



**INVITATION TO BID  
16004**

**CONSTRUCTION**

**Bulk Fuel Upgrade Project  
On behalf of  
The City of Shishmaref, Alaska**

**May 2016**

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## **Bidder's Contact Information**

### **Invitation to Bid 16004**

### **CONSTRUCTION Bulk Fuel Upgrade Project On behalf of The City of Shishmaref, Alaska**

AEA is conducting this procurement as an agent for The City of Shishmaref Alaska under the authority of 3 AAC 108 Financial and Technical Assurances of Energy Systems, Facilities and Equipment. Actions related to protests, claims and appeals will be handled in accordance with 3 AAC 108.910, 3 AAC 108.915, and 3 AAC 108.920. Any final actions relating to protests, claims, or appeals of a procurement officer decision rests with the Executive Director of the Authority.

This project is funded by a combination of State of Alaska, Trans-Alaska Pipeline and the Denali Commission grants.

**Important** - Bidders are requested to register online to receive any addenda, and information at <http://www.aideaaeprocmement.org/> Plan Holders Registration.

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**Invitation to Bid**  
**Construction**  
**Bulk Fuel Upgrade Project**

ITB Number	16004
ITB Date	May 4, 2016
Project Location	Shishmaref, Alaska
Contracting Officer	Rich S. Wooten, CDT, CPSM Phone 907-771-3019 / Fax 907-771-3044 Email <a href="mailto:rwooten@aidea.org">rwooten@aidea.org</a>
Issuing Office	Alaska Energy Authority 813 West Northern Lights Boulevard Anchorage, AK 99503
Funding	This project is funded by a combination of State of Alaska, Trans-Alaska Pipeline and the Denali Commission grants.

Description of Work

The Work consists of providing all labor, materials and equipment required to complete a bulk fuel upgrade as per the specification contained herein.

Project Cost Estimate

- |  |   |
|--|---|
| <input type="checkbox"/> Less than \$100,000               | <input type="checkbox"/> Between \$1,000,000 and \$2,500,000            |
| <input type="checkbox"/> Between \$100,000 and \$250,000   | <input checked="" type="checkbox"/> Between \$2,500,000 and \$5,000,000 |
| <input type="checkbox"/> Between \$250,000 and \$500,000   | <input type="checkbox"/> Between \$5,000,000 and \$7,500,000            |
| <input type="checkbox"/> Between \$500,000 and \$1,000,000 | <input type="checkbox"/> Greater than \$7,500,000                       |

Schedule

All work shall be Substantially Completed by September 22, 2017 with Final Completion by October 13, 2017.

Pre-bid Conference

A pre-bid meeting is scheduled for **May 12, 2016 at 1:00 p.m.** at the Alaska Energy Authority Office building located at 813 West Northern Lights Boulevard, Anchorage, AK 99503, Birch Conference Room. Parking is off Arctic and 27<sup>th</sup>. This is not a mandatory meeting, and there will not be a scheduled site visit prior to the bid opening. Attend by teleconference dial 1-888-585-9008 and when prompted enter code 434756425#.

Submission of Bids

Bidders shall submit sealed bids in single (1) copy. All Bids including any modifications or withdrawals shall be received prior to the bid opening; bids will be publically opened at Authority's Office on **May 23, 2016 at 2:00 p.m. Alaska time**. Willow Conference Room.

Use the bid forms furnished herein and submissions must be in a sealed envelope marked as follows:

ITB: 16004 Bulk Fuel Upgrade, Shishmaref Alaska	Attention: Rich Wooten, Contract Compliance Spec. Alaska Energy Authority 813 West Northern Lights Blvd Anchorage, AK 99503-2495
--	---

Bid Guaranty

A 5% of the amount of the bid, bid-guaranty is required with each 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.)

Non-Discrimination

Disadvantaged Business Enterprises (DBEs) are 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.

Date to assist in preparing bids is available as follows:

Individuals with disabilities, including the hearing impaired, who may need auxiliary aids, services, and/or special modifications to submit a bid/proposal should contact the TTD number: (907) 269-0473, no later than one week prior to the submittal date to make any necessary arrangements.

Questions

Direct all questions relating to bid procedures, design features, constructability, quantities, or technical aspects of the project to the Contracting Officer no later than 72 hours prior to the bid opening in order to be answered.

## **INFORMATION TO BIDDERS**

The **Alaska Energy Authority (the Authority)**, acting as agent for **The City of Shishmaref**, 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.

### **00100.1 EXAMINATION OF PLANS, SPECIFICATIONS, AND WORKSITE**

Bidders shall examine the plans, specifications and all other documents incorporated in this bid package before preparing a bid and they are expected to be familiar with 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.

Submitting a bid is a binding representation that the bidder has examined the work site, is aware of the conditions to be encountered, and has examined and understands all of the Contract documents, including plans and specifications.

