two. The installed enclosure shall be rated for a minimum test load of 7500 pounds distributed over a 10 inch by 10 inch area and used in occasional, non-deliberate vehicular traffic or pedestrian traffic application. All hardware shall be stainless steel.

2.12 RACEWAY SEALING FITTINGS

- A. Galvanized malleable iron, galvanized filled with sealing compound.
 - 1. Class 1 Division 1 boundary lines and isolation of arcing devices use Class 1 Division 1 sealing compound.

2.13 BUSHINGS

- A. Non-grounding: Threaded impact resistant plastic.
- B. Grounding: Insulated galvanized malleable iron/steel with hardened screw bond to raceway and conductor lug.

2.14 LOCKNUTS

- A. Threaded Electro Zinc Plated Steel designed to cut through protective coatings for ground continuity.

2.15 WIREWAY

- A. Product Description: General purpose type wireway. Size per NEC minimum fill capacity required.
- B. Knockouts: Field-installed, no factory knockouts acceptable.
- C. Cover: Screw cover.
- D. Fittings and Accessories: Include factory couplings, offsets, elbows, adapters and support straps required for a complete system. Provide internal ground bonding jumper bonded to each section.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Ground and bond raceway and boxes in accordance with Section 26 05 26.
- B. Provide seismic support and fasten raceway and box supports to structure and finishes in accordance with Section 26 05 29.
- C. Identify raceway and boxes with origin and destination in accordance with Section 26 05 53.
- D. Unless otherwise noted, do not inter-mix conductors from separate panelboards or any other system in the same raceway system or junction boxes.

3.2 INSTALLATION - GENERAL RACEWAY

- A. Install raceway for all systems, unless otherwise noted.
- B. Install an equipment grounding conductor inside of all flexible raceways containing line voltage conductors.
- C. Provide raceways concealed in construction unless specifically noted otherwise, or where installed at surface cabinets, motor and equipment connections and in Mechanical and Electrical Equipment rooms. Do not route conduits on roofs, outside of exterior walls, or along the surface of interior finished walls unless specifically noted on the plans.
- D. Raceway routing and boxes are shown in approximate locations unless dimensioned. Where raceway routing is not denoted, field-coordinate to provide complete wiring system.
- E. Do not route raceways on floor. Arrange raceway and boxes to maintain a minimum of 6 feet 6 inches of headroom and present a neat appearance. Install raceways level and square to a tolerance of 1/8" per 10 feet. Route exposed raceways and raceways above accessible ceilings parallel and perpendicular to walls, ceiling, and adjacent piping.
- F. Maintain minimum 6-inch clearance between raceway and mechanical and piping and ductwork. Maintain 12-inch clearance between raceway and heat sources such as flues, steam pipes, heating pipes, heating appliances, and other surfaces with temperatures exceeding 104 degrees F.
- G. Do not install raceway imbedded in spray applied fire proofing. Seal raceway penetrations of fire-rated walls, ceilings, floors in accordance with the requirements of Section 26 05 00 and Division 07.
- H. Raceways and boxes penetrating vapor barriers or penetrating areas from cold to warm shall be taped and sealed with a non-hardening duct sealing compound to prevent the accumulation of moisture, and shall include a vapor barrier on the outside.
- I. Conduit embedded in concrete or solid masonry shall not be larger than 1/3 the thickness of the wall or slab and shall be spaced not less than three diameters apart. No cutting of reinforcing bars shall be permitted unless specifically approved. Should

structural members prevent the installation of conduit or equipment, notify the Contracting Officer before proceeding.

- J. Arrange raceway supports to prevent misalignment during wiring installation. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- K. Group raceway in parallel runs where practical and use conduit rack constructed of steel channel with conduit straps or clamps, as specified in Section 26 05 29. Provide space on each rack for 25 percent additional raceway.
- L. Cut conduit square; de-burr cut ends. Bring conduit to the shoulder of fittings and couplings and fasten securely. Where locknuts are used, install with one inside box and one outside with dished part against box.
- M. Use threaded raintight conduit hubs for fastening conduit to cast boxes, and for fastening conduit to sheet metal boxes in damp or wet locations. Sealing locknuts are not acceptable.
- N. Install no more than the equivalent of three 90-degree bends between boxes.
- O. Install conduit bodies to make sharp changes in direction, such as around beams. "Goosenecks" in conduits are not acceptable.
- P. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 2 inch size.
- Q. Provide protective plastic bushings or insulated throat bushings at each raceway termination not installed to an enclosure. Bushings shall be threaded to the raceway end or connector.
- R. Avoid moisture traps; install junction box with drain fitting at low points in raceway system.
- S. Provide weatherhead on all raceway stub ups which are outdoors and do not terminate into equipment.
- T. Use cable sealing fittings forming a watertight non-slip connection to pass cords and cables into conduit. Size cable sealing fitting for the conductor outside diameter. Use Appleton CG series or equal cable sealing fittings.
- U. Use suitable caps to protect installed raceway against entrance of dirt and moisture.
- V. Paint all exposed conduit to match surface to which it is attached or crosses. Clean greasy or dirty conduit prior to painting in accordance with paint manufacturer's instructions. Where raceway penetrates non-rated ceilings, floors or walls, provide patching, paint and trim to retain architectural aesthetics similar to surroundings.
- W. Coat non-ferrous conduit threads prior to joining with conductive metallic grease antioxidant.

- X. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area that will be inserted into fitting. Let joint cure for 20 minutes minimum.

3.3 INSTALLATION – GENERAL BOXES

- A. Provide electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and code compliance. All electrical box locations shown on Drawings are approximate unless dimensioned.
- B. Coordinate layout and installation of boxes to provide adequate headroom and working clearance. Coordinate mounting heights and locations of outlets.
- C. Align surface-mounted outlet boxes for switches and similar devices.
- D. Use multiple-gang boxes where more than one device are mounted together; do not use sectional boxes. Provide barriers to separate wiring of different voltage systems and where normal and emergency power circuits occur in the same box.
- E. Adjust box location up to 6 feet prior to rough-in to accommodate intended purpose.
- F. Orient boxes to accommodate wiring devices oriented as specified in Section 26 27 26.
- G. Provide knockout closures for unused openings.
- H. Do not fasten boxes to support wires or other piping systems.
- I. Support boxes independently of conduit.
- J. Clean interior of boxes to remove dust, debris, and other material and clean exposed surfaces and restore finish.
- K. Provide blank weatherproof covers or plates for all boxes that do not contain devices.

3.4 INSTALLATION – BURIED CONDUITS

- A. Excavation and backfilling shall be in accordance with these specifications and the applicable portions of Division 31:
 1. Excavate and backfill as necessary for proper installation or work.
 2. Provide bracing and shoring as necessary or required.
 3. Compact backfill under footings, floor slabs and paving using materials and methods specified under Division 31, Earthwork.
 4. All conduits outside the building perimeter shall be buried a minimum of 24 inches below grade. Bottom of trench shall be smoothed and all rocks and cobbles 3 inches and larger shall be removed. Conduits shall be bedded in a minimum of 2 inches of sand and shall have a cover of 2 inches minimum of

sand. Trench shall be backfilled with non-frost susceptible material and compacted.

5. Damage to existing underground utilities shall be repaired immediately by the Contractor at no cost to the Owner.

END OF SECTION

SECTION 26 05 53 – IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Nameplates and Tape Labels.
- B. Wire and Cable Markers.
- C. Conduit Color-Coding.
- D. Wire Markers.
- E. Conduit Markers.
- F. Underground Warning Tape.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements, and Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.
- C. Section 26 05 33 – Raceway and Boxes for Electrical Systems.
- D. Section 26 24 16 – Panelboards.
- E. Section 26 27 26 – Wiring Devices.

1.3 SUBMITTALS

- A. Division 01 and Section 26 05 00 – Common Work Results for Electrical.
- B. Product Data:
 1. Submit manufacturer's catalog literature for each product required.
 2. Submit electrical identification schedule including list of wording, symbols, letter size, color-coding, tag number, location, and function.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Install labels and nameplates only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

PART 2 - PRODUCTS

2.1 NAMEPLATES

- A. Product Description: Laminated three-layer plastic with engraved white letters on black background. Nameplate for service disconnect shall be engraved white letters on red background.
- B. Letter Size:
 - 1. 1/4-inch high letters for identifying individual panel or equipment.
 - 2. 1/8-inch high letters for remaining lines with 1/8 inch spacing between lines.
- C. Minimum nameplate size: 1/8 inch thick with a consistent length and height for each type of nameplate wherever installed on the project.

2.2 TAPE LABELS

- A. Product Description: Adhesive tape labels, with 3/16 inch Bold Black letters on clear background made using Dymo Rhino series label printer or approved equal.
- B. Embossed adhesive tape will not be permitted for any application.

2.3 WIRE MARKERS

- A. Power and Lighting Description: Machine printed heat-shrink tubing, cloth or wrap-on type, for all neutrals and Phase conductors.
- B. Low Voltage System Description: Self-adhesive machine printed label with unique wire number that is shown on shop drawing for system.

2.4 UNDERGROUND WARNING TAPE

- A. Product Description: Red, 6-inch wide, detectable.
- B. Wording to read "Caution – Buried Electric Line Below".

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

- A. Degrease and clean surfaces to receive nameplates and tape labels.
- B. Install nameplates and tape labels parallel to equipment lines.
- C. Underground Warning Tape Installation: Install underground warning tape along length of each underground conduit, raceway, or cable 6 to 8 inches below finished grade, directly above buried conduit, raceway, or cable.

3.2 NAMEPLATE INSTALLATION

- A. Secure nameplates to equipment fronts using machine screws tapped and threaded into panelboard, or using rivets. The use of adhesives is not acceptable. Machine screws to not protrude more than 1/16 inch on back side.
- B. Service Disconnect Nameplate: Provide nameplate on exterior service disconnect that reads "SERVICE DISCONNECT".
- C. Distribution Panel Nameplates:
 - 1. Provide overall equipment identification.
 - a. Line 1: Distribution panel name.
 - b. Line 2: Source which panelboard is fed.
 - c. Line 3: Voltage, phase and wire configuration.
 - d. Line 4: AIC rating of the panel.
 - e. Line 5: Where applicable, indicate that panel is series-rated.
 - 2. Provide circuit breaker identification for each feeder breaker.
 - a. Line 1: Name of panelboard or equipment served.
 - b. Line 2: Location of served panelboard.
- D. Branch Panelboard Nameplates:
 - 1. Provide nameplate for each panelboard with the following information:
 - a. Line 1: Panelboard name.
 - b. Line 2: Source from which the panelboard is fed.
 - c. Line 3: Voltage, phase and wire configuration.
 - d. Line 4: AIC rating of the panelboard.
- E. Disconnects, Starters, or Contactors:
 - 1. Provide nameplate for each device with the following information:

- a. Line 1: Load served.
- b. Line 2: Panelboard and circuit number from which the device is fed.
- c. Line 3: Fuse or Circuit amperage and poles. Where fused disconnect is installed, denote the maximum fuse size to be installed.

F. Control or Low Voltage System Panels:

1. Provide nameplate for each control panel with the following information:
 - a. Line 1: Unique panel name as shown on the shop drawings.
 - b. Line 2: System description
 - c. Line 3: Panelboard and circuit number from which the panel.

3.3 LABEL INSTALLATION

- A. Conduit Feeder Labels - Provide conduit labels on all feeder raceways as follows:
 1. Panelboards – “PANEL xxxx”.
- B. Spare Raceways: Provide raceway label on each individual raceway denoting the source and termination point at each end.
- C. Low-Voltage System Device Labels: Provide label on each device, denoting device ID or address where applicable. Affix label to device faceplate for ceiling-mounted devices or wall-mounted devices above 8'-0" AFF. Affix label inside backbox for exterior devices.

3.4 WIRE IDENTIFICATION

- A. Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Identification shall be as follows:
 1. Markers shall be located within one inch of each cable end, except at panelboards, where markers for branch circuit conductors shall be visible without removing panel deadfront.
 2. Each wire and cable shall carry the same labeled designation over its entire run, regardless of intermediate terminations.
 3. Color code phases, neutral, and ground per NEC requirements and Section 26 05 19.
 4. Color-code all low-voltage system wires and cables in accordance with the individual sections in which they are specified.

5. For power and lighting circuits, identify with branch circuit or feeder number.
6. Control Circuits: Control wire number as indicated on schematic and shop drawings.
- B. Provide pull string markers at each end of all pull strings. Marker shall identify the location of the opposite end of the pull string.

3.5 JUNCTION BOX IDENTIFICATION

- A. Label each lighting and power junction box with the panelboard name and circuit number.

3.6 DEVICE PLATE IDENTIFICATION

- A. Label each receptacle device plate or point of connection denoting the panelboard name and circuit number.
- B. Install adhesive label on the top of each plate.

3.7 PANELBOARD IDENTIFICATION

- A. Provide panelboard circuit directories in accordance with Section 26 24 16.

3.8 LOW-VOLTAGE SYSTEM IDENTIFICATION

- A. Install all labeling in accordance with the requirements of this section and of each section where the individual systems are specified.

END OF SECTION

SECTION 26 09 19 – ENCLOSED CONTACTORS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Enclosed Contactors.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements and Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 05 26 – Grounding and Bonding for Electrical Systems.
- C. Section 26 05 53 – Identification for Electrical Systems.
- D. Section 26 09 23 – Lighting Control Devices: Photocell or Timer Control for Lighting Circuits.
- E. Section 26 24 16 - Panelboards: Installation of Contactors.
- F. Section 26 27 16 – Cabinets and Enclosures.

1.3 REFERENCES STANDARDS

- A. ANSI/NEMA ICS 6 - Enclosures for Industrial Controls and Systems.
- B. NEMA ICS 2 - Industrial Control Devices, Controllers, and Assemblies.

1.4 SUBMITTALS

- A. Product Data: Submit product data for all components provided, showing electrical characteristics and connection requirements. Each catalog sheet should be clearly marked exact part number provided.
- B. Shop Drawings: Submit shop drawings include outline drawings with dimensions, and equipment ratings for voltage, capacity, and poles.

1.5 CLOSEOUT SUBMITTALS

- A. Project Record Drawings: Accurately indicate actual locations of each contactor and indicate circuits controlled.
- B. Operation and Maintenance Manuals: Submit instructions for replacing and maintaining coil and contacts.

1.6 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience and ISO 9000 certified.
- B. Installer: Company specializing in installing products specified in this section with minimum three years' experience.

PART 2 - PRODUCTS

2.1 MANUFACTURERS – ENCLOSED CONTACTORS

- A. Square D.
- B. Cutler Hammer.
- C. ASCO.
- D. Substitutions: Under provisions of Division 01.

2.2 ENCLOSED CONTACTORS

- A. Contactors: NEMA ICS 2; mechanically held, 2 wire control.
- B. Coil Operating Voltage: 120/240 volts, 60 Hertz.
- C. Multipole Lighting Contactor: NEMA ICS 2; 30A, 4-pole with coil clearing contacts, Hand-Off-Auto switch and red pilot light.
- D. General Purpose Contactor: NEMA ICS 2; size to match motor load controlled or as indicated on Drawings.
- E. Enclosure: ANSI/NEMA ICS 6; Type 4X.
- F. Provide solderless pressure wire terminals.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Require marking of terminals and wires landing on terminals.

3.2 FIELD QUALITY CONTROL

- A. Verify wiring connections are tight.
- B. Verify movable contact assemblies are not binding and are free to move.
- C. Verify coil voltage is correct.
- D. With load connected energize and observe load current for each circuit installed.

END OF SECTION

SECTION 26 09 23 - LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. This Section includes stand-alone (non-networked) automatic lighting control devices.
 - 1. Outdoor Photocells.

1.2 RELATED SECTIONS

- A. Section 26 05 00 - Common Work Results for Electrical.
- B. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.
- C. Section 26 05 33 - Raceway and Boxes for Electrical Systems.
- D. Section 26 09 19 – Enclosed Contactors.
- E. Section 26 09 43 – Network Lighting Controls: Networked Occupancy Sensors.
- F. Section 26 27 26 – Wiring Devices: Manual Light Switches.
- G. Section 26 53 00 – Exterior Lighting

1.3 SUBMITTALS

- A. Product Data: Submit product data for all components provided that are specified in this section showing configurations, finishes, and dimensions. Each catalog sheet should be clearly marked to indicate exact part number provided, including all options and accessories.
- B. Operation and Maintenance Data: Include manufacturer's installation and troubleshooting instructions.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS – OUTDOOR PHOTOCELLS

- A. Intermatic.
- B. Tork.
- C. Substitutions: Under provisions of Division 01.

2.2 OUTDOOR PHOTOCELLS

- A. Dusk-to-dawn lighting control with a delay action.
- B. Sonic-welded polycarbonate case and lens to seal out moisture.

- C. Fully enclosed weatherproof housing.
- D. Rated 15A, 120V.
- E. Rated for mounting on exterior pole and -40°F temperature operation.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install outdoor photocells on a Nema 4 enclosure and locate on the north side of the building turned away from artificial light sources, in accordance with the manufacturer's installation instructions. Do not install the photocell so that it directly faces the midday sun. Field adjust slider to turn lights On at dusk and OFF at dawn.

3.2 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
 - 1. After installing lighting control device and after electrical circuitry has been energized, test for compliance with requirements and intended operation..
- B. Lighting control devices that fail tests and inspections are defective work.

3.3 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain lighting control devices. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION

SECTION 26 21 00 – LOW-VOLTAGE ELECTRICAL SERVICE ENTRANCE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Arrangement with Utility Company for permanent electric service including payment of Utility Company charges for service.
- B. Overhead service entrance.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements and Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 05 26 – Grounding and Bonding for Electrical System.
- C. Section 26 05 33 – Raceway and Boxes for Electrical Systems.
- D. Section 26 05 53 – Identifications for Electrical Systems.
- E. Section 31 23 16.13 – Trenching.

1.3 REFERENCE STANDARDS

- A. NEMA 250 – 2003 Enclosures for Electrical Equipment (1000 Volts Maximum).
- B. UL 50 – 1995 Enclosures for Electrical Equipment.
- C. UL 414 – 1999 Standard for Meter Sockets.

1.4 SYSTEM DESCRIPTION

- A. System Voltage: 120/240 volts, single phase, three-wire, 60 Hertz.
- B. Service Entrance: Overhead.

1.5 SUBMITTALS

- A. Product Data: Submit product data for all components provided, showing electrical characteristics, material, finishes, and dimensions. Each catalog sheet should be clearly marked to indicate exact part number provided, including all options and accessories.
- B. Shop Drawings: Submit shop drawings and manufacturer's literature for self-contained meter base with circuit breaker disconnecting means.

1.6 QUALITY ASSURANCE

- A. Utility Company: Alaska Village Electric Cooperative (AVEC)
- B. Install service entrance in accordance with Utility Company's rules and regulations.

PART 2 - PRODUCTS

2.1 METERING EQUIPMENT

- A. Meter: Furnished and installed by the Utility Company.
- B. Self-Contained Meter Base: NEMA 3R rated self-contained meter socket with circuit breaker disconnecting means with safety socket feature and factory installed test-block/bypass facilities. Automatic type, slide type, horn type, screw type and lever type meter socket bypass devices are specifically prohibited. The service entry section and the meter socket shall be sealable and isolated or barriered from other integral enclosure sections to effectively prevent the attachment to un-metered conductors or terminals. Network service installations shall have a factory installed 5th jaw or factory supplied 5th jaw kit. The 5th jaw shall be located in the 9 o'clock position.
- C. Transformer Rated Meter Base: NEMA 3R [1] [4X], 13-terminal [6-terminal], transformer rated 20 amperes, 600 volts with mounting provisions to accommodate a covered test switch with test switch cover sealing provisions. The test switch mounting provisions shall accept a 10 pole covered test switch with a base dimension of 9.5 inches in width and a depth (the dimension from the rear edge of the test switch base to the top of the cover sealing stud) of no less than 3.375 inches. The lower cover of the meter socket shall seat fully with a covered test switch in place. Meet requirements of NEMA standards for watthour meter sockets-NEMA EI17-1978 (similar to EUSERC Drawing No. 339). The utility company will furnish and install the test switch and CT wiring. [13-jaw is for three phase; 6-jaw is for single phase.]
- D. Current Transformer Cabinet: NEMA 3R [1] [4X], UL 414 listed, minimum size as shown on the drawings. All current transformer cabinets and compartments shall have hinged front cover access to the current transformers. The hinged front cover shall be lockable and shall accept a padlock with a shackle diameter of not less than 5/16 inch. Current transformer cabinets for services from 201 Amperes to 800 Amperes shall have 1/4 x 20 mounting studs on the enclosure body spaced to accept a current transformer mounting base. Current transformer cabinets for services from 801 Amperes to 2,500 Amperes shall have side gutters sized as shown on the drawings and removable bus links.
- E. All removable covers for compartments containing un-metered conductors shall be sealable or lockable with sealable latches, stud and wing-nuts, sealing screws, or slot and tab devices. All top cover panels, side cover panels and rear cover panels providing access to un-metered conductors shall be secured in place with devices that cannot be loosened from the outside, screws or bolts requiring special tools for installation or removal are not acceptable alternates. No removable panel or cover requiring sealing or locking shall be located behind other panels, covers or doors except for rain-tight enclosures. Hinged cover panels shall be lockable on the side opposite the hinges. Hinged panel covers shall accept a padlock with a shackle diameter of not less than 5/16 inch. Stud and wing-nut sealing assemblies shall consist of a 1/4 inch x 20 (minimum) stud and associated wing-nut, each drilled 0.0635

inch (minimum) for sealing purposes. The stud shall be securely attached so as to not loosen or back out when being fastened. Sealing screws shall be drilled 0.0635 inch (minimum) for sealing purposes. All securing screws for removable panel covers shall be captive.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Make arrangements with Utility Company to obtain permanent electric service to the Project.
- B. Overhead: Install service rack and weatherhead at height as required by Utility Company. Utility Company will connect service drop to service entrance conductors.
- C. Underground: Install service entrance conduits from Utility Company's terminal pole to service entrance equipment. Utility Company will connect service lateral conductors to service entrance conductors.
- D. Meter sockets shall be installed with the centerline of the socket opening no more than 72 inches and no less than 60 inches above finished grade. The meter socket shall be installed with a minimum 10 inches of side clearance to each side of the socket. On current transformer rated meter sockets, the conduit connecting the meter socket and the current transformer cabinet shall be rigid steel or IMC and have a minimum diameter of 1 inch, shall not be longer than 25 feet, shall have no access points (junction boxes, condulets, etc.), and shall connect to the meter socket at a factory supplied knockout located below the test switch mounting provisions.
- E. Self-contained meter sockets equipped with a 5th jaw for network service but served from a single phase, 3-wire 120/240 Volt source shall have the 5th jaw and its associated wiring removed from the socket.
- F. All service entrance equipment shall have signage for arc hazard installed. The marking shall be located to be clearly visible to qualified personnel before examination, adjustment, servicing or maintenance of the equipment. At a minimum the signage shall state the following:

Warning

Arc Flash and Shock Hazard

Appropriate PPE Required

END OF SECTION

SECTION 26 24 16 - PANELBOARDS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Lighting and Appliance Branch Circuit Panelboards.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements, and Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 05 26 – Grounding and Bonding for Electrical Systems.
- C. Section 26 05 53 – Identification for Electrical Systems.

1.3 REFERENCES

- A. NEMA AB 1 - Molded Case Circuit Breakers.
- B. NEMA KS 1 - Enclosed Switches.
- C. NEMA PB 1 - Panelboards.
- D. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
- E. NEMA PB 2.2 - Application Guide for Ground-fault Protective Devices for Equipment.
- F. UL 50 – Enclosures for Electrical Equipment.
- G. UL 67 – Panelboards.
- H. UL 98 - Enclosed and Dead-front Switches.
- I. UL 489 – Molded Case Circuit Breakers and Circuit Breaker Enclosures.
- J. Federal Specification W-C-375B/Gen – Circuit Breakers, Molded Case, Branch Circuit and Service.
- K. Federal Specification W-C-865C - Fusible Switches.

1.4 SUBMITTALS

- A. Submit data under provisions of Division 01 and Section 26 05 00.
- B. Product Data: Submit product data for all components provided which fall under this section showing configurations, finishes, and dimensions. Each catalog sheet should

be clearly marked to indicate exact part number provided, including all options and accessories.

C. Shop drawings: Submit shop drawings for each panelboard [load center] indicating features and device arrangement and size. Include outline and support point dimensions, voltage, main bus ampacity, and integrated short circuit ampere rating.

1.5 CLOSEOUT SUBMITTALS

A. Project Record Drawings: Submit final record panel schedules as hardcopy and in Microsoft Excel format. Submit under Section 26 05 00.

B. Operation and Maintenance Manuals: Provide product data and shop drawing information including replacement parts list. Provide installation, operation and maintenance information per manufacturer.

C. Panel Schedules: Prior to Substantial Completion, submit copies of all panel schedules for review by the Owner. The Owner will note any changes to the room numbers/names and the Contractor shall provide revised typed panel schedules to reflect all changes, at no additional cost to the Owner.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site under provisions of Division 01.

B. Upon arrival at the site inspect equipment and report on any damage.

C. Handle carefully on site to avoid any damage to internal components, enclosures and finishes.

D. Store in a clean, dry environment. Maintain factory packaging and provide an additional heavy canvas or plastic cover to protect enclosures from dirt, water, construction debris and traffic.

1.7 WARRANTY

A. Manufacturer shall warrant specified equipment to be free of defects for a period of one year from the date of installation.

1.8 SPARE PARTS

A. Keys: Furnish 2 each to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS - PANELBOARDS

A. Square D.

B. Cutler Hammer.

C. General Electric.

- D. Siemens.
- E. Substitutions: Under provisions of Division 01.

2.2 BRANCH CIRCUIT PANELBOARDS

- A. Lighting and Appliance Branch Circuit Panelboards: NEMA PB 1; circuit breaker type.
- B. Enclosure: NEMA PB 1; Type 3R. Boxes shall be galvanized steel constructed in accordance with UL50 requirements. Interiors shall be field convertible for top or bottom incoming feed. Main lug interiors up to 400 amperes shall be field convertible to main breaker. Interior leveling provisions shall be provided for flush mounted applications.
- C. Cabinet Size: 6 inches deep; 20 inches wide minimum.
- D. Provide flush or surface cabinet front with concealed trim clamps, concealed hinge and flush lock all keyed alike. Finish in manufacturer's standard gray enamel.
- E. Provide panelboards with copper bus, ratings as scheduled on Drawings. Provide one continuous bus bar per phase each. Panelboards shall have sequentially phased branch circuit connectors suitable for bolt-on branch circuit breakers. Bussing shall be fully rated.
- F. Integrated Short Circuit Rating: Provide panelboards with short circuit ratings as shown on the Drawings. Minimum ratings shall be 14,000 amperes RMS symmetrical.
- G. Main/Sub Feed Circuit Breakers: NEMA AB 1; Provide vertical mount main and/or sub feed circuit breaker in panelboards as shown on the drawings.
 - 1. Circuit breakers shall be operated by a toggle-type handle and shall have a quick-make, quick-break over-center switching mechanism that is mechanically trip-free. Automatic tripping of the breaker shall be clearly indicated by the handle position. Contacts shall be nonwelding silver alloy and arc extinction shall be accomplished by means of DE-ION arc chutes. A push-to-trip button on the front of the circuit breaker shall provide a local manual means to exercise the trip mechanism.
 - 2. Lugs shall be UL Listed to accept copper and aluminum conductors and shall be suitable for 90°C rated wire, sized according to the 75 °C temperature rating per NEC Table 310-16. Lug body shall be bolted in place.
- H. Branch Circuit Breakers: NEMA AB 1; Provide panelboards with bolt-on type thermal magnetic trip circuit breakers.
 - 1. Circuit breakers shall be operated by a toggle-type handle and shall have a quick-make, quick-break over-center switching mechanism that is mechanically trip-free with common trip handle for all poles.

2. Lugs shall be UL Listed to accept copper and aluminum conductors and shall be suitable for 90°C rated wire, sized according to the 75 °C temperature rating per NEC Table 310-16. Lug body shall be bolted in place.
3. Provide circuit breakers UL listed as Type SWD for lighting circuits.
4. Provide UL Class A ground fault interrupter circuit breakers where scheduled on Drawings.

2.3 PANELBOARD IDENTIFICATION

- A. For each new panelboard provide typed schedule denoting each circuit load by the load type and final name and location.
- B. Provide panel schedule in O&M manual for every new panelboard.
- C. All panelboards load centers shall have signage for arc hazard installed. The marking shall be located to be clearly visible to qualified personnel before examination, adjustment, servicing or maintenance of the equipment. At a minimum the signage shall state the following:

Warning

Arc Flash and Shock Hazard

Appropriate PPE Required

2.4 TRANSIENT VOLTAGE SURGE SUPPRESSOR

- A. Integral Surge Suppressor:
 1. The manufacturer of the TVSS shall be the same as the manufacturer of the distribution equipment in which the devices are installed and shipped. Also, this distribution equipment shall be fully tested and certified to UL 67 standards.
 2. Component recognized in accordance with UL 1449 and UL 1283.
 3. Independently tested with category C3 high exposure waveform (20 kV-1.2/50us, 10kA-8/20 us) per IEEE C62.41.
 4. Furnish copper bus bars for surge current path.
 5. Construct using surge current modules (MOV based). Each module fused with user replaceable 200,000 AIR rated fuses. Status of each module monitored on front cover of panelboard enclosure and on module.
 6. Furnish with audible alarm activated when one of surge current modules has failed. Furnish alarm on/off to silence alarm and alarm push-to-test switch to test alarm. Locate switches and alarm on front cover of panelboard enclosure.

7. Meet or exceed the following criteria:
 - a. Minimum surge current rating shall be 160 kA per phase (80 kA per mode) for service entrance and 80 kA per phase (40 kA per mode) for distribution applications.
 - b. Pulse Lift Test: Capable of protecting against and surviving 5000 IEEE C62.41 Category C transients without failure or degradation.
 - c. UL 1449 clamping voltage must not exceed the following:

<u>VOLTAGE</u>	<u>L-N</u>	<u>L-G</u>	<u>N-G</u>
240/120	800/400V	800/400V	400V

8. Furnish response time no greater than five nanoseconds for individual protection modes.
9. Designed to withstand maximum continuous operating voltage (MCOV) of not less than 115 percent of nominal RMS voltage.
10. Furnish visible indication of proper suppresser connection and operation. Lights indicate operable phase and module.
11. Furnish minimum EFI/RFI filtering of 34 dB at 100 kHz with insertion loss ratio of 50: 1 using Mil Std. 220A methodology.

B. Panelboard Mounted:

1. UL 67 listed and TVSS device UL 1449 Component Recognized. TVSS device meets UL 1449. Furnish panelboard markings with clamp voltage at TVSS terminals and clamp voltage at panelboard line terminals.
2. Construct box of galvanized steel. Box size as indicated on Drawings.
3. Main bus constructed of copper and rated for load current.
4. Furnish interior with branch circuit breakers if not bus mounted type. Furnish [one] [60] amp circuit breaker for each TVSS, with appropriate number of poles, as dedicated disconnect for TVSS.
5. Furnish with insulated ground bus and safety ground bus.

C. Enclosure Mounted:

1. UL 67 listed and TVSS device UL 1449 Component Recognized. TVSS device meets UL 1449.
2. Provide with [flush] [surface] mounted NEMA Type 4X enclosure. Construct box of galvanized steel. Box size as required for TVSS unit and in compliance with NFPA 70.

3. Provide panelboard mounted circuit breakers with appropriate number of poles and manufacturer required ampacity, as dedicated disconnect for TVSS.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install panelboards plumb and flush in conformance with NEMA PB 1.1.
- B. Height: 6 feet, 6 inches to top of panelboard.
- C. Provide filler plates for unused spaces in panelboards.
- D. Panel Schedules: Revise schedules to reflect circuiting changes required to balance phase loads.

3.2 FIELD QUALITY CONTROL

- A. Measure steady state load currents at each panelboard feeder. Should the difference at any panelboard between phases exceed 20 percent, rearrange circuits in the panelboard to balance the phase loads within 20 percent. Take care to maintain proper phasing for multi-wire branch circuits.
- B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers.

END OF SECTION

SECTION 26 27 16 – ELECTRICAL CABINETS AND ENCLOSURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Hinged Cover Enclosures.
- B. Cabinets.
- C. Terminal Blocks and Accessories.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements, and Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 05 26 – Grounding and Bonding for Electrical Systems.
- C. Section 26 05 33 – Raceway and Boxes for Electrical Systems.
- D. Section 26 05 53 – Identification for Electrical Systems.

1.3 REFERENCES

- A. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- B. ANSI/NEMA ICS 1 - Industrial Control and Systems.
- C. ANSI/NEMA ICS 4 - Terminal Blocks for Industrial Control Equipment and Systems.
- D. ANSI/NEMA ICS 6 - Enclosures for Industrial Control Equipment and Systems.

1.4 SUBMITTALS

- A. Submit product data under provisions of Division 01.
- B. Shop Drawings for Equipment Panels: Include wiring schematic diagram, wiring diagram, outline drawing and construction diagram as described in ANSI/NEMA ICS 1.

PART 2 - PRODUCTS

2.1 HINGED COVER ENCLOSURES

- A. Construction: NEMA 250; 4X stainless steel.
- B. Finish: Manufacturer's standard enamel finish.
- C. Covers: Continuous hinge, held closed by flush latch operable by key.

- D. Panel for Mounting Terminal Blocks or Electrical Components: 14 gauge steel, white enamel finish.

2.2 CABINETS

- A. Cabinet Boxes: Galvanized steel with removable endwalls,. Provide $\frac{3}{4}$ inch thick marine grade plywood backboard for mounting terminal blocks.
- B. Cabinet Fronts: Steel, surface type with concealed trim clamps, concealed hinge and flush lock keyed to match branch circuit panelboard; finish in gray baked enamel.

2.3 TERMINAL BLOCKS AND ACCESSORIES

- A. Terminal Blocks: ANSI/NEMA ICS 4; UL listed.
- B. Power Terminals: Unit construction type, closed-back type, with tubular pressure screw connectors, rated 600 volts.
- C. Signal and Control Terminals: Modular construction type, channel mounted; tubular pressure screw connectors, rated 300 volts.

2.4 FABRICATION

- A. Shop assemble enclosures and cabinets housing terminal blocks or electrical components in accordance with ANSI/NEMA ICS 6.
- B. Provide conduit hubs on enclosures.
- C. Provide protective pocket inside front cover with schematic diagram, connection diagram, and layout drawing of control wiring and components within enclosure.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install cabinets and enclosures plumb; anchor securely to wall and structural supports at each corner, minimum.
- B. Install trim plumb.

END OF SECTION

SECTION 26 27 26 - WIRING DEVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Switches.
- B. Receptacles.
- C. Device Plates and Box Covers.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 - General Requirements and Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 05 26 – Grounding and Bonding for Electrical Systems.
- C. Section 26 05 33 – Raceway and Boxes for Electrical Systems.
- D. Section 26 05 33.16 – Boxes for Electrical Systems.
- E. Section 26 05 53 – Identification for Electrical Systems.

1.3 REFERENCE STANDARDS

- A. FS W-C-596 – Federal Specification for Electrical Power Connector, Plug, Receptacle, and Cable Outlet.
- B. FS W-S-896 – Federal Specification for Switches, Toggle (Toggle and Lock), Flush Mounted.
- C. NEMA WD 1 - General Color Requirements for Wiring Devices.
- D. ANSI/NEMA WD 6 – Wiring Devices – Dimensional Requirement.
- E. UL 20 – General-Use Snap Switches.
- F. UL 943 – Ground-Fault-Circuit-Interrupters.

1.4 SUBMITTALS

- A. Product Data: Submit product data for all components provided that are specified in this section showing configurations, finishes, and dimensions. Each catalog sheet should be clearly marked to indicate exact part number provided, including all options and accessories.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS - WALL SWITCHES

- A. Hubbell.
- B. Leviton.
- C. Pass & Seymour.
- D. Arrow Hart
- E. Substitutions: Under provisions of Division 01.

2.2 SWITCHES

- A. Switches for Lighting Circuits: UL 20; ANSI/NEMA WD-6; and Federal Specification FS W-S-896 AC industrial grade snap switch with toggle handle, rated 20 amperes and 120-277 volts AC.
- B. [Pilot Light Type: UL 20; ANSI/NEMA WD-6; and Federal Specification FS W-S-896 AC industrial grade snap switch, rated 20 amperes and 120-277 volts AC. Handle: Red pilot light toggle (illuminated when load is on). Provide single pole unless otherwise indicated on Plans.]

2.3 ACCEPTABLE MANUFACTURERS - RECEPTACLES

- A. Hubbell.
- B. Leviton.
- C. Pass & Seymour.
- D. Arrow Hart
- E. Substitutions: Under provisions of Division 01.

2.4 RECEPTACLES

- A. GFCI Receptacles: ANSI/NEMA WD-6; 20A, duplex convenience receptacle with integral class 'A' ground fault current interrupter, LED indicator lamp and integral lockout.
- B. Weather-Resistant Receptacles: ANSI/NEMA WD-6; Listed to the weather-resistant supplement of UL498 and complying with the requirements of NEC 406.9.

2.5 DEVICE PLATES

- A. Weatherproof Cover Plate: UL listed, cast aluminum, hinged outlet cover/enclosure, with gasket between the enclosure and the mounting surface, suitable for wet locations while in use and identified as "Extra Duty" per NEC 406.9 (B)(1).
- B. Exposed Work Cover Plate: $\frac{1}{2}$ inch raised, square, pressed, galvanized or cadmium plated steel cover plate supporting devices independent of the outlet box.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install wall switches at height and location as indicated on Drawings.
- B. Install receptacles at height and location as indicated on Drawings.
- C. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface-mounted outlets.
- D. Install devices and plates flush and level.
- E. Ground receptacles to boxes with a grounding wire. Grounding through the yoke or screw contact is not an acceptable alternate to the ground wire.
- F. Install circuit label on each receptacle and light switch in accordance with Section 26 05 53.

END OF SECTION

SECTION 26 50 00 – LIGHTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Exterior Luminaires and Accessories.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under General Conditions of the Contract General Requirements, and Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 05 19 – Low Voltage Electrical Power Conductors and Cables.
- C. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- D. Section 26 05 29 - Hangers and Supports for Electrical Systems: General Supports for Luminaires.
- E. Section 26 05 33 – Raceway and Boxes for Electrical Systems.
- F. Section 26 05 53 – Identification for Electrical Systems.
- G. Section 26 09 19 – Enclosed Contactors.
- H. Section 26 27 26 – Wiring Devices.

1.3 DEFINITIONS

- A. CCT: Correlated Color Temperature.
- B. CRI: Color Rendering Index.
- C. Driver: LED Power Supply.
- D. Fixture: See "Luminaire."
- E. IES: Illuminating Engineering Society of North America
- F. IP: International Protection or Ingress Protection Rating.
- G. Lamp Module: Replaceable LED board array/light engine including a plug-in connector.
- H. LED: Light-emitting diode.
- I. Lumen: Measured output of lamp and luminaire, or both.

J. Luminaire: Complete lighting unit, including lamp or lamp module, driver, reflector, and housing.

1.4 REFERENCE STANDARDS

- A. IES TM-21-11 Projecting Long Term Lumen Maintenance of LED Light Sources.
- B. IES LM-80 IES Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules.

1.5 SUBMITTALS

- A. Product Data: Submit the following:
 1. Luminaires: Include manufacturer's product data sheets and/or shop drawings including outline drawings showing support points, weights, and accessory information for each luminaire type. Clearly indicate all options being provided. Arrange data for luminaires in the order of fixture designation.
 2. Prior to preparing submittals, coordinate with the reflected ceiling plan for ceiling finishes and provide all necessary kits, brackets, stems, trim, etc. to install the specified fixtures in the ceilings provided. Clearly note these configurations on the product data sheets.
- B. Shop Drawings: Provide detailed shop drawings for specialty luminaires as required by the manufacturer.
- C. Warranty: Provide copies of manufacturer's warranty information for each luminaire. If warranty information is the same for a group of manufacturer's luminaires, provide a letter or schedule clearly indicating what warranty applies to each fixture.

1.6 CLOSEOUT SUBMITTALS

- A. Project Record Drawings: Indicate actual locations and mounting heights of all lighting fixtures and accessories on the project record drawings. Update part numbers and description on the Lighting Fixture Schedule to match the actual luminaires installed. Submit under Section 26 05 00.
- B. Operation and Maintenance Manuals:
 1. Provide recommended luminaire cleaning and re-lamping schedule. If any luminaire lenses require special lubricants for cleaning, include this in the schedule.
 2. Provide detailed bill of materials for all items purchased in this section including distributor's contact name, phone number and pertinent information.
 3. Provide luminaire manufacturer's installation instructions.
 4. Provide manufacturer's step-by-step installation instructions showing how to replace the LED lamp modules and drivers for each luminaire.

5. Include any specific warranty information provided by the manufacturer for luminaires, LED boards, and drivers.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site, store and protect in a clean, dry environment under provisions of General Conditions of the Contract.

1.8 EXTRA MATERIALS

- A. Provide spare parts under provisions of Division 01.
- B. LED Luminaire: Where the specified or substitute luminaire does not have a replaceable lamp or lamp module, provide two spare luminaire per size and type installed.