Any questions about bidding procedures, site conditions, or Contract requirements must be submitted in writing to the persons designated on the Invitation to Bid. Questions must be submitted in sufficient time to get a reply before submitting a bid. No oral responses or other oral statements are binding on the Authority. Any response to a material question shall be issued by addendum sent to all bidders.

### **00100.2 INTERPRETATION OF SCOPE OF WORK**

Bid prices shall be based on the Contractor's estimate of the cost, including overhead and profit, to complete the work described in the bid package. If the scope of work or quantity of work is unclear, the Bidder shall provide written notification to the Procurement Officer.

### **00100.3 ADDENDA REQUIREMENTS**

The Authority will issue addenda if it determines, in its discretion, that clarifications or changes to the Contract documents or bid opening date are needed. The Authority may send addenda by any reasonable method such as mail, email, courier, fax, or may post the addenda on its web site. Unless picked up in person or included with the bid documents, addenda or notice that an addenda has been issued will be addressed to the individual or company to whom bidding documents were issued and sent to the address or fax number on the plan holders' list. Notwithstanding the Authority's efforts to distribute addenda, bidders are responsible for ensuring that they have received all addenda affecting the Invitation to Bid.

Bidders must acknowledge all addenda received, either on the Bid Form or by fax prior to the scheduled time of bid opening. If a bidder received no addenda, the bidder shall enter "None" on the Bid Form. No claim or protest will be allowed based on the bidder's allegation that he did not receive all of the addenda for an Invitation for Bids.

### **00100.4 PREPARATION OF BID**

Bids shall only be submitted on the forms furnished by the Authority or legible copies of the Authority's forms. All entries shall be legible and in ink or type. Bidders shall:

1. Enter all prices required on the Bid Schedule, in figures;
2. Enter a unit price for each contract item for which a quantity is given;
3. Enter the products of the respective unit prices and quantities in the column provided;
4. Enter lump sum prices for lump sum contract items in the column(s) provided; and
5. Enter the total amount of all contract items for the basic bid and, when specified, any alternates.

When a bid item contains a choice to be made by the bidder, the bidder shall indicate a choice according to the Specifications for that item. No further choice is permitted.

The bid must be signed in ink by the person or persons authorized to sign the Contract for the bidder. If a bidder is a corporation, the bid must be signed by a corporate officer with authority to bind the corporation. If a bidder is

a partnership, a partner must sign. If the bidder is a joint venture, each principal member must sign. If a bidder is a sole proprietorship, the owner must sign. Each person signing the bid must initial any changes made to entries on the bid forms.

The bid must include the original documents used to prepare the bid in a separate envelope in accordance with the instructions below.

#### **00100.5 BID GUARANTY**

Bids shall be accompanied by a bid guaranty in the amount specified on the Invitation to Bid. The guaranty shall be unconditionally payable to the Authority and shall be in the form of an acceptable Bid Bond (Form 25D-14), or a certified check, cashier's check, or money order.

The surety of a Bid Bond may be any corporation or partnership authorized to do business in Alaska as an insurer under AS 21.09. A legible power of attorney shall be included with each Bid Bond.

An individual surety will not be accepted as a bid guaranty.

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

#### **100.6 DELIVERY OF BIDS**

Bids shall be submitted in a sealed envelope that clearly indicates its contents and the designated address, as shown on the Invitation to Bid. Bids for other work may not be included in the envelope. Electronic or faxed bids will not be considered, unless specifically called for in the Invitation to Bid.

#### **00100.7 WITHDRAWAL OR REVISION OF BIDS**

Bidders may withdraw or revise a bid in writing delivered by mail or by fax, provided that the designated office receives the withdrawal or revision before the time set for opening of bids.

Revisions 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.

#### **00100.8 RECEIPT AND OPENING OF BIDS**

Bids will be opened and read publicly at the time and place indicated in the Invitation to Bid. The Authority is not responsible for prematurely opening or failing to open bids that are improperly addressed or identified.

The Authority reserves the right to waive any technicality in bids received when such waiver is in the interest of the Authority.

#### **00100.9 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.

#### **00100.10 BIDDERS INTERESTED IN MORE THAN ONE BID**

If more than one bid is offered by any one party, by or in the name of its 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.



### **00100.11 NON-RESPONSIVE BIDS**

A bid shall be rejected as non-responsive if it:

1. Is not properly signed by an authorized representative of the bidder in ink and in a legally binding manner;
2. Contains unauthorized additions, conditional or alternative bids, or other irregularities that make the bid incomplete, indefinite, or ambiguous;
3. Includes a reservation of the right to accept or reject any award, or to enter into a contract pursuant to an award;
4. Fails to include an acceptable bid guaranty with the bid;
5. Is materially unbalanced; or
6. Fails to meet any other material requirement of the Invitation to Bid.