PART 2 - PRODUCTS

2.1 EXTERIOR LUMINAIRES AND ACCESSORIES

- A. Luminaires: Provide UL listed luminaires as scheduled on the drawings or as approved equal.
- B. Listing: Luminaires shall be listed for use in the environment in which they are installed. For example, in hazardous, wet, damp, or corrosive locations shall be UL listed for such application.
- C. Accessories: Provide all mounting kits, supports, interconnecting wiring, power supplies, trim kits, gaskets, etc. for a complete installation.
- D. Housing:
 1. Metal parts shall be free of burrs and sharp corners and edges. Form and support to prevent warping and sagging.

2.2 LAMP MODULES – LED

- A. All LED's shall be nominal 4000 degrees Kelvin (nominal) within a 3-step MacAdam Ellipse unless special circumstances require a different color temperature application, see Luminaire Schedule on Plans.
- B. Color Rendering: Minimum CRI as scheduled on the Plans for each fixture. Under no circumstances shall the CRI be less than 70.
- C. Lamp Life: Minimum lamp life shall be calculated in accordance with IES LM-80. Lamp life for each luminaire shall be equal or greater than scheduled on the Plans. Under no circumstances shall an outdoor luminaire have a minimum rated life (L70) less than 75,000 hours at 40 degrees F average outdoor ambient temperature.
- D. Replaceable: Unless otherwise scheduled, all LED modules shall be field replaceable with quick disconnect connections.

- E. Luminaires and lamps installed outdoors shall be rated for starting and operating at a minimum of -40F.

2.3 DRIVERS - LED

- A. LED Driver: Provide UL listed power supply as recommended by the LED fixture manufacturer for operation of the specified LED lamps. Power supply shall be integral to the luminaire unless otherwise noted on the Plans. Power supply shall be dual voltage (120/277V) where available or operate at the supply voltage indicated on the Plans.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Unless otherwise noted on Plans, provide drivers integral to luminaires, pre-wired and installed at the factory, suitable for use with the selected LED lamps.
- B. Provide luminaire disconnecting means in the wiring compartment of each luminaire. Where the luminaire is fed from a multi-wire branch circuit, provide multi-pole disconnect to simultaneously break all supply conductors to the ballast, including the grounded conductor.

3.2 RELAMPING

- A. Re-lamp or replace luminaires that have failed lamps at completion of work.

3.3 ADJUSTING AND CLEANING

- A. Align luminaires and clean lenses and diffusers at completion of work. Clean dirt and debris from installed luminaires.
- B. Touch up luminaire finish at completion of work.

END OF SECTION

SECTION 31 11 00

CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. This item consists of furnishing all labor, equipment, supplies, and material in performance of all operations required for site clearing, grubbing and clean-up operations.

1.2 RELATED REQUIREMENTS

- A. Section 31 23 19 Dewatering and Control of Surface Water.
- B. Section 31 23 00 Excavation and Fill.

1.3 DEFINITIONS

- A. Clearing: Includes cutting all brush, trees and stumps, to within 6 inches of natural ground, chipping and disposing of the cuttings. Clearing also includes the removal of all snow and ice in the project area.
- B. Grubbing: Includes the removal and disposal of all stumps, roots, organics, buried logs, brush and other objectionable material or debris not otherwise indicated to remain.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 GENERAL

- A. Contractor shall perform all clearing and grubbing operations where designated on the Contract Drawings and as specified herein or as directed by the owner.
 - 1. Locate, identify and protect utilities from damage.
 - 2. Verify with the Owner any vegetation to remain.
- B. The project site contains miscellaneous debris including old dispensers, inoperable construction equipment, construction material, an existing fuel tank and containment area, and other debris. Contractor must coordinate with the appropriate owner or governing authority as necessary to relocate all materials, waste, and equipment that interfere with proposed improvements to approved offsite location.

3.2 PROTECTION

- A. Provide protection as necessary to prevent damage to existing improvements and utilities indicated to remain.
 - 1. Protect improvements on adjoining properties and on project site.
 - 2. Protect trees, plant growth and features designated to remain. Protect survey benchmarks, property corners, survey monuments and existing work from damage or displacement.
- B. All property corners, benchmarks or other permanent survey marker disturbed during construction shall be removed and recorded. The contractor shall be responsible for the resurvey and resetting of any disturbed property corners, benchmarks or other permanent survey markers by a professional land surveyor, licensed by the State of Alaska.

3.3 USE AND DISPOSAL OF GRUBBED MATERIAL

- A. Cleared and grubbed material shall be disposed of at a Contractor furnished disposal area.
- B. Except as otherwise stated, the Contractor shall make his/her own arrangements and assume all cost in connection with disposal sites. Disposal sites shall be located and maintained in such a manner as to prevent a public nuisance.
- C. If the disposal site is located on private land, the Contractor shall obtain written permission from the property owner or owners for such disposal sites and shall furnish the Project Manager with a copy of this permission. The written permission shall specifically provide that the property owner will not hold the Authority, its employees, agents, or engineers liable for use or damage to this property. The Contractor shall be held liable for any trespass and property damage incurred outside of the disposal site.

END OF SECTION

SECTION 31 23 00

EXCAVATION AND FILL

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. This item consists of furnishing all labor, equipment, supplies, and material in performance of all earthwork operations including construction of access road(s), tank farm & dispensing pad(s), permanent laydown area, and bulk transfer area.
- B. Important Notes:
 - 1. Contractor shall make his own determination of the adequacy of the site to support equipment and other construction loads. Additional fill material and/or crane mats may be required to support loads during construction and Contractor shall provide additional fill and/or crane mats as required at no additional cost to the Owner.

1.2 RELATED REQUIREMENTS

- A. Division 01 Specifications.
- B. Section 02 32 00 Geotechnical Investigations.

1.3 QUALITY CONTROL ASSURANCE

- A. Testing Procedures and Methods:
 - 1. Moisture-Density test standard: ASTM D1557 or AASHTO T-180, Method D.
 - 2. In-place Density Determination: Nuclear Method ASTM D2922 or AASHTO T-238.
 - 3. Gradation Analysis: ATM T-7, ASTM C136 or AASHTO T-27.
 - 4. Other testing procedures and methods referenced in individual specification sections.
- B. Quality Control Monitoring:
 - 1. Contractor shall secure and pay for all required quality control monitoring. Contractor shall utilize Project Manager approved, certified, independent laboratory and field personnel for all required testing.
 - 2. Provide certified test results as required in Section 1.04, Submittals.

3. Fill material placed prior to Project Manager Approval of test results is at the sole risk of the Contractor. Material not meeting requirements shall be removed and replaced at Contractor's expense.

C. Minimum testing requirements are indicated below.

1. Moisture Density and Gradation Analysis:
 - a. Classified Fill: Two (2) samples shall be taken at each Classified Fill material source to be used in the work. One (1) additional sample shall be taken when any change in material occurs which, in the opinion of the Engineer, may significantly affect the optimum moisture content or maximum laboratory dry density.
 - b. If laboratory tests indicate that the fill material does not meet the specification requirements, the Contractor shall provide additional certified tests for alternative fill material sources at no additional cost to the Owner.
2. In-Place Density:
 - a. One (1) test for every 200 cy of embankment fill placed (Minimum of one test per lift is required regardless of fill quantity).
 - b. The results of each density test shall be recorded on a test sheet. The following information shall be recorded.
 - 1) Horizontal and vertical location.
 - 2) Density and percent of referenced standard compaction.
 - 3) Material description and appropriate compaction control standard.
 - c. If test results indicate insufficient compaction, Contractor shall cease placement of fill and provide additional compaction effort and/or moisture conditioning until subsequent in-place density testing indicates proper compaction has been achieved.
 - d. All costs associated with additional in-place density testing as a result of failed tests shall be borne by the Contractor.

1.4 SUBMITTALS

- A. Submittals shall be made in accordance with the General Conditions, Division 1, and this Section.
- B. Provide the following submittals:
 1. Name of proposed independent certified testing laboratory and field testing sub-consultant.
 2. Format of proposed laboratory and field test forms.
 3. Laboratory results of gradation and moisture density tests for each fill type to be used on the project.

4. If the Contractor changes the source and/or stockpile from which materials are obtained, Gradation Analysis and Moisture-Density test reports for these new sources shall be submitted to the Project Manager.
5. Results of all in-place density field tests.
6. Catalog and manufacturer's data sheets for proposed compaction equipment.
7. Disposal plan for unusable excavation.

C. Additional Testing:

1. All testing necessary for the Contractor to locate acceptable sources of classified or unclassified fill material for the project shall be provided by the Contractor at no additional cost to the Owner.
2. During construction, the owner may elect to have further gradation and compaction testing completed on the materials being furnished by the Contractor. This testing shall be at the expense of the Owner. The Contractor shall provide material samples as may be necessary to complete this testing and these material samples shall be furnished from material available on the Project site or from the Contractor's source and/or supplier.

1.5 MATERIAL SOURCES

- A. The local gravel source has been exhausted of usable material. Several stockpiles of imported gravel are located within the old gravel pit. The base bid assumes the Contractor will use this stockpiled material to construct the co-located tank farm. See 01 11 13 Work Covered by Contract for additional information.
- B. The Contractor shall coordinate as necessary with the borrow pit surface and subsurface property owners, shall acquire all necessary permits and other costs associated with pit access and material extraction.
- C. The Contractor shall be responsible for all costs associated with transporting, testing, storing, placing and compacting fill material for the work. The Owner is not responsible for fill lost during transportation.

PART 2 - PRODUCTS

2.1 UNCLASSIFIED EXCAVATION

- A. Excavation from the project area shall be considered unclassified. Complete all excavation regardless of the type, nature or condition of the materials encountered as shown on the drawings and/or at the Project Manager's direction.

- B. Excavation conforming to the specifications for Classified Fill Materials may be reused. Unclassified excavation intended for reuse shall be stockpiled and tested prior to placement in the work.
- C. Dispose of unusable excavation at a location provided by Contractor and approved by Owner.

2.2 CLASSIFIED FILL MATERIALS

- A. The design intent is for Fill Material to meet the requirements for Classified Fill material listed below. Material provided by the Owner may differ from the classification shown below.
- B. Classified Fill:
 1. Classified fill material shall consist of mineral soil, free from dirt, muck, frozen chunks, clay balls, roots, organic material, debris, or deleterious material. It shall have a liquid limit no greater than 25 and a plasticity index no greater than 6 as determined by AASHTO T-89 and T-90.
 2. Type I classified fill material:

Type I classified fill material shall conform to the following gradation as determined by AASHTO T-27:

U.S. Standard <u>Sieve Size</u>	Percent Passing, <u>by Weight</u>
4 inch	100
2 inch	85-100
No. 4	20-60
No. 200	4-12

- 3. Type II classified fill material shall be crushed gravel consisting of sound, tough, durable rock fragments of uniform quality and shall meet the following requirements:

Degradation Value (ATM T-13): 45 Min
Percent Fracture (ATM T-4): 50 Min (Single Face)

Type II classified fill material shall conform to the following gradation as determined by AASHTO T-27:

U.S. Standard <u>Sieve Size</u>	Percent Passing, <u>by Weight</u>
1 inch	100
No. 4	35-65
No. 10	25-45
No. 200	4-10

4. Rip-Rap/Armor Rock classified fill material shall be crushed/blasted consisting of sound, tough, durable rock of uniform quality and shall meet the following requirements:
 - At least 85% larger than 3" but less than 12"
 - At least 50% larger than 6"
 - Materials smaller than 3" consisting predominantly of rock spalls and shall be free of soil
- C. Pipe Bedding Material: Use Type II classified material.

PART 3 - EXECUTION

3.1 GENERAL

- A. Safety – The Contractor shall be solely responsible for making all excavations in a safe manner. Provide appropriate measures to retain excavation sideslopes and prevent sloughing to ensure that persons working in or near the excavation are protected.
- B. Notify Project Manager of any discrepancies between Contractual requirements and site conditions prior to start of Work.
- C. Maintain subgrade, backfill and embankment areas or lifts open until testing is complete and testing requirements are met, or approval of testing is secured from the Project Manager.
- D. Any work covered up prior to test completion and achieving testing requirements or Project Manager's approval shall be excavated and reconstructed at Contractor's expense.
- E. Work in inclement weather is at Contractors risk. Any materials which become unstable as the result of improper moisture content, improper selection of techniques, equipment, or operations during inclement wet weather shall be replaced at Contractor's expense.
- F. Excavations and embankment shall be accomplished in such a manner that drainage is maintained at all times; any areas not so drained shall be kept free of standing water by pumping if necessary.
- G. The Contractor shall provide for the proper maintenance of traffic flow and accessibility as may be necessary, and shall also make adequate provisions for the safety of property and persons.
- H. No separate payment for any excavation shall be made. All excavation shall be incidental to the Bid Item being performed.

3.2 EXCAVATION

- A. Excavate to lines and grades shown on the Contract Drawings. Remove and dispose of all topsoil, dirt, muck, frozen chunks, clay balls, roots, organic material, debris, or deleterious material.
- B. At Contractor's option, unclassified excavation may be stockpiled and tested for conformance with classified fill specifications. See Part 1 of this specification for testing requirements.
- C. Disposal of Excess Excavation:
 1. Dispose of all excess excavated materials offsite. Contractor shall make arrangements for the disposal of the excavated material and bear all costs incidental to such disposal.
 2. Sideslopes of excavation waste piles shall be sloped to match the materials natural angle of repose, or flatter.
 3. Excavation waste areas shall be completely within the limits of the disposal area property.
- D. Dewatering:
 1. Excavate all materials in a dewatered condition unless approved otherwise by the Project Manager.
 2. Dewatering shall be performed in accordance with the requirements of Section 31 23 19, Dewatering and Control of Surface Water.
- E. Unauthorized Excavation:
 1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or heat-line dimensions without written direction by the Project Manager.
 2. Unauthorized excavation, as well as remedial work as directed, shall be at Contractor's expense.
 3. Backfill and compact unauthorized excavations as specified for authorized excavations of same classification.

3.3 SITE PREPARATION

- A. Clear and grub the construction area in accordance with Section 31 11 00 of the Specifications and the Contract Drawings. Remove all organic material, silt, and top soil and dispose at a location provided by the Contractor.
- B. Project area must be fully thawed (no seasonal frost) prior to placement of fill.
 1. Prior to placement of fill Contractor shall demonstrate that ground is frost free by excavating a minimum of three test pits evenly spaced

over the project area.

2. Minimum test pit depth shall be 8 feet.
3. If frozen soils are encountered, the Project Manager shall be notified and the test pit shall be filled. At the discretion of the Project Manager additional time shall be allowed for the ground to thaw. Subsequent test pits shall be dug a minimum of 10 ft horizontal from previous pits.
- C. Fill all depressions or holes below the general area surface level, whether caused by test pits, removal of debris or unacceptable material, or otherwise. Fill with Classified material as shown on the drawings, and compact to specified density and to a level, uniform surface before the placement of subsequent layers.
- D. Sloped ground surfaces steeper than 1 vertical to 4 horizontal on which embankment is to be placed shall be plowed, benched, or broken up in such manner that the fill material will bond with the prepared surface.

3.4 EMBANKMENT CONSTRUCTION

A. Embankment Fill Placement:

1. The specified material shall be placed at the locations and to the lines and grades indicated on the Contract Drawings. The material shall be placed and spread uniformly in successive layers not exceeding eight (8) inches in loose thickness. The Project Manager may approve lifts of greater thickness provided the equipment and method used will consistently achieve the specified density. The layers shall be carried up full width from the bottom of the fill to avoid the necessity of widening the edges after the center has been brought to grade. Each layer shall be compacted in accordance with Section 3.05 of this Specification.
2. Blading, rolling, and tamping shall continue until the surface is smooth, free from waves and irregularities, and conforms to elevations shown on the Contract Drawings. If at any time the material is excessively wet, it shall be aerated by means of blade graders, harrows, or other suitable equipment until the moisture content is satisfactory. The surface shall then be compacted and finished as specified above.
3. Oversized material shall be removed. Portions of any layer in which the embankment material becomes segregated shall be removed and replaced with satisfactory material or shall be added to and remixed to secure proper gradation as directed by the Project Manager. No separate payment will be made for any material removed or regraded in areas where material becomes segregated.

3.5 COMPACTION

- A. Compact each embankment lift to 95% of maximum density at optimum moisture content as determined by ASTM D1557 or AASHTO T-180, Method D.
- B. Correct improperly compacted areas or lifts if soil density tests indicate inadequate compaction.
- C. Portions of any lift in which the materials become segregated to the extent that the required percent compaction cannot be attained, shall be removed by the Contractor and replaced with satisfactory materials, or blended with additional material until segregation is eliminated and specified percent compaction is attained.
- D. If, in the opinion of the Project Manager, based on testing service reports and inspection, subgrade and layers of embankment that have been placed are below specified density, the Contractor shall perform additional compaction and testing at elevations directed by the Project Manager until specified density is obtained, at no additional cost to the Owner.
- E. The Contractor shall be responsible for providing the proper size and type of compaction equipment and for selecting the proper method of operating said equipment to attain the required compaction density.

3.6 GRADING

- A. Existing ground contours shown on the Contract Drawings are based upon limited survey information and are approximate.
- B. Finished surfaces shall be not more than 0.10 foot above or below the finished grade elevations shown on the Contract Drawings; soft spots or settling areas shall be corrected at Contractor's expense. Feather finish grades to match adjacent existing roads and parking surfaces where required.

3.7 MAINTENANCE

- A. As necessary, Contractor shall water the site while grading is in progress to control dust.
- B. Contractor shall protect newly graded areas from traffic and erosion and keep free of trash and debris.
- C. Contractor shall repair and re-establish grades in settled, eroded and rutted areas as directed by the Project Manager.
- D. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.
- E. All open excavations shall be adequately signed and barricaded to protect the public.

3.8 DENSITY TEST RECORD DOCUMENTATION

- A. The results of each density test shall be recorded on a test sheet. The following information shall be recorded.
 1. Horizontal and vertical location.
 2. Density and percent of referenced standard compaction.
 3. Material description and appropriate compaction control standard.

END OF SECTION

SECTION 31 23 19

DEWATERING AND CONTROL OF SURFACE WATER

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. This Section describes the requirements for dewatering and the control of surface water during construction.

1.2 SYSTEM DESCRIPTION

- A. Dewatering and temporary diversion works shall be designed by and be the sole responsibility of the Contractor.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Selection of equipment and materials to perform the work is at the option of the Contractor.

PART 3 - EXECUTION

3.1 GENERAL

- A. Contractor shall make his own provisions for diverting surface run off, alleviating ponding water, and dewatering excavation when ground water is encountered.
- B. Contractor shall be responsible for coordinating, acquiring, and paying for all permits required for dewatering operations.
- C. Remove ponded water and limit water flowing or infiltrating into the work area to the extent that the quality of work is not compromised.
- D. Surface water flows within the work area shall be diverted by constructing temporary ditches, berms, or other means to control and direct the water away from the work; use of pumping equipment may be required to dewater some areas.
- E. Discharge from dewatering operations shall be returned to natural drainage routes. Settling pits, silt fences, straw dikes, or other appropriate measures shall be taken to prevent highly turbid waters from entering existing ponds, streams, or wetlands.

END OF SECTION

SECTION 31 23 33

TRENCHING AND BACKFILL FOR UTILITIES

PART 1 – GENERAL

1.1 SCOPE OF WORK

- A. The Work under this item includes furnishing all labor, materials and equipment to perform all operations pertaining to trenching and backfill for utilities.

1.2 RELATED REQUIREMENTS

- A. Section 31 23 00 - Excavation and Fill
- B. Section 33 52 13 – Liquid Fuel Piping
- C. Section 26 00 00- Electrical Methods and Materials

1.3 PROTECTION

- A. Protect equipment and vehicular traffic from trenches and excavations by providing adequate barricades and signage.
- B. Protect excavation side-slopes or adjacent structures by providing adequate back-slopes, shoring, bracing or other methods required to prevent failure of the excavation or existing soils.
- C. Protect all above and belowground utilities.
- D. Notify the Project Manager of unexpected sub-surface conditions and discontinue work in affected areas until notification is given to resume work.
- E. Grade top perimeter of the excavation to prevent surface water runoff from entering the excavation.
- F. Provide for dewatering of the trench where ground water is encountered.

1.4 QUALITY CONTROL ASSURANCE

- A. Moisture-Density test standard: ASTM D1557 or AASHTO T-180, Method D.
- B. In-place Density Determination: Nuclear Method ASTM D2922 or AASHTO T-238.
- C. Quality control monitoring of trench backfill materials and construction by certified independent laboratory approved by Owner, secured and paid for by the Contractor.
- D. Minimum frequency for testing is indicated below. Additional testing may be necessary depending on field conditions

1. Moisture Density and Gradation Analysis on Classified and Unclassified Materials: One (1) sample for approval, prior to use, plus one (1) additional sample when any change in material occurs which, in the opinion of the Project Manager, may significantly affect the optimum moisture content or maximum laboratory dry density.
2. In-Place Density – Trench Backfill:
 - a. One (1) test per lift for every 200 lineal feet of trench.

1.5 SUBMITTALS

- A. Moisture-Density test reports for backfill material from qualified testing laboratory.
- B. In-place density test results in approved format.
- C. If the Contractor changes the source and/or stockpile from which materials are obtained, Gradation Analysis and Moisture-Density test reports for these new sources shall be submitted to the Project Manager.
- D. The Contractor shall make allowances in his Bid for these items to cover expenses incurred for certified testing and no additional compensation will be allowed.

PART 2 – MATERIALS

2.1 TRENCH BACKFILL

- A. Material for trench backfill shall be obtained from the trench excavation.
- B. If the excavated material is unsuitable for trench backfill (contains organic matter, muck, peat, frozen materials, vegetation, debris or other unsuitable or deleterious matter), the Project Manager may direct the Contractor to furnish Classified Fill material.

2.2 LOCATOR/WARNING TAPE

- C. Metallic Locator/Warning tape shall be capable of being inductively detected electronically. Tape shall be as manufactured by Lineguard, Inc., Wheaton, Illinois, (708)-653-0271, Reef Industries, Inc., Houston, Texas, (713)-943-0070, or approved equal. Materials shall conform to the following:
 1. Film: Inert plastic. Each film layer shall be not less than 0.0005-inch thick (0.5 mil).
 2. Imprint: 3/4-inch or larger bold black letters.
 3. Legend: The buried utility line tape shall be identified with imprint such as "Caution: Water Line Below" and the identification repeated on approximately 24-inch intervals.

4. Metallic foil laminated between two layers of impervious plastic film not less than 2 inches wide. The adhesive shall be compatible with the foil and film. Total thickness of tape shall not be less than 0.005 inch (5 mil).

PART 3 – EXECUTION

3.1 PREPARATION

- A. Identify all existing underground utilities. Stake and flag their locations.
- B. Maintain and protect the existing utilities that may pass through the work area. The Contractor shall coordinate with AVEC, the City, and the local utility company before excavating near utility poles. Temporary bracing of poles and the relocation of poles or guy-anchors shall be as directed by the utility company and approved by the Project Manager.

3.2 EXCAVATION

- A. Excavate the subsoil required for installing piping and conduits.
- B. Cut trenches sufficiently wide to enable proper installation and inspection of utilities as specified and shown on the Contract Drawings.
- C. Remove and dispose of all organic material and debris from trench excavation.
- D. Correct unauthorized excavation or over-excavated areas at no cost to the Owner.

3.3 DISPOSAL SITES

- A. Except as otherwise stated, the Contractor shall make his/her own arrangements and assume all costs in connection with disposal sites. Disposal sites shall be located and maintained in such a manner as to prevent a public nuisance.
- B. If the disposal site is on private property, the Contractor shall obtain written permission from the property owner or owners for such disposal sites and shall furnish the Authority with a copy of this permission. The written permission shall specifically provide that the property owner will not hold AVEC, its employees, agents, or engineers liable for use of or damage to this property. The Contractor shall be held liable for any trespass or property damage incurred outside of the disposal site.

3.4 TRENCH BACKFILL

- A. The first lift is to provide at least a 6-inch bedding thickness under the pipeline and shall be placed before the pipe is laid in the trench. Subsequent lifts of not more than 8-inches shall be installed and individually compacted to 95% of maximum density as described in Section 31 23 00 Excavation and Fill, of these Specifications.
- B. No blocking of any type shall be used to adjust the pipe to grade.

- C. Where ground water is present, the Contractor shall provide drainage through pumping or ditching to ensure that the bedding does not become saturated before placement of the backfill material.
- D. The Contractor shall exercise caution when compacting above pipes to ensure that the pipes and coatings are not damaged by compaction and backfilling operations. All pipes or coatings damaged during backfill or compaction operations shall be repaired or replaced by the Contractor, at no expense to the Owner.

3.5 FIELD QUALITY CONTROL

- A. Notify the Project Manager at least 24 hours in advance of trench backfilling operations to allow for inspection. Failure to obtain inspection prior to placement of backfill may be cause for rejection of pipe.
- B. The results of each density test shall be recorded on a test sheet. The following information shall be recorded.
 - 1. Horizontal and vertical location.
 - 2. Density and percent of referenced standard compaction.
 - 3. Material description and appropriate compaction control standard

END OF SECTION

SECTION 32 05 09

GEOTEXTILE FABRICS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The Work under this Section consists of furnishing all labor, equipment, supplies and materials necessary to perform all operations pertaining to the furnishing and placement of geomembrane liner and geotextile fabrics.
- B. Geomembrane containment liner is to be placed at locations shown in the contract drawings including within tank diked areas.

1.2 RELATED REQUIREMENTS

- A. Section 31 23 00 - Excavation and Fill.

1.3 SUBMITTALS

- A. General: Conform to Section 01 33 23, Shop Drawings, Product Data and Samples.
- B. Furnish Manufacturer's Information and design data, including complete product installation instruction.

1.4 DELIVERY, STORAGE AND HANDLING

- A. General Requirements: Conform to Section 01 60 13, Material and Equipment.
- B. Packaging and Identification Requirements:
 - 1. Geomembrane and geotextile rolls shall be furnished with suitable wrapping for protection against moisture, contamination and extended ultra-violet exposure prior to placement.
 - 2. Each roll or bundle shall be labeled or tagged to provide product identification sufficient for field identification.
 - 3. Products shall be stored in a manner that protects them from the elements. If stored outdoors, they shall be elevated and protected with a waterproof cover.

1.5 QUALITY ASSURANCE

- A. Manufacturer: The manufacturer of the geomembrane and geotextile materials shall have a minimum of ten years' experience in their respective fields.
- B. Sampling and Compliance Requirements:

1. A competent laboratory must be maintained by the producer of the fabric at the point of manufacture to insure quality control in accordance with ASTM testing procedures.
2. That laboratory shall maintain records of its quality control results and provide, upon request of the specifying agent prior to shipment, a manufacturer's certificate.
3. The certificate shall include:
 - a. Name of manufacturer.
 - b. Chemical composition.
 - c. Product description.
 - d. Statement of compliance to specification requirements.
 - e. Signature of legally authorized official attesting to the information required.

C. Contractor shall hydrotest all containment areas prior to the placement of fill. The containment basin shall be filled to the top of the membrane liner and monitored for 24 hours. Report any fluctuations in the water level to the Owner. Contractor shall submit a minimum of three photos of each secondary containment areas taken during the hydrotest and a written report on the results of the hydrotests.

D. Weather Limitations: All work shall be performed under weather conditions recommended by the manufacturer.

PART 2 - PRODUCTS

2.1 GEOTEXTILE FABRIC

A. Woven Geotextile Fabric:

1. Geotextile Fabric shall be GEOTEX 315ST or approved equal.
2. The fabric shall be inert to naturally encountered chemicals, hydrocarbons, mildew and rot resistant, resistant to ultraviolet light exposure, insect and rodent resistant, and conform to the properties in the following table.
3. The minimum average roll value (MARV) for strength properties of any individual roll tested from the manufacturing lot or lots of a particular shipment shall be in excess of the MARV stipulated herein.

SPECIFICATION PROPERTY	TEST LIMIT	METHOD
Grab Strength	300 lbs	ASTM D-4632
Trapezoid Tear Strength	100 lbs	ASTM D-4533
CBR Puncture Strength	900 lbs	ASTM D-4833

Survivability Class 2 AASHTO M288

B. Non-Woven Geotextile:

1. The fabric shall be inert to commonly encountered chemicals, hydrocarbons, mildew and rot resistant, resistant to ultraviolet light exposure, insect and rodent resistant, spun-bound, black, fuel resistant, and conform to the properties in the following table.
2. The average roll minimum value (weakest principle direction) for strength properties of any individual roll tested from the manufacturing lot or lots of a particular shipment shall be in excess of the average roll minimum value (weakest principle direction) stipulated herein.

SPECIFICATION PROPERTY	TEST LIMIT	METHOD
Grab Strength	150 lbs	ASTM D-4632
Grab Elongation	50% max	ASTM D-4632
Trapezoid Tear Strength	65 lbs	ASTM D-4533
Puncture Strength	90 lbs	ASTM D-4833
Mullen Burst Strength	315 psi	ASTM D-3786

3. Acceptable brands include:

- a. Geotex 601, or approved equal.

C. Geomembrane Liner (Containment Liner):

4. The geomembrane liner shall be 23-oz per square yard yellow, high strength polyester scrim coated liner with urethane which meets or exceeds the physical and low temperature properties of Cooley L1023DEP. Liner shall be specifically designed to resist long term exposure to hydrocarbons including gasoline and diesel. The fabric shall be inert to commonly encountered chemicals, hydrocarbons, mildew and rot resistant, resistant to ultraviolet light exposure, insect and rodent resistant, and conform to the properties in the following table.
5. Geomembrane liners shall be ordered as one piece units. Seams shall be factory welded and certified prior to shipment.
6. Field verify size required and include excess to prevent binding and excessive stress.
7. Liner shall be protected and crated to prevent any damage during shipping.

8. Provide an unfolding map that indicates where the liner bundle needs to be positioned to allow for ease in unfolding at the site.
9. Install liner in accordance with the manufacturer's instructions.
10. Install liner between non-woven geotextile layers for protection.
11. The average roll minimum value (MARV) (weakest principle direction) for strength properties of any individual roll tested from the manufacturing lot or lots of a particular shipment shall be in excess of the average roll minimum value (weakest principle direction) stipulated herein.

SPECIFICATION PROPERTY	TEST LIMIT	ASTM METHOD
Tensile Strength, Grab (Warp/Fill)	350/300 lbs	D-751A
Tensile Strength, 1" Strip	240/200 lbs	D-751B
Puncture Resistance, Ball	500 lbs	D-751
Low Temperature Flexibility	-65oF	D-2136
Ply Adhesion	35 lbs/2in	D-751

12. Acceptable Brands

- a. Cooley L1023DEP

2.2 LINER SEAMING

- A. Field seaming is prohibited unless approved in writing by the Owner. If approved, all field joints must be bonded by a qualified technician using manufacturers recommendations, material and equipment.

PART 3 - EXECUTION

3.1 INSTALLATION OF GEOTEXTILE FABRICS

- A. Preparation:
 1. Prepare subgrade and embankment as specified.
 2. Grade to a smooth surface, leaving no surface undulations or irregularities that the fabric can stretch and "bridge" over.
 3. Remove any loose and angular materials, rocks and sticks that may damage the fabric.
- B. Installation:
 1. The geotextile fabric sheet shall be unrolled, positioned, and drawn tight without stretching, in accordance with manufacturer's

recommendations.

2. Geomembrane liner shall be crated to prevent any damage during shipping. Provide an unfolding map which indicates where the liner bundle needs to be positioned to allow for ease in unfolding at the site. Install liner in accordance with the manufacturer's instruction by a certified installer. Install between layers of non-woven geotextile for protection.
3. No penetrations are allowed through the geomembrane liner except at the top of exterior dike wall.
4. Construction vehicles will not be allowed to travel directly on the fabric.
5. Take due care to ensure that fabric is not damaged during construction activities.
6. Fabric damaged to a degree that compromises its intended capabilities shall be replaced with same approved geotextile fabric at no additional cost to the Owner.

3.2 FILL PLACEMENT

- A. Fill or backfill placement shall be in accordance with Section 31 23 00 Excavation and Fill.
- B. A minimum of 12 inches of fill material shall be placed before any construction equipment is permitted to pass over the installed geotextile or geomembrane liner. At no time shall equipment be operated on the unprotected fabric.
- C. Care shall be taken to avoid tears or other damage to the fabric during placement. Tears or damage are cause for repair or replacement of the fabric at the Contractor's expense.

3.3 GEOTEXTILE FABRIC REPAIR

- A. If the geotextile becomes torn or damaged, it shall be repaired at the Contractor's expense prior to backfill operations.
- B. The fill material shall be cleaned from the surface of the geotextile and the torn area overlain with new fabric, providing a minimum of 3 feet of overlap around the edges of the torn area. Care shall be taken that the patch remains in place during subsequent fill placement.

3.4 GEOMEMBRANE REPAIR

- A. Any repairs made to the geomembrane liner shall be patched with the lining material and shall be performed by a qualified manufacturer technician in accordance with manufacturer instructions.

B. The repaired lining shall retain its factory warranty and shall perform in "as new" condition. If the liner cannot be repaired to the satisfaction of Owner or if the repair is not covered under the manufacturer's warranty then the Contractor shall provide a new liner in place of the damaged one at no additional cost to the project.

END OF SECTION

SECTION 32 31 13

CHAINLINK FENCES AND GATES

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The work covered by this Contract includes the furnishing of all labor, tools, equipment and materials necessary to design, fabricate, coat, package for shipment, and delivery, fence materials as shown on the attached Contract Drawings and described in this Specification.
- B. Fencing is to be 8-feet in height measured from the ground surface to the top of the fence fabric.

1.2 REFERENCES

- A. The fence and materials shall be in accordance with this Specification, the Contract Drawings and with the following:
 1. 2020 Alaska Department of Transportation Standard Specifications for Highway Construction Section 607.

1.3 DEFINITIONS

- A. In this specification, the following words or expressions shall be understood to have the meaning given below:
 1. Fence – Chainlink fencing, fabric, pipes, posts, plates, gates, wire, truss rods, fasteners, latches and other materials shown in the Contract Drawings and necessary to install fence.
 2. Temporary Security Fence - Chainlink fencing with galvanized steel posts constructed of new materials or previously used chainlink fence in good condition.
 3. Safety Fence - Orange fabric fence with t-posts.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. The submittals include:
 1. Product Data: Submit manufacturer's standard printed information and literature for all materials to be incorporated in the work.
 2. Shop Drawings: Submit dimensionally correct (scaled) shop drawings for all items to be fabricated (gates, etc.).
 3. Assembly procedures and standard details for the installation of all fence materials.

1.5 QUALITY ASSURANCE

A. The manufacturer shall be experienced and regularly engaged in the supply and installation of fence materials. The manufacturer shall understand the system design and its intent and shall produce components suitable to accomplish that intent. Any deficiencies in the Contract Drawings or these Specifications which may jeopardize the performance of the system shall be brought to the immediate attention of the PROJECT MANAGER, prior to submittal of product description and information for acceptance, whenever possible.

1.6 IDENTIFICATION

A. All fence materials for each facility shall be marked with an identifying number that identifies which facility and component of the fence they pertain to.

1.7 DELIVERY, STORAGE AND HANDLING

A. Packaging:

1. Contractor shall verify shipping dimensions and weight limitations with shipper to ensure that the receipt and delivery of materials will not require the use of specialized equipment.
2. Packing must meet the shipping requirements of all anticipated carrier(s) and be adequate to protect the materials from being damaged.
3. Individual packages/crates must be limited to three thousand pounds (3,000) gross weight and be suitable for lifting by forklift and cable sling.
4. Contractor shall provide packing lists with all bundles and packages which shall list all materials contained in the package or bundle. Packing list shall be securely attached to each bundle in a watertight carrier.

PART 2 - PRODUCTS

2.1 NEW FENCING MATERIALS, POSTS AND ACCESSORIES

A. Zinc-Coated Steel Wire Fabric:

1. Type 1-1.2 oz/sq ft , 2-inch mesh, 9 gauge
2. Fabric selvage to be twist, twist.
3. Provide three strands of 12.5 gauge, 4-point, class III barb wire.

B. Tension Wire for top and bottom of Fabric: 7 gauge, coil spring steel, Class III

- C. All pipe should be SS40 Standard Fence Pipe. Posts and Braces (Class 1, zinc-coated steel pipe, Grade A or B):
 - 1. Line Posts: 2.375-inch O.D. and weight of 3.12 lb/ft.
 - 2. End, Corner, Man Gate and Pull Posts: 2.875-inch O.D. and weight of 4.64 lb/ft.
 - 3. Gate Posts: 4-inch O.D. and weight of 6.56 lb/ft.
 - 4. Brace Rail: 1.66-inch O.D. and weight of 1.84 lb/ft.
 - 5. Top Rail: Use top Tension wire unless otherwise noted.
- D. Gates:
 - 1. Size and type shown on Drawings.
 - 2. Class 1 steel pipe, Grade A or B, 1.90-inch O.D. and weight of 2.28 lb/ft.
 - 3. Gate leaves 6 feet wide and wider shall have either intermediate members and diagonal truss rods or shall have tubular members as necessary to provide rigid construction, free from sag or twist.
 - 4. Gate leaves less than 6 feet wide shall have truss rods or intermediate braces.
 - 5. Gate fabric shall be attached to the gate frame by method standard with the manufacturer except that welding will not be permitted.
 - 6. All hardware shall be zinc-coated.
 - 7. Latches:
 - a. Frost free or strongarm latch for double gates, fork latch for single man gates.
 - b. Latches shall be arranged for pad-locking so that the padlock will be accessible from both sides of gates.
- E. Accessories: Ferrous accessories shall be zinc-coated steel.
 - 1. Tension bars: 1/4 -inch x 3/4-inch flat bar.
 - 2. Standard tension bands: 1/8-inch x 1-inch with 5/16-inch carriage bolt.
 - 3. Wire Ties and Clips: 9 gauge.
 - 4. Steel Hog Rings: Aluminum or steel post ties
 - 5. Truss Rods: 3/8-inch diameter.
- F. Zinc Coating:

1. All steel and iron parts will be zinc-coated after fabrication in accordance with FS RR-F-191.
2. Weight of zinc coating per square foot of actual surface shall average not less than 1.2 ounces and no individual specimen show less than 1.0 ounce.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install posts, fabric, gates and accessories in accordance with ANSI/ASTM F567 and the manufacturer's instructions.
- B. Repair damaged galvanized surfaces with an approved cold galvanizing compound in accordance with manufacturer's instructions.

3.2 POSTS

- A. Spacing: Space posts equidistant measured on a horizontal line; on straight runs, space at 10 feet maximum.
- B. Location:
 1. Locate terminal posts (end, corner, and gate) at the beginning and end of each continuous length of fence and at abrupt changes in vertical and horizontal alignments.
 2. On straight runs, brace posts in two directions to act as pull posts.
- C. Setting:
 1. Set posts plumb and to the depth shown on the Drawings.
 2. Posts to be placed to minimum 5-foot embedment or as indicated on the Drawings.

3.3 INSTALLING FABRIC

- A. Place fabric on the outside of posts around the area enclosed.
- B. Cut fabric by untwisting a picket and attach each span independently at all terminal posts.
- C. Attach one end and then apply tension to remove all slack and attach other end, using stretcher bars with tension bands at maximum 15-inch intervals or any other approved method.
- D. The installed fabric shall have a smooth, uniform appearance, free from sag.

- E. Install fabric 2 inches above ground level with a tolerance of plus or minus 1-inch at each post.
- F. Fasten fabric to line posts at intervals not to exceed 15 inches and to the top and bottom tension wires at intervals not to exceed 24 inches.
- G. Join sections of fabric by weaving a single picket into the ends of the rolls to form a continuous mesh.

3.4 BRACES AND TRUSS RODS

- A. Braces and truss rods shall be installed as indicated and in conformance with the standard practice for the fence furnished.
- B. Horizontal (compression) braces and diagonal truss (tension) rods shall be installed.
- C. Braces and truss rods shall extend from terminal posts to first line post.
- D. Diagonal braces shall form an angle of approximately 40 to 50 degrees with the horizontal.

3.5 TENSION WIRES

- A. Tension wires shall be installed along the top and bottom of the fence line and attached to the terminal posts of each stretch of the fence.
- B. Top tension wires shall be installed within the top 4 inches of the installed fabric.
- C. Bottom tension wire shall be installed within the bottom 6 inches of the installed fabric.
- D. Tension wire shall be pulled taut and shall be free of sag.

3.6 GATES

- A. Install plumb with tops of posts level with each other.
- B. Gate fabric shall be the same design and height of line fence fabric, furnished with twisted selvage top and bottom.
- C. Install as detailed in the Contract Drawings: Intermediate clips shall be installed at the midspan of each bottom tension wire, between posts.

3.7 GROUNDING

- A. Electrical grounds shall be installed along the fence between gate openings, at locations shown on the Plans. Electrical grounds shall also be installed where a power line passes over the fence.

3.8 TEMPORARY FENCE

A. The Contractor shall furnish, install, and maintain a 6-foot temporary fence to provide a continuously secure and enclosed area around the project site during construction activities. Temporary fencing shall be chainlink with galvanized steel posts constructed of new materials or previously used chainlink fence in good condition. Posts shall be galvanized steel pipe of adequate diameter to provide rigidity. Posts shall be mounted on concrete footings or driven into the ground such that the fence cannot be knocked down by wind or pedestrians. Fabric shall be woven vinyl coated or galvanized steel mesh. Provide in continuous lengths to be wire tied to fence posts or prefabricated into modular pipe-framed fence panels.

Install temporary fence in locations shown on Drawings or as proposed by the Contractor and approved by the Project Manager that maintains job site security and meets Owner's needs. Install posts at 10-foot maximum spacing and securely fasten fabric. There shall be less than 6 inches of clearance between fence fabric and grade. Posts and fabric shall be secured such that they cannot be easily moved or separated for pedestrian access. Install fence in straight lines with no gaps. Temporary security fencing shall be maintained during working and non-working hours. Maintain fence in good condition and immediately repair any damaged fence sections.

Temporary fence shall be replaced by permanent fence prior to project completion as detailed in the drawings.

END OF SECTION

SECTION 33 05 00
COMMON WORK RESULTS FOR UTILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. All work specified in Division 33.

1.2 SCOPE OF WORK

- A. This section and Division 33 applies to bulk fuel tank farms, dispensers, bulk fuel transfer systems, and utilities.
- B. Provide the new facilities as shown and specified, including the following:
 1. Construct all new work providing complete and operating systems.
 2. Furnish and install Mechanical systems, including:
 - a. Exterior Fuel Piping, Tanks, and Fuel Equipment.
 - b. All appurtenances, accessories, fittings, valves, dampers, and devices related to fuel systems.
 - c. Fuel System Start Up.
 - d. Training and warranty.
- C. All equipment and installation shall be in compliance with OSHA regulations.
- D. Intent:
 1. The Intent of the Contract is to include all labor and materials, tools, hoisting, scaffolding, supervision, equipment, and transportation necessary or reasonably inferable as being necessary for the execution of the work.
 - a. The Contract Documents endeavor to communicate intended completed work. Interim stages, methods, and means may not be specifically indicated where such is reasonably inferable by qualified Contractors and workers.
 2. The Contractor is responsible for providing the finished work, tested and ready for operation.
 3. By submitting a proposal, the Contractor represents that they have made a thorough examination of the site, of the work, and all existing conditions and limitations, and that they have examined the Contract Documents in complete detail and has determined beyond doubt that the drawings, specifications, and existing conditions are

sufficient, adequate and satisfactory for the execution of the work under the Contract.

4. Where minor adjustments of the work are necessary for purposes of fabrication, scheduling, or installation of items, for accommodation of site conditions reasonably inferable for this project, or resolution of conflicts between items within the intent of the Contract Documents, the Contractor shall make such adjustments at no added expense to the Owner.
 - a. Where such adjustments affect functional or aesthetic design of the work, they shall first be submitted to the Owner's Representative for review and approval.

1.3 COORDINATION

- A. Contractor shall be thoroughly acquainted with the work involved and shall verify at the site those measurements necessary for proper installation of the work.
- B. Contractor shall refer to engineered drawings for site and building construction and other details which affect the mechanical installation.

1.4 DEFINITIONS AND ABBREVIATIONS

- A. Contractor: The word "Contractor," as used in these Specifications, means the mechanical subcontractor.
- B. Owner's Representative: The person or entity designated by the Owner. It may be different persons or entities for different applications.
- C. Provide: The word "provide," as used in these Specifications, means furnish and install, complete and ready for the intended use.
- D. Indicated: The term "indicated" refers to graphic representations, notes, or schedules on the Drawings, or other paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the reader locate the reference. Location is not limited.
- E. Directed: Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted," mean directed by the Owner's Representative and similar phrases.
- F. Specialist: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor. This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the Work. It is also not

intended to interfere with local trade union jurisdictional settlements and similar conventions.

1.5 STORAGE AND PROTECTION OF EQUIPMENT AND MATERIALS

- A. General: At all times take such precautions as may be necessary to properly protect all material and equipment from damage.
 - 1. Cap, plug, or otherwise protect all temporary openings in materials and equipment to prevent entry by foreign matter.
 - 2. Protect from injury by others.
- B. Keep installations clean.
 - 1. Restore installations including piping and equipment, which is damaged by any means including weather, rust, paint, dirt, and physical damage or to new condition prior to installation. Replace rejected piping, equipment, etc. with new materials.
 - 2. Deliver systems to Owner with clean filters, clean strainers, and all bearings properly lubricated.
- C. Cover stored materials and specialties to protect from moisture and dirt. Elevate above grade.
 - 1. Retain protective covers and caps on materials and equipment when provided by manufacturers.
- D. Store equipment a minimum of 2 feet above ground and under protective cover. If storage location is subject to moisture, keep covered with plastic sheeting, arranged to provide adequate ventilation and prevent trapping of moisture.
 - 1. Cover all motors and bearings with watertight and dustproof covers during storage and construction.
- E. Rejected items shall remain property of Contractor.

1.6 SEQUENCING AND SCHEDULING

- A. Sequence, coordinate, and integrate installations of materials and equipment for efficient flow of the Work.
 - 1. Sequence mechanical equipment installation with other site work.
 - 2. Coordinate connection of electrical services.
 - 3. Coordinate with other trades to maintain access routes to mechanical systems.
- B. Schedule inspections and tests of mechanical materials and equipment

while they are exposed.

1. If defective installations are discovered or suspected by Owner, uncover work for inspection and correction of defective condition.

1.7 SAFETY AND PROTECTION

- A. Safety Measures to be Taken: The Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. Comply with "Safety and Health Regulations for Construction," Volume 36, No. 75, Part II of the Federal Register by the U.S. Department of Labor. Contractor shall be responsible for providing all such safety measures and shall consult with the state or federal safety inspector for interpretation whenever in doubt as to whether safe conditions do or do not exist or whether it is or is not in compliance with state or federal regulations.
 1. The Engineer has not been retained or compensated to provide design and construction review services relating to the Contractor's safety precautions or to means, methods, techniques, sequences, or procedures required for the Contractor to perform its work. The Engineer's observations of the Contractor's performance are not intended to include review of the adequacy of the Contractor's safety measures in, on, or near the construction site.
- B. Drive Guards: Provide OSHA-approved drive and shaft guards for all exposed, rotating drive shafts and drive connections between motors and driven equipment including fans, pumps, compressors, etc. Guards shall include heavy-duty steel frames securely fastened to the equipment frame. Guards, in general, shall be solid sheet metal with tachometer cutout at shafts where applicable. Fan belt guards shall be heavy mesh or expanded metal to permit airflow. Guards may be provided by the equipment manufacturer or fabricated by this Contractor to the manufacturer's clearances, configurations, etc.

1.8 CODES, PERMITS, AND INSPECTIONS

- A. Work shall be installed in conformity with applicable local ordinances and state statutes. Standards and sizes which meet or exceed preceding requirements shall be installed as indicated.
- B. Give necessary notices, obtain permits, and pay taxes, fees and other costs, including utility connections or extensions for the work. File necessary plans, prepare documents and obtain necessary approvals of governmental departments having jurisdiction. Apply for and pay for all utility meters and gauges required. Obtain required certificates of inspection for work; retain in the Project Closeout manual and deliver to the Owner's Representative before request for acceptance and final payment for the Work.
- C. Comply with laws, ordinances, rules, regulations, and lawful orders of any

public authority bearing on the performance of the work.

- D. Material and equipment within the scope of the UL Testing Laboratory Service shall be listed by the Underwriters Laboratories for the purpose for which they are used and shall bear their listing mark.
- E. Contractor shall call for all inspections by the authority having jurisdiction when they become due and shall not cover any work until approved by the governing authorities.

1.9 QUALITY ASSURANCE

- A. Single Source Responsibility: Comply with the requirements specified in Division 01 Section, "Materials and Equipment".
- B. Warranty: Products, material, and installations shall be warranted by the manufacturer against defects in material and workmanship for a period of twelve (12) months from the date of acceptance. Any portion of the work repaired or replaced under warranty shall be warranted for the remainder of the original warranty period.
 - 1. Certain items have longer warranty requirements stated in their respective specification sections. The foregoing shall not limit such warranties, and the longer warranty provisions shall apply.
- C. Unless otherwise indicated or specified, all materials shall be new. Contractor shall properly store all materials and equipment for protection from physical damage or damage due to corrosion.
- D. Standardization of Manufacturer: This Contractor shall make every effort to furnish all equipment of any equipment type (such as all fans, all motors, all motor controls, all pumps, all valves, and etc.) from one manufacturer. Confirm before ordering, requirements of standardization with Owner's existing equipment.
- E. Rigging and Appliances: Provide all rigging, scaffolding, staging, and ladders required for complete installation of all equipment.
- F. Manufacturer's Directions: Each material for which the manufacturer issues written directions shall be used according to its manufacturer's directions, as approved and if not at variance with these specifications.
 - 1. If manufacturer's directions are at variance to the contract documents, install to the more stringent requirement within the terms of the manufacturer's warranty. If warranty conflicts arise, refer the question to the Owner's Representative before proceeding.
- G. Equipment Furnished by Others: For installation of equipment and casework furnished by others and installed by this Contractor, roughing-in dimensions shall be obtained from approved shop drawings, by measurements from the actual equipment, details shown on drawings, or

as directed by Owner's Representative.

- H. Accessibility: Install all equipment to be easily accessible for operation, maintenance, or repair. Equipment deemed inaccessible shall be relocated as directed.
- I. Drawings and specifications shall be taken together. Provide work specified and not drawn or work drawn and not specified as though mentioned in both.
- J. General Locations and Arrangements:
 - 1. Drawings (plans, schematics, and diagrams) indicate general location and arrangement of fuel systems and utilities and do not attempt to show exact details or all offsets in piping. Do not scale drawings to obtain final cut lengths, quantities, or the like. Examine the site drawings for exact location of tanks and equipment.
 - 2. Indicated locations and arrangements were used to size ducts and pipe and to calculate friction loss, expansion, and other design considerations. Install systems as indicated, unless deviations to layout are approved in advance on coordination drawings.
 - 3. Follow drawings in laying out work and check drawings of other trades to verify locations in which work will be installed. Install piping in such a manner as to conform to site conditions, structure, avoid obstructions, and keep openings and passageways clear. Lines that must pitch, or that must have a constant elevation, shall have the right-of-way over lines not so restricted. If site conditions appear inadequate, notify the Owner's Representative before proceeding with the work. Make reasonable modifications in the work without extra cost as needed to prevent conflict with work of other trades and for proper execution of the work.
 - 4. Site Conditions: The design documents indicate certain site conditions to assist the Contractor. These drawings are not intended to indicate all conditions. It shall be the responsibility of the Contractor to verify all site conditions and include the removal or relocation of equipment, piping, and wiring in the Contract.

1.10 SUBSTITUTIONS

- A. Brand Names: The use of brand names is for the purpose of description and establishing quality and does not eliminate the requirements of meeting specifications.
- B. Exceptions: Other brands will be allowed except where an item or class of material is specified exclusively by trade name and followed by word "only."
- C. Requests for Substitutions: Approval of alternative and/or substitute products will be considered only under terms and conditions specified in Division 01.

D. Changes Due to Substitutions: Design is based on equipment as listed in the equipment schedules and/or specified elsewhere in Division 23. Where implementation of an approved substitution requires redesign to any part of the work, provide such redesign. Obtain approval of redesign from the Owner's Representative. Redesign cost and additional construction cost, including related and incidentally affected work, resulting from the redesign shall be at the Contractor's expense.

1.11 SUBMITTALS, APPROVALS, AND REVIEWS

A. Provide submittals for all products and systems described in Division 33 and shown on the drawings to demonstrate compliance with the requirements of the project. Furnish equipment submittals, include data for review, and organize data in the manner described below. Submittals procedures shall comply with applicable requirements of Division 1 specifications.

B. Review of submittals will not relieve the Contractor of responsibility for dimensions and/or errors that may be contained in them, or deviations from the Contract Documents' requirements. It shall be clearly understood that the noting of some errors but overlooking others does not grant the Contractor permission to proceed in error. Regardless of any information contained in the submittals, the requirements of the Contract Documents shall govern and are not waived or superseded in any way by the review of the submittals.

1. Submittals processed by the Owner's Representative and/or Architect/Engineer design team are NOT Change Orders. The purpose of Contractor Submittals is to demonstrate to the Architect/Engineer design team that the Contractor understands the design concept and demonstrates its understanding by indicating which equipment and material it intends to furnish and install and by detailing the fabrication and installation methods it intends to use.

C. General: Submittals shall be legible. Degraded faxes, faded or smudged literature, or literature too tiny as to be reasonably read if reproduced at $\frac{1}{2}$ size will be rejected without further review.

1. Contractor further agrees that if deviations, discrepancies, or conflicts between Submittals and Specifications are discovered either prior to or after Submittals are processed by the Architect, the Design Drawings and Specifications shall govern and shall be followed.

D. Product Literature Requirements:

1. Provide all submittals electronically. Indicate the following:
 - a. Contractor's name and contact information; and project title on the cover page.
 - b. Table of contents.
 - 1) List sections and each item in the section.
 - c. Divide the submittals into sections by specification section. Place a numbered divider between each section.
 - 1) Table of contents for each section.

- 2) Place each submitted item within its specification section.
- 3) Include a separate section for items indicated on the drawings only.

d. On each item or product, customize the submittal to thoroughly convey the contractor's intent. The terminology "As Specified" used without marked up listing is not acceptable. (Show exactly what will be provided to include options or deletions.)

- 1) Mark submittal literature to indicate the make and model, materials, accessories, and options proposed. Cross out those not proposed. Unmarked literature indicates ALL accessories options will be provided.
- 2) Identify each item. Mark the project Tag or ID. Mark the specification reference and/or drawing reference which the submittal satisfies.
- 3) Mark the manufacturer's name and address, and supplier's name, address and phone number.
- 4) Rough-in data and dimensions.
- 5) Operating characteristics.
 - a) Performance curves and rated capacities. Indicate the point on the performance curve which satisfies the contract requirements.
 - b) Temperature range and limitations, if applicable.
 - c) Motor and electrical characteristics.
 - d) Wiring diagrams for the specific system operation.
- 6) Indicate whether item is "As Specified" or "Proposed Substitution".
 - a) For substitutions, indicate any deviations from the specified item on the submittal. Include physical size, materials, and performance characteristics, as well options and features.
- 7) Working construction drawings (shop drawings) for other than stock manufactured items.

E. Partial Submittals are permitted with cause only after prior approval such as for long lead items require special attention. Piecemeal submittals, and submittals not organized and tabbed by specification section will be returned without review.

F. Shop Drawing Requirements:

1. Shop Drawings are for the benefit of the contractors to resolve spatial conflicts and appropriate design before the opportunities for acceptable solutions diminish. They are to convey work customized by the tradesmen for this project including, but not limited to, layouts of assemblies of field-fabricated components, pipe, and equipment
 - a. Spatial conflicts which arise as the project progresses which have not first been addressed by shop drawings are expressly assigned to the contractor for resolution within the contract

requirements without additional cost to the owner.

b. Where work obstructs the space needed for O&M, work shall be removed and redone to satisfy O&M spatial requirements without additional cost to the owner.

2. Shop Drawings utilizing manufactured equipment shall be reviewed by the manufacturer to determine correct product application before submitting. The manufacturer's determination shall be evident on the submitted shop drawing.

3. Shop drawings shall be drawn to scale by skilled drafters to conventions and norms prevailing in the field of architectural drafting. Specialized terms, symbols, and techniques which add accuracy and concisely convey the intent are encouraged.

a. Shop Drawings shall include horizontal and vertical dimensions. Multiple views (top, side, front, cross-section, isometric, and etc) shall be used if necessary to illustrate the purpose of the Shop Drawing.

1.12 OPERATION AND MAINTENANCE MANUALS

A. Provide Operation and Maintenance (O&M) Manuals for all products and systems described in Divisions 33 and shown on the drawings. Furnish in time for training of Owner's personnel in operation and maintenance of systems and related equipment. O&M submittal procedures shall comply with applicable requirements of Division 1 specifications and this section.

B. Operating and Maintenance Sequence and Procedures:

1. All written information shall be typewritten. Handwritten notes, lists, or the like will not be accepted.

2. Contents: In each chapter, describe the procedures necessary for personnel to operate the system and equipment covered in that chapter. Provide procedures for start-up, operation, emergency operation, and shutdown.

a. Start-up: Give complete step-by-step instructions for initial energizing equipment, making initial settings and adjustments whenever applicable.

b. Operation: Give instructions for continued operation including ongoing settings. Commands, overrides, and adjustments whenever applicable.

c. Shutdown Procedure: Include instructions for stopping and securing the equipment after operation. If a particular sequence is required, give step-by-step instructions in order.

d. Emergency Operation: Give detailed instructions for emergency procedures required to prevent damage to equipment and property, etc.

e. Provide a schedule of preventive maintenance for each

- product. Recommend frequency of performance for each preventive maintenance task; i.e., cleaning, inspection, etc.
- f. Provide instructions and schedules for all routine cleaning, lubrication and inspection with recommended lubricants for all equipment and systems. Schedule times of the year that inspection and maintenance should be performed.
- g. Provide instructions for minor repair or adjustments required for preventive maintenance routines, limited to repairs and adjustments which may be performed without special tools or test equipment, and which require no extensive special training or skills.
- h. Special Maintenance: Provide all information of a maintenance nature covering warranty items, etc., which have not been discussed elsewhere.

C. Manufacturer's Catalog Cuts: Include manufacturers' descriptive literature covering all appurtenances used in each system, together with illustrations, exploded views and renewal parts lists. Include name, address and phone number of supplier.

D. Shop Drawings: Provide a copy of all corrected, approved shop drawings covering equipment for the project either with the manufacturers' catalog cuts or properly identified in a separate subsection.

E. Spare Parts Lists: Include a list of all equipment furnished for project, with a tabulation of descriptive data of all the spare parts proposed for each type of equipment or system. Properly identify each part-by-part number and manufacturer, include address and phone number.

F. Other Items:

- 1. Valve Directory: Indicate valve number, size, location, function and normal position for each numbered valve.
 - a. Provide a complete Valve Directory in the O&M Manual.
- 2. Name Plate Directory: Provide list of fans, pumps, automatic dampers, and all other major equipment nameplates, giving manufacturer's nameplate data, nameplate designation, location of equipment, area served, switch location, normal position of switch, and equipment label designations specified. Submit directory for review and obtain approval prior to substantial completion of project.

G. Number all pages to assure correct placement in manual.

1.13 OPERATING PERSONNEL INSTRUCTION

A. General: Provide instruction of all pertinent mechanical systems to facility operating personnel prior to facility acceptance, upon mutually satisfactory arrangement with Owner.

- 1. Instruction: Instruction shall begin only after the component, assembly,

or system is complete and has been tested and is in acceptable operating condition. Instruction shall encompass normal operation, emergency operation, fire and other hazards, safety provisions, pollution prevention provisions, and maintenance procedures for all work provided.

2. Instructors: Instructors shall be qualified on the system being instructed. Include the Contractor's staff supplemented by authorized representatives of the component, assembly, or system manufacturer.
3. Aids: Instruction process shall utilize the O&M manuals which, if deemed unsatisfactory in any content, shall be supplemented in a manner to achieve useful, pertinent, and complete instruction.
4. Time: Provide all necessary instruction to the complete understanding of the operating personnel. No individual session shall last more than 4 hours per day. Minimum total instruction periods shall be as follows except that where instruction periods for longer terms are specified herein, such longer term shall apply:
 - a. Piping, and Tanks systems: 8 Hours.
 - b. Controls: 16 hours.
5. Statement of completion: At the conclusion of each training session, provide the Owner's Representative with a form containing the following information:
 - a. Name and contact information of Trainer, including company represented.
 - b. Name of each trainee.
 - c. Date of the training.
 - d. Relevant specification section satisfied by the training.
 - e. Time spent in classroom training and in hands-on practical training.
 - f. Signature of trainees confirming delivery and time of training.

1.14 CONTINUITY OF SERVICE FOR EXISTING SERVICES

- A. General: Comply with all Division 01 requirements.

1.15 PROJECT CLOSEOUT

- A. General: Comply with all Division 01 requirements.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION—COMMON REQUIREMENTS

- A. Equipment Connections:

1. Provide piping flanges where necessary for access to equipment.
 - a. Provide flanges so equipment can be disconnected without dismantling the piping system.
 - b. Make up all piping connections to equipment with offsets arranged that the equipment can be serviced or removed without dismantling the piping beyond the flanged connections.
 - c. Welded piping systems: Wherever a welded piping system connects to equipment, valves, or other units which may require maintenance, servicing, or removal, the connecting joint shall be flanged.
- B. Install equipment in serviceable locations.
 1. Install mechanical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. Connect equipment for ease of disconnecting, with minimum of interference with other installations.
 - a. Install equipment with clear access routes.
 - b. Maintain access route to equipment, and coordinate with other trades to prevent blocking these routes by other work.
 2. Extend grease fittings to an accessible location.
- C. Install equipment according to approved submittal data and the manufacturer's or governing trade association's written instructions. Portions of the Work are shown only in diagrammatic form.
- D. Install equipment level and plumb, parallel and perpendicular to tanks and buildings on site.
- E. Install equipment giving right-of-way to piping systems installed at a required slope.

3.2 EQUIPMENT NAMEPLATES AND OPERATIONAL TAGS

- A. Provide identification nameplates for all equipment, valves, tanks, etc.
- B. Material : 3"x5"x0.08" aluminum w/ 3/16" diameter holes drilled in each corner, black Gerber thermal transfer film printed letters on Gerber 220 high performance vinyl background, color as indicated, one side only, as manufactured by Warning Lights of Alaska or approved equal.
- C. Color:
 1. Nameplates: White background with black lettering.
 2. Operational Tags:
 - a. Diesel components: Apple green background with black lettering.
 - b. Gasoline components: Red background with black lettering.
- D. Information:

1. Nameplates: Provide nameplates for all pumps, electrical panels, and other components as required on the Contract Drawings.
 - a. Nameplates to include component ID as shown on the Contract Drawings.
2. Operational Tags: Provide operational tags for components as shown on the Contract Drawings.
 - a. Operational tags to include component ID (MV-1, etc), normal operating condition (normally open or closed), component owner and information required for proper operation.

3.3 MECHANICAL DEMOLITION

- A. General: Perform demolition to minimize damage to adjacent work or systems to remain intact. Comply with OSHA and this project's safety regulations in performance of demolition.
 1. Employ safety precautions throughout the demolition process.
 - a. Wear the appropriate OSHA-approved PPE for the processes employed.
 - b. Evaluate the demolition for hazardous materials. If a material is in question, notify the Owner's Representative.
 2. Remove systems completely, leaving no materials in the demolition zone abandoned in place.
 - a. Cap any adjacent piping left in place.
 3. Collect and remove demolished materials and debris regularly, but no less than once per day.
 - a. Leave demolition areas safe and clean whenever not continuously occupied by work crews.

3.4 TOUCH-UP PAINTING

- A. For minor repairs to surfaces scratched during shipping and installation.
 1. Repair all dings and scratches to original color and luster.
 2. Repair corrosion protection on metallic surfaces to match manufacturer's original.

3.5 CONNECTING EQUIPMENT FURNISHED UNDER OTHER DIVISIONS

- A. Provide rough-in and final piping connections to equipment as listed in specifications and equipment schedules.
 1. Obtain all rough-in data from approved shop drawings on all equipment.
 2. Equipment and fixtures furnished under other divisions will be received, uncrated, and set in place under other divisions unless

specifically noted otherwise in Division 33 or on the drawings.

3. Make required piping connections to equipment furnished under other divisions including, but not be limited to, installation of all fittings, strainers, valves, instruments, safety devices, and other piping appurtenances provided with or as an integral part of equipment.

END OF SECTION

SECTION 33 52 13
LIQUID FUEL PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and the Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Follow all provisions of Section 33 05 00, "Common Work Results for Utilities."

1.2 WORK INCLUDED

- A. Work under this section shall include furnishing all labor, materials, tools, and equipment necessary for the complete installation of the fuel system. Work shall include, but not be limited to, the following:
 - 1. Piping and Fittings.
 - 2. Piping Specialties.
 - 3. Fuel Appurtenances.
 - 4. Pipe Supports.
 - 5. Pipe and Pipe Support Coatings.

1.3 SUBMITTALS

- A. Submit each item specified in this Section according to the Conditions of the Contract and Division 01 Specification Sections and Section 33 05 00, "Common Work Results for Utilities".
- B. Provide a product list which identifies the products intended to satisfy the requirements of this specification. Catalog cuts for each product shall be included with the product list.
- C. Product Data: Provide manufacturer's literature and data indicating dimensions, rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.
- D. Submit shop drawings: indicate piping layout, required clearances, and location and size of field connections.
- E. Pipe coating process and schedule.
- F. Inspection and Testing Procedures and Results.
- G. Welding procedure qualification Records (PQRs) and welding procedure specification.

1.4 REFERENCED STANDARDS

- A. American National Standards Institute (ANSI):
 - 1. B1.20.1, Pipe Threads, General Purpose (Inch).
- B. American Society for Testing Materials (ASTM):
 - 1. A53, Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - 2. A105, Specification for Forgings, Carbon Steel, for Piping Components.
 - 3. A106, Standard for Seamless Carbon Steel Pipe.
 - 4. A181, Forgings, Carbon Steel, for General Purpose Piping.
 - 5. A183, Carbon Steel Track Bolts and Nuts.
 - 6. A234, Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures.
- C. American Society of Mechanical Engineers (ASME):
 - 1. ASME B31.4, Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids.
 - 2. ASME B31.9, Building Services Piping.
 - 3. B16.3, Malleable-Iron Threaded Fittings.
 - 4. B16.5, Pipe Flanges and Flanged Fittings.
 - 5. B16.34, Valves—Flanges, Threaded, and Welding End.
 - 6. B16.39, Pipe Unions, Malleable Iron Threaded.
- D. National Fire Protection Association (NFPA):
 - 1. NFPA 30, Flammable and Combustible Liquids Code.
 - 2. NFPA 31, Standard for the Installation of Oil Burning Equipment.

1.5 QUALITY ASSURANCE

- A. Piping, fittings, and valves manufactured or procured from sources beyond territorial boundaries of the United States will not be acceptable.
- B. Comply with all applicable city and state codes and ordinances. In case of conflict with drawings or specifications, the codes and ordinances shall govern.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Materials shall be new unless otherwise specified. All items of the same type shall be of the same manufacturer.

2.2 PIPING AND FITTINGS

A. Exterior Above Grade Piping:

1. Steel Pipe:
 - a. Pipe larger than 1" and located outside of the diked containment area shall be schedule 80, seamless, ASTM A106, grade "B".
 - b. Pipe larger than 1" and located inside of the diked containment area shall be schedule 40, seamless, ASTM A106, grade "B".
 - c. Pipe 1" and smaller schedule 160, ASTM A106 grade "B".
2. All piping & fittings shall be butwelded or socket welded except where shown on drawings or required for equipment connection.
3. Pipe Fittings: Butt weld elbows, tees, and reducers shall be seamless, ASTM A234, grade WPB, schedule shall match adjacent piping. Butt weld elbows shall be long radius. Schedule to match pipe wall. Socketweld and threaded fittings shall be ASTM A105, 3000#.
 - a. Pipe and fittings 1-1/2" and larger shall be full penetration butt welded. Flanged fittings shall be ANSI 150 lbs, raised face, weld neck, ASTM A105, bore to match adjacent pipe
 - b. Pipe and fittings smaller than 1-1/2" shall be socket welded. Flanged fittings shall be ANSI 150 lbs, raised face, socketweld, ASTM A105, bore to match adjacent pipe
 - c. Provide flanged connections as required to allow removal of individual components. Threaded fittings are not allowed except where shown on the project drawings, or required for connection to equipment.

B. Exterior Below Ground Piping

1. Steel Pipe:
 - a. Pipe 1" and larger shall be schedule 80, seamless, ASTM A106, grade "B".
2. Pipe fittings: Carbon steel butt weld conforming to ASTM A234 and ASME B16.9.
3. Pipe and fittings shall be full penetration butt welded.
4. Butt weld elbows, tees, and reducers shall be seamless, ASTM A234, grade WTB, schedule match adjacent piping. Butt weld elbows shall be long radius. Schedule to match pipe wall.
5. Cathodic Protection: Buried pipe shall be cathodically protected.

2.3 PIPING SPECIALTIES

A. Exterior Piping Specialties:

1. Flange Gaskets: Gaskets shall be raised face, spiral wound, with

stainless steel winding strip, flexible graphite filler, with carbon steel inner and outer rings, and rated for -50°F service.

2. Dielectric Isolation Flange: Provide where indicated on the project drawings and at all transitions to buried piping. Provide and assemble flanges as indicated on the drawings and as recommended by the manufacturer. Basis of Design: Pikotek VCS or approved equal.
3. Ball Valves 1-1/2" and larger: Full port, ANSI class 150 lbs., Cast carbon steel body, stainless steel ball, Teflon seat and stuffing box seals, lockable lever handle, raised faced flanged. All materials shall be suitable for the service conditions. NACE MR-01-75 Conformance and fire safe per API 607. PBV C-5410-31-2236-FTNL, or approved equal.
4. Ball Valves less than 1-1/2"
 - a. 30,000 gallon Bulk Fuel Tank Water Draw Valves - ANSI **class 300** lbs., cast carbon steel body, stainless steel ball, Teflon seat and stuffing box seals, lockable lever handle. All materials shall be suitable for the service conditions.
 - b. All Others - ANSI class 150 lbs., cast carbon steel body, stainless steel ball, Teflon seat and stuffing box seals, lockable lever handle. All materials shall be suitable for the service conditions. Nibco Model No. T-590-CS-R-66-FS-LL, or approved equal.
5. Check Valves: Carbon steel, ANSI class 150 lbs., raised face flanged, swing check valve. Crane No. 147, or approved equal. Smaller than 2", Bonney Forge L1-61 piston check valve or equal.
6. Wye Strainer: Flanged, carbon steel body, bottom clean-out "Y"-strainer with 1/16" perf. mesh, and blow off tapping plug. Mueller Fig. 781, or approved equal. Provide blow off taping with lockable ball valve and threaded plug for blow down.
7. Basket Strainer: Flanged, carbon steel body, bottom clean out, bolted top cover, basket with 1/4" perf. mesh, and blow off tapping plug. Mueller Fig. 185 or approved equal. Provide blow off taping with lockable ball valve and threaded plug for blow down.
8. Flex Fittings: ANSI Class 150 lbs., stainless steel annular corrugated inner core with stainless steel braided cover, fixed flanged end by floating flanged end with 18" live length or as specified otherwise on project drawings or required for equipment connection. Pressure test at 110 psi and provide certification for each flex. Metraflex Metra-Mini, or approved equal.
9. Pressure Relief Valves: For thermal expansion relief, raised face flanged, carbon steel body pressure relief valve set as specified on drawings. PSV's shall be Hydro-seal Model No. 30FL1CV-00 for 2" and 1FLAXV-00 for 1", and relief pressure set as indicated on project drawings, or equal.
10. Anti-Siphon Valve: Normally closed, stainless steel body, with special expansion relief set at 25 psi. Valve set to open at 20 feet head pressure. Morrison Bros Figure 910ER, or approved equal.

11. Actuated Ball Valves: Normally Closed, ANSI class 150 lbs, A350LF2 body, buna seats and seals. 350 in-lbs operating torque at -50°F, PTC self-regulating heater, NEMA 7 enclosure without manual override shaft extension, Exxon Beacon 325 severe cold grease, 115 V AC, 600 in-lbs torque: 10 second stroke time, stainless steel mounting hardware to allow for manual operation using #10 adjustable wrench, actuator rated to -50°F. 2" ball valve shall be Nutron model#T3-R20R01LZ with RCS model SXR-1023 actuator, no substitutes.
12. Pressure Switches: Adjustable differential pressure switch for NEC class I division I group D areas. Adjustable operating range 0.2 to 10 psig, 100 psig maximum operating temperature. Manufacturer: Square D, class 9012, type GAR1. Install to measure gage pressure at transfer pump discharges.
13. Fuel Flow Switches (to hose reels): See Electrical Design Drawings
14. Quick Connect Couplings: Aluminum body cam and groove fitting with dust cap. Male fitting with ANSI 150-pound class flanged MPT or FPT connection, as shown, 150 psig minimum working pressure. PT Coupling or approved equal.
15. Cam Lock Couplings: Aluminum body cam and groove male fittings with FNTCP connection, 150 psi minimum working pressure. Provide dust cap with Buna-N seal for each fitting provided. PT couplings or equal.
16. Dry break coupling: Aluminum body cam and groove fitting with dust cap with ANSI 150-pound class flanged, MPT, or FPT connection as shown on the Contract Drawings. 150 psig minimum working pressure. Each dry break coupling to include dust caps and appropriate adapters to connect to standard camlock fittings of the same size. PT Coupling Maxi-Dry Series MD20A or approved equal.
17. Strainers: Flanged, carbon steel body, bottom clean-out Y-strainer with #10 mesh and blow-off tapping plug. Mueller Fig. 781, or approved equal.
18. Utility Markers: Continuous glass fiber and resin reinforced marker, one-piece, vandal and vehicle impact resistant. Provide Carsonite CUM 375 or approved equal.

2.4 PIPE SUPPORTS

- A. All pipe supports, clamps, fittings, and hardware shall be Stainless Steel.
- B. Support strut: Stainless Steel finish and slotted back unless specifically indicated otherwise.
 1. Standard strut: 12 gauge, 1-5/8 inch by 1-5/8 inch, Unistrut P1000T (SS), or approved equal.
 2. Double strut: 12 gauge, 1-5/8 inch by 3-1/4 inch, Unistrut P1001 (SS), or approved equal.

3. Post Base: 1-5/8 inch by 1-5/8 inch, Unistrut P1887 (SS), or approved equal.
4. Single Strut: 12 gauge, 1-5/8 inch by 1-3/8 inch, Unistrut P3000 (SS), or approved equal.
5. Deep Strut: 12 gauge, 3-1/4 inch by 1-5/8 inch, Unistrut P5000 (SS), or approved equal.
6. Shallow strut: 14 gauge, 1-5/8 inch by 13/16 inch, Unistrut P4100T (SS) or approved equal.
7. Solid back strut: For welding to tanks or structures, 12 gauge, 1-5/8 inch by 1-5/8 inch, unfinished black steel, Unistrut P1000 (SS), or approved equal.

C. Provide stainless steel fitting, brackets, channel nuts and accessories designed specifically for use with supplied strut.

D. Pipe Clamps: stainless steel two-piece pipe clamp designed to support pipe tight to strut. Unistrut P1117E-SS and P1119E-SS or approved equals.

E. Pipe Straps: stainless steel two-hole pipe strap. Unistrut P2558 (SS), no substitutes.

F. Fasteners:

1. Bolts, nuts and washers: Stainless steel unless galvanized is specifically shown. Stainless steel shall be: Type 316L.
2. Lags: stainless steel unless galvanized steel is specifically shown. Stainless steel shall be: Type 316L.

2.5 PIPE AND PIPE SUPPORT COATINGS

A. Coating processes shall be submitted to the engineer for approval prior to pipe coating.

B. Above Grade Steel Pipe:

1. Prime pipe and fittings prior to shipping from factory. Prepare outer pipe and fitting surfaces by wheel abrading or sandblasting to bare metal. Prime with universal red oxide primer (Devoe Rustguard 4160 OAE) to 1.5 mils minimum DFT.
2. After field fabrication is complete, top coat primed pipe and fittings with two coats of ALKYD enamel (Devoe Gloss Industrial 4308 OAE). Color shall be red (ICI Color Code 9000 – Safety Red) for gasoline piping and green (ICI Color Code 6650 – Medium Green) for diesel piping.
3. Label all above grade piping as to contents and provide flow direction arrows in accordance with ASME A13.1. Arrows may be painted stencils or high quality printed stickers. Maximum flow direction arrow spacing shall be 10 feet measured along pipe length, minimum of one arrow per pipe segment. Color shall be black. Periodically label each pipe run every

50-feet.

C. Below Grade Steel Pipe:

1. Below grade pipe shall be coated with 17 mils minimum DFT fusion bonded epoxy coating, 3M Scotchkote 134 or approved equal.
2. Provide mastic line heat shrink sleeves at all joints and fittings. Raychem WPC 100 or approved equal for pipe joints and Rahchem Flexclad or approved equal for fittings.
3. Extend sleeves and overlap a minimum of 2-inches over pipe coatings.
4. Prior to backfilling, test coating with an electronic holiday detector. Repair all defects and retest

2.6 FUEL DISPENSERS AND APPURTENANCES

- A. Dual Product Dispenser (Single Product Similar). Bennett 38XX Series, standalone, remote pump, standard flow rate, dual product, single sided, 1-tier pricing display, Electro-mechanical totalizer, w/ local preset keypad.
- B. Dispenser Appurtenances:
 1. Retail Dispensing Facility Arctic Hose: Low temperature (-60 deg F) $\frac{3}{4}$ inch fuel dispensing hose, 300 psi working pressure, Goodyear Arctic Ortac, or approved equal. Provide hose swivels at each end.
 2. Retail Dispensing Facility Breakaway Coupling: UL listed, $\frac{3}{4}$ inch, breakaway fitting, EBW model# 679-137 with hose connection, or approved equal.
 3. Retail Dispensing Shear Valve: 1-1/2" x 1-1/2" shear valve with fusible link. Morrison Bros. Co. model# 636F, or approved equal.
 4. Retail Dispensing Facility Hose Swivel: UL listed dispenser hose swivel. OPW model# 45M-0492, or approved equal.
 5. Retail Dispensing Hose Nozzle: UL listed, automatic shut-off, automotive fill nozzle with hold open rack and color coded handles (black for gasoline, green for diesel). OPW model#11BP-0400 and 11B-0100, or approved equal.
- C. Coatings: Dispenser structure, floor, and base shall be coated in accordance with 05 50 00. Bolts, nuts, and washers shall be hot dip galvanized in accordance with ASTM A153.
- D. Point of Sale System: Provide standalone dispenser. Credit card sales will be via a 3rd party system (NIC).

2.7 BULK FUEL TRANSFER EQUIPMENT

- A. Meters: Positive displacement meter rated for 100 gpm of continuous flow with a 150 psig working pressure. Accuracy shall be +/- 0.22% or better from 6-60 gpm. Provide 2-inch inlet and outlet companion flanges with o-ring seals, preset counter with direct mechanical linkage to shutoff valve, resetable register, non-resetable totalizer, air eliminator, strainer, microswitch for shutting down transfer pump, and 10 gallon dwell. All elastomeric seals shall be low temperature nitrile rubber (Buna-N). Factory calibrate for No. 1 diesel fuel, or unleaded gasoline as indicated.
 - 1. Resettable registers shall have 0.1 gallon as the smallest division, preset counter with whole gallon increments only.
 - 2. Liquid Controls M-7-K-1 or approved equal.
- B. Fuel Filter (inside pump cabinet) Two (2) cartridge in-line filter with Buna-N gasket and grommets, 1 1/2" NPT inlet/outlet, 50 psig maximum working pressure 60 GPM capacity. CIM-TEK Centurion III or approved equal. Provide eight (8) Buna-N gaskets (#90005), eight (8) 30 micron hydro sorb type II (#30036), eight (8) Buna-N grommets (#90006), eight (8) filter cartridges (#90002), and two (2) replacement canisters.
- C. Bulk Transfer Arctic Hose: 1 1/2 inch diameter with 1 1/2 inch NPT connections at each end. Provide 30 foot long section of hose with each hose reel assembly. Goodyear Arctic Ortac or approved equal.
- E. Bulk Transfer Breakaway Connection: UL listed 1 1/2-inch breakaway fitting. OPW model no. 66SP-5150 with custom fabricated 18-inch hose section, 1 1/2" NPT connections at each end.
- F. Hose Swivel: UL listed hose swivel. PT Coupling model F0B150MF, or approved equal.
- G. Hose Nozzle: UL listed automatic shut off, heavy duty, high flow fill nozzle with hold open latch and color coded handle, green for diesel #1 and #2 and red for gasoline. OPW 1290-0050, or approved equal.
- H. Hose Reel: Class 1, Div 1 rated, explosion proof spring rewind hose reel capable of holding 40 feet of 1 1/2 inch I.D. hose. Reel shall be top rewind. Hannay 922-23-24-10.5B (Top Rewind) with utility hose rollers and ball stop for 1 1/2 arctic hose, or approved equal.
- I. Static Grounding Reel: Enamel coated steel frame and reel with permanently sealed spring return. Provide with 50 feet of 1/8 inch galvanized carbon steel cable, minimum 100 ampere grounding clip, and stop ball. Hannay GR75, or approved equal.
- J. Cam Lock Couplings: Aluminum body cam and groove male fitting with FNPT connection, 150 psig minimum working pressure. Provide dust cap with Buna-N seal for each fitting provided. PT coupling, or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION OF PIPING AND FITTINGS

A. General Provisions:

1. Work includes all tank farm piping and distribution piping to and from marine or truck fill headers, bulk storage tanks, and bulk transfer hose reels.
2. All piping shall be fabricated and tested in conformance with ASME/ANSI B31.4.
3. Diagrams: Piping diagrams are schematic only and must not be used for obtaining lineal runs or number and type of fittings.
4. Offsets in Piping: The drawings do not attempt to show exact details of all piping. No extra payments will be allowed where obstructions in the work of other trades, or work under this contract, require offsets in piping.
5. Openings in Pipes: Keep closed during the progress of the work.
6. Installation of Valves: Install valves with stem horizontal or above the horizontal.
7. Connections to Equipment: All piping connections to motor driven equipment shall be made through flexible pipe connectors.
8. Short Pipe Connections: Close nipples are not permitted. For short pipe connections, use standard short nipples.
9. Make threaded joints using pipe joint compound applied to the male threads. Hercules Grip, no substitution.
10. Coat flange gaskets with anti-seize compound prior to assembly.
11. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
12. Flanged Connections: Make up joints with flanged faces true and perpendicular to the centerline of the pipe to which the flanges are attached. Bolts for flanged joints shall be steel square head machine bolts with heavy semi-finished hexagon nuts.
13. Flanges: Wherever welded piping connections to equipment, valves, or other units need maintenance, servicing or require possible removal, the connecting joint shall be flanged. Pressure rating of the pipe flanges shall match the pressure rating of the flanges on the equipment to which the piping connects.
14. Route piping in an orderly manner and maintain gradient

15. Group piping whenever practical at common elevations.
16. Install piping to allow for expansion and contraction without stressing pipe, joints or connected equipment. Install valves to allow full operation without obstruction of operating handle.
17. Support piping and equipment as shown on the drawings using specified supports and fasteners. If not detailed on the drawings, support from structural members with pipe hangers, clamps or pipe straps specifically intended for the application. Do not support piping from connections to equipment. Provide piping supports spaced per the following table.

<u>Pipe Size</u>	<u>Maximum Support Spacing</u>
1-1/2 inch	9 ft
2 inch	10 ft
2-1/2 inch	11 ft
3 inch	12 ft
4 inch	14 ft

18. Provide piping supports as shown and as required to adequately support piping. Touch up all cut ends and damaged surfaces of galvanized steel and zinc plated supports and fasteners with spray-on cold galvanizing compound. ZRC, or approved equal.
19. Do not use stainless steel in contact with galvanized supports.
20. Label contents of all piping in accordance with ASTM A13.1

B. Perform welding in accordance with ASME BPV, IX and API 1104. Welding procedures shall be submitted and approved. Visually inspect weld joints in accordance with API 1104. Welder shall be certified for the approved procedure and welder certification shall be submitted and approved.

3.2 INSTALLATION OF PIPING SPECIALTIES

- A. Install per manufacturer's recommendations.

3.3 UTILITY MARKERS

- A. Install utility markers every 50 feet along the pipeline outside diked areas.
- B. Utility markers shall not be installed on drivable surfaces of trails or roads. Markers shall be clearly visible and out of the way of vehicles and pedestrians.

3.4 PRESSURE TESTING

- A. Pressure Testing for Exterior Fuel Piping: Piping shall be pressure tested per ASME B31.4.
 - 1. Notify PROJECT MANAGER in writing seven (7) days in advance of pressure tests. PROJECT MANAGER shall be present at all testing. Pressure testing performed without PROJECT MANAGER present will be rejected, unless prior written approval is received from PROJECT MANAGER.
 - 2. Pressure test requirements for above ground pipe:
 - a. Piping shall be tested prior to the application of coatings and the installation of valves, strainers, etc. Pressure test piping spools at 125 psi for a minimum of 1 hour or longer as required to visibly inspect all joints in the tested section for leaks.
 - b. After all piping, valves, and other equipment are installed a final pneumatic leak test shall be performed. Piping shall be pressure tested at 1.5 times the operating pressure or a minimum of 125 psi, whichever is greater, for a minimum of 4 hours. All joints shall be inspected for leaks.
 - c. Provide a minimum 4-inch diameter calibrated clock gauge with readings in 1 psi increments for pressure observation.
- B. Pressure Test Documentation: Provide test reports for all pressure tests required above. Submit a copy of each test report to the owner for approval prior to covering pipe. All test reports shall include the following.
 - 1. Date of Test.
 - 2. Identification of piping system tested.
 - 3. Test fluid.
 - 4. Test duration.
 - 5. Test pressure, ambient temperature, and time at start and finish.
 - 6. Certification of test equipment.
 - 7. Certification results by examiner.
- C. Before operating any equipment or systems, make thorough check to determine that systems have been flushed and cleaned as required and equipment has been properly installed, lubricated and serviced in accordance with factory instructions.

3.5 FUEL SYSTEM TESTS

- A. The entire fuel system shall be tested for leaks after installation and prior to operational testing of pumps, motor operated valves, fuel transfer control panels, etc.
- B. The Contractor shall perform operational testing of the entire fuel system

to include but not limited to all pumps, motor operated valves, fill limiting valves, level switches, pressure switches, dispensing units, fuel transfer control panels, fuel dispensing controllers, cathodic protection systems, etc..

END OF SECTION

SECTION 33 52 23

BULK FUEL TRANSFER PUMPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and the Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Follow all provisions of Section 33 05 00, "Common Work Results for Utilities."

1.2 WORK INCLUDED

- A. Work under this section shall include furnishing all labor, materials, tools, and equipment necessary for the complete installation of the pump system.

1.3 SUBMITTALS

- A. Submit each item specified in this Section according to the Conditions of the Contract and Division 01 Specification Sections and Section 33 05 00, "Common Work Results for Utilities".
- B. Shop Drawings: Indicate assembly, required clearances, and location and size of field connections.
- C. Product Data: Provide manufacturer's literature and data indicating rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.
- D. Manufacturer's Installation Instructions: Indicate rigging, assembly, and installation instructions.

1.4 QUALITY ASSURANCE

- A. Pumps procured from sources beyond territorial boundaries of the United States (including Alaska and Hawaii) will not be acceptable.
- B. The installing contractors shall have the necessary knowledge, skills and equipment to enable proper and safe pump installation.
- C. Storage: Protect pumps from dirt and moisture.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements. Manufacturers offering products that may be incorporated in the work include, but are not limited to the following:

1. Pumps:
 - a. Gorman-Rupp.
 - b. Red Jacket.
 - c. STP.

2.2 PUMPS

- A. Transfer Pumps: Gray cast iron, self-priming centrifugal pump for petroleum service. 1-1/2 inch NPT inlet & outlet, bronze impeller, self-lubricated Buna-N mechanical seal. Close coupled to 3,450 rpm, 1 hp explosion proof motor, 230VAC, single phase. Pump shall produce 40 gpm at 36 feet total dynamic head. Gorman-Rupp Model 81-1/2D3-X1, No substitutes.
- B. Submersible Pumps: 3/4 hp, 208-230v, single phase, explosion proof submersible turbine pump with intake screen and integral leak detection. Install pump intake to level shown on drawings. Provide Red Jacket NO. P75S1 with trapper intake screen, or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Check equipment for damage that may have occurred during shipment. Repair damaged equipment as approved or replace with new equipment.

3.2 INSTALLATION

- A. Install pumps and associated equipment in accordance with applicable codes and per manufacturer's installation instructions.
- B. Electrical installation shall be in accordance with NEC and Division 26 Specifications.

3.3 FUEL SYSTEM TESTS

- A. The entire fuel system shall be tested for leaks after installation and prior to operational testing of pumps, motor operated valves, fuel transfer control panels, etc.
- B. The Contractor shall perform operational testing of the entire fuel system to include but not limited to all pumps, motor operated valves, fill limiting valves, level switches, pressure switches, dispensing units, fuel transfer control panels, fuel dispensing controllers, cathodic protection systems, etc.

END OF SECTION

SECTION 33 56 13

ABOVE GROUND FUEL STORAGE TANKS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and the Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Follow all provisions of Section 33 05 00, "Common Work Results for Utilities".
- C. See project drawings and Section 01 64 00, "Receipt of Owner Furnished Materials" for tank quantities and locations.

1.2 WORK INCLUDED

- A. This section includes the furnishing of all labor, tools, equipment, and materials necessary to fabricate, coat, package for shipment, deliver, and install the appropriate number of the following tanks in accordance with the awarded Contract schedule(s):
 1. Quantity 3 (three): Owner PROVIDED new thirty thousand (30,000) nominal gallon, single wall, horizontal, steel, skid mounted, aboveground bulk storage tanks for diesel and gasoline service. Outer tank dimensions shall be in accordance with the Contract Drawings & UL142.
 2. Quantity 2 (two): Owner PROVIDED new thirty thousand (30,000) nominal gallon, single wall, dual compartment, horizontal, steel, skid mounted, aboveground bulk storage tanks for diesel and gasoline service. Outer tank dimensions shall be in accordance with the Contract Drawings & UL142.
 3. Quantity 1 (one): **CONTRACTOR PROVIDED** five thousand (5,000) nominal gallon, two product, protected, horizontal, steel, skid mounted, above ground bulk storage tanks for gasoline and diesel service. Outer tank dimensions shall be in accordance with the Contract Drawings & (UL142 & 2085).
 4. Quantity 1 (one): **CONTRACTOR PROVIDED** fifteen-hundred-gallon (1,500) nominal gallon, single product, protected, horizontal, steel, skid mounted, above ground bulk storage tanks for gasoline service. Outer tank dimensions shall be in accordance with the Contract Drawings & (UL142 & 2085).
 5. ALL TANK APPURTANCES for Owner and Contractor Provided tanks.

1.3 SUBMITTALS

- A. Submit each item specified in this Section according to the Conditions of the Contract and Division 01 Specification Sections and Section 33 05 00, "Common Work Results for Utilities".
- B. Submit shop drawings for the following components:
 1. Submittals shall include all tank appurtenances including but not limited to pumps, tank liquid level indicators, normal/emergency vents, sample hatches, overfill prevention valves, high/low level floats, pump control panel, etc.
 2. Submit tank shop drawings, prior to fabrication, showing all principal dimensions of the tanks, details and locations of all accessories, penetrations and appurtenances, thickness of sheets and plates, details of joints and welds and description of coating system. All deviations from these Specifications and the Contract Drawings shall be clearly shown and identified on the shop drawings.
 3. Submit material lists with catalog cuts for any proposed substitutions.
 4. Quality Control Plan.
 5. Tank Painting Schedule.

1.4 REFERENCED STANDARDS

- A. American National Standards Institute (ANSI):
 1. B1.20.1, Pipe Threads, General Purpose (Inch).
- B. American Society for Testing Materials (ASTM):
 1. A53, Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 2. A105, Specification for forgings, Carbon Steel, for Piping Components.
 3. A106, Standard for Seamless Carbon Steel Pipe.
 4. A181, forgings, Carbon Steel, for General Purpose Piping.
 5. A183, Carbon Steel Track Bolts and Nuts.
 6. A234, Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures.
- C. American Society of Mechanical Engineers (ASME):
 1. ASME B31.4, Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids.

2. ASME B31.9, Building Services Piping.
3. B16.3, Malleable-Iron Threaded Fittings.
4. B16.5, Pipe Flanges and Flanged Fittings.
5. B16.34, Valves—Flanges, Threaded, and Welding End.
6. B16.39, Pipe Unions, Malleable Iron Threaded.

D. Underwriters Laboratories (UL):

1. UL 142, Steel Aboveground Storage Tank Installation & Testing.
2. UL 2085, Standard for Protected Aboveground Tanks for Flammable and Combustible Liquids

E. National Fire Protection Association (NFPA):

1. NFPA 30/30A Flammable and Combustible Liquids Code.
2. NFPA 31, Standard for the Installation of Oil Burning Equipment.

1.5 QUALITY ASSURANCE

- A. Piping, fittings, and valves manufactured or procured from sources beyond territorial boundaries of the United States will not be acceptable.
- B. The installing contractors shall have the necessary knowledge, skills and equipment to enable proper and safe above ground storage tank installation.
- C. Tank Handling: To prevent damage to the tank, equipment to handle the vessel shall be of adequate size to lift and lower the tank without dropping or dragging.
- D. Tank Storage: If the tank must be temporarily stored prior to installation, it shall be placed in an area away from activity where tank damage could occur. Factory-installed protective padding material should remain in place until the tank is ready to be lowered in the excavation.
- E. Comply with all applicable city and state codes and ordinances. In case of conflict with drawings or specifications, the codes and ordinances shall govern.
- F. Tank manufacturers shall have a minimum of 10 years' experience including the manufacture of at least five similar tanks in the previous three years.
- G. Tank Leak Test: Provide tank integrity testing in the form of a hydrostatic test or other approved method in accordance with UL 142.

1.6 DRAWINGS

- A. Contract Drawings are diagrammatic and show the general design, arrangement, and extent of the facility. Due to the small scale of the drawings it is not possible to show all offsets, fittings, and accessories which may be required. Contractor shall carefully investigate the field conditions and work requirements for all trades and arrange accordingly.
- B. Contractor is responsible for verifying drawing dimensions by making field measurements and preparing separate shop drawings.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Materials and apparatus shall be new unless otherwise specified, and each shall have all necessary accessories to make it functionally complete. All items of the same type shall be of the same manufacturer.
- B. Tank manufacturer to provide shop-welded standoffs as required for bolting on appurtenances in the field.
- C. **FIELD WELDING TO TANKS IS PROHIBITED.**

2.2 30,000 GALLON SINGLE WALL BULK STORAGE TANKS

- A. 30,000-gallon tanks shall be Owner provided and CONTRACTOR transported and installed. Tanks furnished by Owner do not include tank appurtenances. See Section 01 64 00 Owner Furnished Materials for Tank quantities & FOB point. All tank appurtenances shall be provided by the Contractor and installed in the field.
- B. Tank Appurtenances for 30,000 Gallon Single & Dual Compartment Tanks:
 1. Provide all tank appurtenances as required by applicable codes & shown in the Design Drawings. Appurtenances shall include fill tubes & internal piping. Note: Dual compartment tanks require duplicate appurtenances (See Design Drawings).
 2. Labeling: Provide labeling on tank in accordance with the International Fire Code and NFPA 704, including but not limited to product identification, tank number, hazard classification, compartment storage capacity, etc.
 3. Install external ladder and catwalks for access to tank mounted equipment as indicated on the project drawings.
 4. Provide atmospheric and emergency venting for the tank in accordance with UL 142.
 - a. Primary Tank Combination Atmospheric Vent/Alarm: Threaded 3" pressure/vacuum vent with integral whistle overfill alarm

set to activate at 6 oz/sq. inch pressure. Provide Morrison Bros., Co Fig 922, or approved equal. Set whistle to start at 90% of tank capacity.

b. Primary Tank Emergency Vent: Aluminum body, flanged connection emergency vent set to open at 16 oz/sq. inch pressure. Emergency vent shall be sized in accordance with UL142. Morrison Bros, Co. Model 244F, with flanged adapter, or approved equal. Loose manholes not permitted.

5. Liquid Level Clock Gauge: Stainless Steel float operated clock gauge with readout in feet and inches, up to 12 feet in $\frac{1}{4}$ " increments installed in stilling well. Morrison Bros, Co. Model No. 818, or approved equal.

6. Gauge Hatch: Brass cap, brass adapter, and brass chain, Buna-N gasket, 2-inch FPT connection. Morrison Figure 307, or approved equal.

7. Submersible Pump: See section "33 52 23 Liquid Fuel Pumps".

8. Tank Level Monitoring:

a. Collocated Tank Farm Float Switches: See "Electrical Equipment Schedule" in the Contract Drawings. Note that the 3 & 4 position floats are used in the Collocated Tank Farm in conjunction with the control panel.

b. AVEC Tank Farm level monitoring system: See "Electrical Equipment Schedule" in the Contract Drawings.

9. See project drawings for further specifications and requirements.

2.3 5,000 GALLON PROTECTED TWO PRODUCT DISPENSING TANK

A. 5,000 gallon tank shall be CONTRACTOR furnished and Contractor installed. All tank appurtenances shall be provided by the Contractor and installed in the field.

B. Tank Appurtenances for 5,000 Gallon Tank:

1. Provide all tank appurtenances as required by applicable codes. Appurtenances shall include fill tubes & internal piping.
2. Labeling: Provide labeling on tank in accordance with the International Fire Code and NFPA 704, including but not limited to product identification, hazard identification, tank numbering, compartment storage capacity, etc.
3. Provide external ladder and catwalks for access to tank mounted equipment as indicated on the project drawings.
4. Provide atmospheric and emergency venting for the storage tank in

accordance with UL 142.

- a. Primary Tank Combination Atmospheric Vent/Alarm: Threaded 3" pressure/vacuum vent with integral whistle overfill alarm set to activate at 6 oz/sq. inch pressure. Provide Morrison Bros., Co Fig 922, or approved equal. Set whistle to start at 90% of tank capacity.
- b. Emergency Vents: Aluminum body, flanged connection emergency vent set to open at 16 oz/sq. inch pressure. Emergency vent shall be sized in accordance with UL142. Morrison Bros, Co. Model 244F, with flanged adapter, or approved equal. Loose manholes not permitted.
5. Liquid Level Clock Gauge: Stainless Steel float operated clock gauge with readout in feet and inches, up to 12 feet in $\frac{1}{4}$ " increments installed in stilling well. Morrison Bros, Co. Model No. 818, or approved equal.
6. Gauge Hatch: Brass cap, brass adapter, and brass chain, Buna-N gasket, 2-inch FPT connection. Morrison Figure 307, or approved equal.
7. Submersible Pump: See section "33 52 23 Liquid Fuel Pumps".
8. Fill drop tube, 3-inch shop fabricated.
9. Float Switches: See "Electrical Equipment Schedule" in the Contract Drawings. Note that the 3 & 4 position floats are used in the collocated Tank Farm in conjunction with the control panel.
10. See project drawings for further specifications and requirements.

2.4 1,500 GALLON PROTECTED DISPENSING TANK

- A. 1,500-gallon tank shall be CONTRACTOR furnished, and Contractor installed. All tank appurtenances shall be provided by the Contractor and installed in the field.
- B. Contractor shall field verify available penetrations and install additional tank top penetrations as required to accommodate the required components.
- C. Tank Appurtenances for 1500 Gallon Tank:
 11. Provide all tank appurtenances as required by applicable codes. Appurtenances shall include fill tubes & internal piping.
 12. Labeling: Provide labeling on tank in accordance with the International Fire Code and NFPA 704, including but not limited to product identification, hazard identification, tank numbering, compartment storage capacity, etc.
 13. Provide external ladder and catwalks for access to tank mounted equipment as indicated on the project drawings.
 14. Provide atmospheric and emergency venting for the storage tank in

accordance with UL 142.

- c. Primary Tank Combination Atmospheric Vent/Alarm: Threaded 3" pressure/vacuum vent with integral whistle overfill alarm set to activate at 6 oz/sq. inch pressure. Provide Morrison Bros., Co Fig 922, or approved equal. Set whistle to start at 90% of tank capacity.
- d. Emergency Vents: Aluminum body, flanged connection emergency vent set to open at 16 oz/sq. inch pressure. Emergency vent shall be sized in accordance with UL142. Morrison Bros, Co. Model 244F, with flanged adapter, or approved equal. Loose manholes not permitted.

15. Liquid Level Clock Gauge: Stainless Steel float operated clock gauge with readout in feet and inches, up to 12 feet in $\frac{1}{4}$ " increments installed in stilling well. Morrison Bros, Co. Model No. 818, or approved equal.
16. Gauge Hatch: Brass cap, brass adapter, and brass chain, Buna-N gasket, 2-inch FPT connection. Morrison Figure 307, or approved equal.
17. Submersible Pump: See section "33 52 23 Liquid Fuel Pumps".
18. Fill drop tube, 3-inch shop fabricated.
19. Float Switches: See "Electrical Equipment Schedule" in the Contract Drawings. Note that the 3 & 4 position floats are used in the collocated Tank Farm in conjunction with the control panel.
20. See project drawings for further specifications and requirements.

2.5 TANK COATINGS FOR EXTERNAL TANK SURFACES

- A. The tank exterior, saddles, and skids shall be shop coated in accordance with the following specification and in accordance with the coating manufacturer's recommendations.
 1. Surfaces to be coated: All exterior surfaces of tanks, including bottom of vertical tanks, nozzles, skids, pipe supports, fittings and pipe.
 2. Surfaces not coated: Flange and nozzle faces, penetration threads, flange and manhole bolts.
 3. Surface Preparation: All surfaces to be coated shall be sand blasted in accordance with the Structural Steel Painting Council SSPC-SP10, near white blast criteria. Alternate methods of surface preparation which provide equal, or better, surface preparation will be considered. Identify proposed alternate surface preparation methods, if any, on bid.
 4. Coatings:
 - a. Prime Coat- Devoe Catha-Coat 302H (3 mils minimum dry finish thickness (DFT)

- b. Intermediate Coat – Devoe Bar-Rust 236 (5-6 mils minimum DFT)
 - c. Top Coat- Devoe Devthane 389 (2-3 mils DFT)
5. Coat Colors: All coats shall be contrasting colors. Top coat color shall be white.
6. Where field touch up of paint is required, wire brush area to bare metal and paint with prime, intermediate and top coats as indicated above.
7. Touch-up Paint: Provide 10 gallons each (30 gallons total) of prime, intermediate, and top coat coatings. The touch-up coating shall be color matched to coatings applied to the tanks.

B. Coating Application

1. The Contractor shall submit to the Project Manager, for his/her approval, the tank manufacturer's proposed painting schedule. At minimum, this shall include the spreading rate in square feet per gallon for each coat, minimum dry film thickness for each coat, application temperature, curing time and temperature, humidity limits, and paint and paint thinner to be used for the final coat. The painting schedule shall be in accordance with the paint manufacturer's recommendation and this specification, and shall be approved, in writing, by the Project Manager prior to application.
2. If paint is diluted for application by spray gun, the coating shall be built up to the same film thickness achieved with undiluted material. Deficiencies in film thickness shall be corrected by the application of an additional coat(s) of paint.

PART 3 - EXECUTION

3.1 INSTALLATION OF ABOVEGROUND TANK

- A. General: Comply with current edition of Steel Tank Institute Standard No. R912 and R931, Contract Drawings and manufacturers written instructions.
- B. Site Preparation: Site shall be properly graded to provide drainage of surface water and prevent stagnant water under or around the tank.
- C. The tank shell shall be maximum 12-inches above finished grade. Infill between tank foundation elements with classified fill as required.
- D. Testing: Before placing tank in service, conduct on-site air pressure tests on both the inner tank and the secondary containment in accordance with UL 142 or approved test method.
- E. Touch up painting: After final placement and setting of tank, and after all connections to/from the tank and all appurtenances have been installed, tank paint is to be touched up using the touch up paint provided by the

manufacturer or as indicated under tank coatings requirements in this section.

F. Tank shall be electrically grounded.

END OF SECTION

SECTION 33 71 16

UTILITY POLES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Wood poles.
 - 2. Pole hardware.
- B. Related Sections:
 - 1. Section 26 56 00 – Exterior Lighting

1.2 SCOPE

- A. Provide primary, secondary, and lighting poles as shown on plans. Light fixtures are not permitted on secondary poles.
- B. Verify pole size and quantities with AVEC & Engineer prior to procurement.
- C. Coordinate all pole locations with AVEC & Engineer prior to erecting.

1.3 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI C135.30 - Zinc-Coated Ferrous Ground Rods for Overhead or Underground Line Construction.
 - 2. ANSI C135.4 - Zinc-Coated Ferrous Eyebolts and Nuts for Overhead Line Construction.
 - 3. ANSI C135.5 - Zinc-Coated Ferrous Eyenuts and Eyebolts for Overhead Line Construction.
 - 4. ANSI C135.6 - Zinc-Coated Ferrous Crossarm Braces for Overhead Line Construction.
 - 5. ANSI O5.1 - Wood Poles, Specifications and Dimensions.
- B. ASTM International:
 - 1. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 2. ASTM A475 - Standard Specification for Zinc-Coated Steel Wire Strand.
- C. American Wood-Preservers' Association:

1. AWPA C4 - Poles - Preservative Treatment by Pressure Processes.
2. AWPA U1 - Use Category System: User Specification for Treated Wood.

D. Institute of Electrical and Electronics Engineers:

1. IEEE C2 - National Electrical Safety Code.
2. IEEE C135.1 - Standard for Zinc-Coated Steel Bolts and Nuts for Overhead Line Construction.
3. IEEE C135.2 - Standard for Threaded Zinc-Coated Ferrous Strand-Eye Anchor Rods and Nuts for Overhead Line Construction.

1.4 SUBMITTALS

- A. Submit each item specified in this Section according to the Conditions of the Contract and Division 01 Specification Sections and Section 33 05 00, "Common Work Results for Utilities".
- B. Shop Drawings: Indicate pole locations, quantities of each type, and details of pole guy construction.
- C. Product Data: Submit data showing materials and construction of hardware.

1.5 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of poles, guys, anchors, and required horizontal and vertical clearances.
- B. Operation and Maintenance Data: Submittals for Project Closeout.

1.6 QUALITY ASSURANCE

- A. All construction work shall be done in a thorough and workman-like manner in accordance with the staking sheets, plans and specifications, and the construction drawings.
- B. The latest edition of the National Electrical Safety Code (NESC, ANSI C2) shall be followed except where local regulations are more stringent, in which case local regulations shall govern
- C. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum three years' experience.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 13– Material and Equipment: Requirements for transporting, handling, storing, and protecting products.
- B. Protect poles from damage and decay by stacking to allow free circulation of air. Maintain 1 foot minimum spacing between bottom pole and ground or ground vegetation. Do not store poles above decayed or decaying wood.
- C. Stack poles stored for more than two weeks on creosoted or decay-resistant skids arranged to support poles without noticeable pole distortion.
- D. Handle treated poles with tools to not produce indentations greater than 1 inch deep. Do not drag treated poles along ground. Do not apply tools to section of treated poles between 1 foot above and 2 feet below ground line.

PART 2 PRODUCTS

2.1 POLES

- A. Wood Poles: ANSI O5.1, treated Douglas Fir poles of minimum length and class indicated.
- B. Select poles for straightness and minimum sweeps and short crooks.
- C. All utility poles are to be pressure treated with Penta to a minimum of .45# CF by Assay per RUS Specifications #1728F-700, Specification #1728H-702, and Pole Framing Guide W1.1G (M20).
- D. Vendor will be required to supply Certification of Inspection with each purchase order.
- E. All utility poles are to be banded.
- F. Poles should be marked according to the RUS Pole Framing Guide W1.1G (M20) and include the supplier's code or trademark; independent inspection agency designation or quality assurance mark; plant location and month and year of treatment; code letters denoting the pole species, preservative and required retention; height and class of the pole, and "AVEC". The letters shall be not less than 5/8-inch high if burn branded, and not less than 1/8-inch high if on a metal tag.

2.2 POLE HARDWARE

- A. Miscellaneous Pole Hardware: Hot-dipped galvanized after fabrication.
- B. Flat Braces: 1/4 x 1-1/4 inch).

- C. Eye Bolts and Nuts: ANSI C135.4.
- D. Anchor Rods and Nuts: IEEE C135.2.
- E. Bolts and Nuts: IEEE C135.1.
- F. Eyenuts and Eyelets: ANSI C135.5.
- G. Ground Rods: ANSI C135.30.
- H. Guy Strand: High strength 7-strand steel cable galvanized to ASTM A475, Class A.
- I. Guy Termination: Three-bolt clamp type.
- J. Guy Guards: 8 foot long plastic, colored yellow.
- K. Ground Wire: Soft drawn copper conductors, 6 AWG minimum size.

PART 3 EXECUTION

3.1 PREPARATION

- A. Plug unused holes in poles using treated wood dowel pins. Treat field-cut gains and field-bored holes with preservative.
- B. Cut gains on face of pole, with gained surfaces in parallel planes.
- C. Shorten poles when required by cutting from top end. Apply hot preservative to shortened end of pole.

3.2 INSTALLATION

- A. Pole setting:
 1. All poles shall be set to REA/RUS specifications plus one foot. The minimum depth for setting poles shall be as follows:

Length of Pole (feet)	Setting in Soil (feet)
20	4.0 + 1.0 = 5.0
25	5.0 + 1.0 = 6.0
30	5.5 + 1.0 = 6.5
35	6.0 + 1.0 = 7.0
40	6.0 + 1.0 = 7.0
45	6.5 + 1.0 = 7.5
50	7.0 + 1.0 = 8.0

On sloping ground, the depth of the hole shall be measured from the low side of the hole.

- B. Distribution of poles:
 - 1. In distributing the poles, large, choice, close-grained poles shall be used for transformer, dead-end, angle and corner poles.
- C. Utility Pole setting:
 - 1. All poles shall be set to REA/RUS specifications..
 - 2. Poles shall be set in alignment and plumb except at corners, terminals, angles, junctions, or other points of strain, where they shall be set and raked against the strain so that the conductors shall be in line..
 - 3. Pole backfill shall be thoroughly tamped the full depth. Excess dirt shall be banked around the pole.
- D. Lighting Pole setting
 - 1. All poles shall be set to REA/RUS specifications..
 - 2. Poles shall be set per plans. .
 - 3. Pole backfill shall be thoroughly tamped the full depth. Excess dirt shall be banked around the pole.
- E. Grading of line:
 - 1. When using high poles to clear obstacles such as buildings, foreign wire crossing, railroads, etc., there shall be no up-strain on pin-type (*) insulators in grading the line each way to lower poles.
- F. Guys and anchors:
 - 1. Guys shall be placed before the conductors are strung and shall be attached to the pole as shown in the construction drawings.
 - 2. All anchors and rods shall be in line with the strain and shall be so installed that approximately six inches of the rod remain out of the ground. In cultivated fields or other locations, as deemed necessary, the projection of the anchor rod above the earth may be increased to a maximum of 12 inches to prevent burial of the rod eye. The backfill of all anchor holes must be thoroughly tamped the full depth. (*)
 - 3. Guy bonding clamps shall be installed in the eyes of all anchor rods. All guys (primary & secondary) shall be effectively grounded according to REA/RUS specifications. On secondary poles, guys shall be bonded to the secondary neutral.
 - 4. All anchors shall consist of 24" plate anchors buried to proper depth in line with the strain. A 1:1 guy lead shall be provided (i.e. 28'-30' lead) wherever possible, with a minimum allowable lead of 20' unless otherwise specified.

- G. Locknuts:
 - 1. Locknut shall be installed with each nut, eyenut or other fastener on all bolts or threaded hardware such as insulator pins, upset bolts, double arming bolts, etc.
- H. Dig setting holes large enough to permit use of tampers to full depth.
- I. Set poles in straight line or as shown on the plans. Place curved poles with curvature in line with lead pole. Maintain even grade.
- J. Set poles plumb. Rake poles located at corners, angles, and dead ends so poles are plumb after line installation.
- K. Do not install poles along edge of cuts and embankments or where soil is in danger of washing out.
- L. Install anchor rods, guy strands, and accessories.
- M. Install ground rods and ground wire. Per RUS Guide drawing

3.3 FIELD QUALITY CONTROL

- A. Field test at least one anchor of each capacity installed to rated holding power.

END OF SECTION

APPENDIX A

STEEL SECONDARY CONTAINMENT EXAMPLE SYSTEM

Sioux Steel Secondary Containment

Dura Life Containment Systems, the leading provider of secondary containment on the market, are the most common sense alternative to high-maintenance earth dikes and costly concrete. We are able to provide you with systems that are of the highest quality, with the durability to match.

Each Dura Life Containment System is professionally engineered, using Finite Element Analysis (FEA). This process efficiently pinpoints and eliminates stress points, producing the most environmentally safe system in the industry. Systems are designed to exceed the Environmental Protection Agency (EPA) Standards and EUB (G55) regulations for oil spill prevention and countermeasures.

We use only the highest quality, chemically treated, galvanized steel. The 65,000 PSI, heavy-duty 10, 12 and 14 gauge corrugated steel construction resists rust and corrosion even in the harshest environments. Steel wall heights are available in 12", 25", 33", 45", 57" and 68" in order to best match each containment system.

Our steel systems ensure longevity, by forming each 5/8" sidewall sheet with flanged tops and easy bolt together seams, provide twice the strength while maintaining sidewall shape and failsafe seals. To prevent further leakage when, and if, a spill occurs, our high-grade liners are expertly sealed at each seam.

Dura Life Containment Systems come in four standard shapes. However, custom site creations are also available. Custom Containment Systems fit anywhere, allowing tight installations between structures possible. Our custom corner systems can be installed with as many as 14 different angles to work around obstacles such as pipes, buildings and control equipment.

Dura Life Containment Systems can be easily disassembled, moved and reassembled to a new site, making relocating easy. Additionally, expansions and modifications to an existing system is easily done by adding more panels.



www.siouxsecondarycontainment.com | 855-CONTAIN (855-266-8246)

System Shapes



Oblong



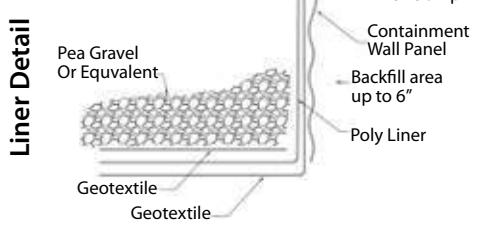
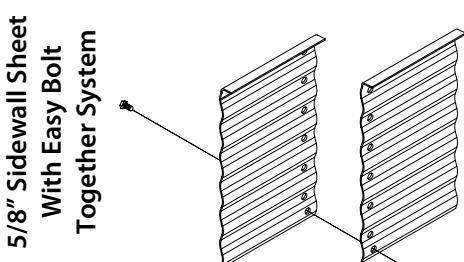
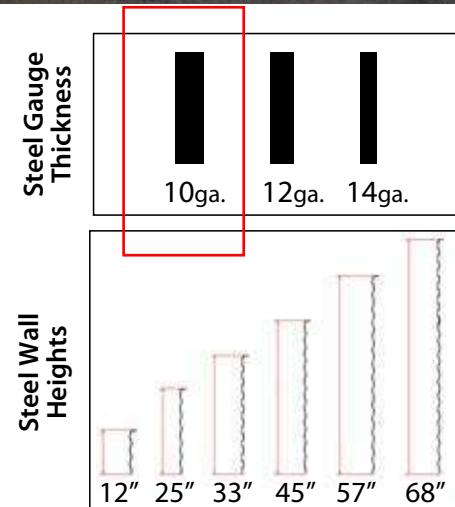
Round



Rectangle/Square with rounded corners



Square/Rectangle



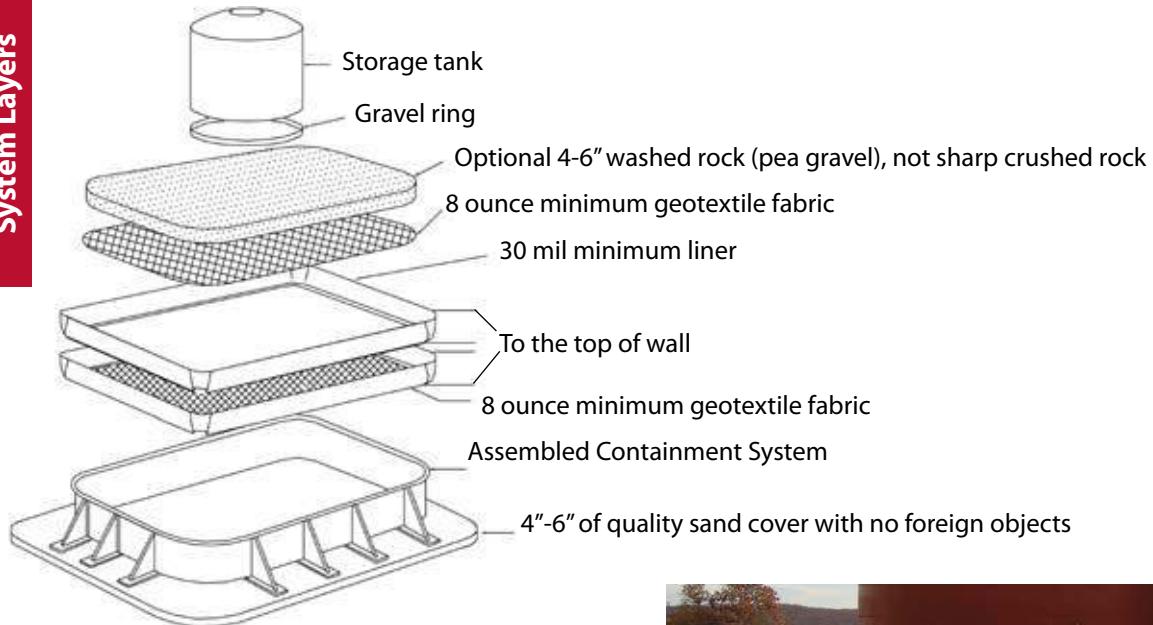
Custom Site Creation

Dura Life® Ground Guard Containment Systems

- Created exclusively for above ground installations.
- These containment systems require ZERO ground penetration and/or disturbance, taking away timely site identification that is typically needed when installing systems requiring post holes set in concrete.
- Ground Guard Systems take the risk of puncturing existing pipelines away by removing the threat of digging underground.
- Concrete materials are eliminated entirely, making the Ground Guard the toughest, all-steel system in the industry.

**Dura Life® Dynamic Loading Containment Systems**

- Designed and manufactured to contain an entire load if a catastrophic rupture were to occur.
- The strongest containment system on the market today without a single reported failure in the entire history of the brand.
- Built with 10 gauge steel walls and patented Z-posts set in concrete that protects the structure from frost heave.
- Designed by professional engineers that utilize state-of-the-art Finite Element Analysis tools to scrutinize every component in order to maximize durability and increase strength.



Scan with your smartphone to find out more information.



- Powder coated color finishing provides one of the most economical, longest-lasting, and most color-durable quality finishes available.
- Surfaces are more resistant to chipping, scratching, fading, and wearing than other finishes.
- Color selection that is virtually unlimited.

Standard Environmental Colors

Carlsbad Canyon	Covert Green	Shadow Gray
Juniper Green	Shale Green	Sudan Brown
Beetle	Yuma Green	Carob Brown

Popular Custom Colors

Red	Gray
Blue	White

For special order colors, please call for price and availability.

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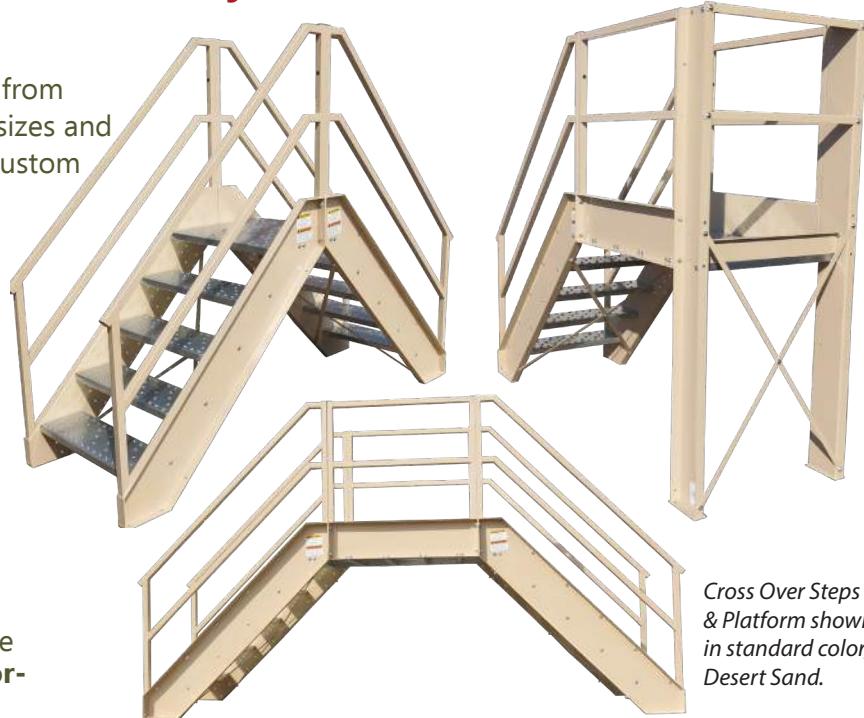


Cross Over Steps & Platforms

Visit us online at www.siouxsecondarycontainment.com

Our complete line of skid resistant cross over steps offer long lasting durability and safe access to and from containment areas. Select from six cross over step sizes and three extensions that work easily with typical and custom containment applications.

- Available in 3, 4, 5, 6, 7 & 8 step configurations.
- **Clears containment walls** from 12" to 68" in height.
- Frames are laser cut from **14 gauge steel**.
- Assembled with 5/16" & 1/2" hardware.
- Can **hold 1,000 pounds**.
- Perfect for any size facility.
- Provides **quick & easy** access.
- Step Extensions are available in three sizes: 3 1/2 feet, 5 feet, and 10 feet.
- Powder coated color finishing provides one of the most economical, longest-lasting, and **most color-durable quality finishes available**.



Cross Over Steps & Platform shown in standard color, Desert Sand.

Standard Environmental Colors

Carlsbad Canyon	Covert Green	Shadow Gray
Juniper Green	Shale Green	Sudan Brown
Beetle	Yuma Green	Carob Brown

Custom Colors

Red	Gray
Blue	White

For special order colors, call for price & availability.

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APPENDIX B

SITE & 25,000 GALLON TANK PHOTOS



RELOCATE 25,000
GALLON TANK



Shageluk BFU
Appendix B - Photos
Photo Date May 2024



PROJECT GRAVEL (BASE BID). NOTE: QUANTITES AND LOCATION SUBJECT TO CHANGE.

COLLOCATED TANK FARM SITE

RELOCATE 25,000 GALLON TANK



AVEC Power Plant

AVEC Tank Farm



Shageluk BFU
Appendix B - Photos
Photo Date May 2024

Decommission Existing
AVEC Tank Farm



Decommission Existing
Corporation Tank Farm