A bid may be rejected as non-responsive, in the Authority's discretion, if it:

1. Is not typed or completed in ink;
2. Fails to include an acknowledgement of receipt of each addendum by assigned number and date of issue; or
3. Is missing a bid price for any pay item, except when alternate pay items are authorized.

### **00100.12 REJECTION OF BIDS**

The Authority reserves the right to reject any and all bids when such rejection is in the best interest of the Authority: 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 Procurement 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.

### **00100.13 CONSIDERATION OF BIDS**

After the Bids are opened and read, they will be compared on the basis of the base bid and any or all additive alternates 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 bid the low Bidder will be identified by the Authority by telephone and in writing. If the low Bidder differs from the apparent low Bidder then the requirements for Subcontractor listing, as noted above, shall become effective upon the low Bidder at the time of identification.

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

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

If a Contract is awarded to a Bidder who violates this section, the Bidder agrees that the Procurement 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 Procurement Officer to be nonresponsive."

#### **00100.14 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 previous experience in performing comparable work, the business and technical organization, financial resources, and equipment and suppliers available to be used in performing the contemplated work.

Bidders either directly or through their suppliers and subcontractors must clearly demonstrate they have construction experience building the type of job describe in this invitation to bid document in small rural communities in Alaska, and can demonstrate an understanding of the logistics and issues related to working in rural Alaska. Bidders who fail to adequately demonstrate meeting these requirements may be determined to be non-responsible and their bid may be rejected.

#### **00100.15 RESPONSIBILITY OF BIDDERS**

The Authority may find a bidder is non-responsible for any one of the following reasons, but is not limited in its responsibility analysis to the following factors:

1. Evidence of bid rigging or collusion;
2. Fraud or dishonesty in the performance of previous contracts;
3. More than one bid for the same work from an individual, firm, or corporation under the same or different name;
4. Unsatisfactory performance on previous or current contracts;
5. Failure to pay, or satisfactorily settle, all bills due for labor and material on previous contracts;
6. Uncompleted work that, in the judgment of the Authority, might hinder or prevent the bidder's prompt completion of additional work, if awarded;
7. Failure to reimburse the state for monies owed on any previous contracts;
8. Default under previous contracts;
9. Failure to submit evidence of registration and licensing;
10. Failure to comply with any qualification requirements of the Authority;
11. Engaging in any activity that constitutes a cause for debarment or suspension under the State Procurement Code (AS 36.30) or submitting a bid during a period of debarment;
12. Failure to satisfy the responsibility standards set out in state regulations;
13. Lack of qualifications, skill, ability, financial resources, or equipment required to perform the contract; or
14. Lack of legal capacity to contract.

Nothing contained in this section deprives the Authority of its discretion in determining the lowest responsible bidder.

### **00100.16 PROTEST OF INVITATION TO BID**

An interested party may protest an Invitation to Bid in accordance with **3 AAC 108.910. Protests**. Protests must be submitted to the Procurement Officer in writing and include the following information:

1. the name, address, and telephone number of the protester;
2. the signature of the protester or the protester's representative;
3. identification of the Authority and the solicitation or contract at issue;
4. a detailed statement of the legal and factual grounds of the protest, including copies of relevant documents; and
5. the form of relief requested.

A protest based on alleged improprieties or ambiguities in a solicitation must be filed at least 10 days before the due date of the bid.

### **00100.17 NOTICE OF INTENT TO AWARD THE CONTRACT**

The Notice of Intent to 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 14 calendar days after opening of bids.

All Bidders will be notified of the Authority's intent to award the Contract. The successful bidder will be notified of the Authority's requested to execute certain documents.

### **00100.18 PROTEST OF AWARD**

A protest based upon alleged improprieties in an award of a contract or a proposed award of a contract must be filed within 10 days after a Notice of Intent to Award is issued by the Procurement Officer in accordance with **3 AAC 108.910. Protests**. Damages are limited to reasonable bid or bid preparation costs.

Protests must be submitted to the Procurement Officer in writing and include the following information:

1. the name, address, and telephone number of the protester;
2. the signature of the protester or the protester's representative;
3. identification of the Authority and the solicitation or contract at issue;
4. a detailed statement of the legal and factual grounds of the protest, including copies of relevant documents; and
5. the form of relief requested.

### **00100.19 AWARD OF CONTRACT**

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 Notice of 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.

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## **00120 Required Documents**

### **00120.1 Required For Bid:**

By signature on the bid, Bidder's certify they agree to all the Federal Terms and Conditions. Bids will be considered nonresponsive if the following documents are not completely filled out and submitted at the time of bidding:

- 1. Bid Schedule (2-pages)**
- 2. Bid Guaranty**
- 3. Bid Modification** (Only to be submitted as Bidder deems necessary.)
- 4. Debarment Certification**

### **00120.2 Required After Notice Of Intent To Award:**

The apparent successful bidder is required to complete and submit the following document within 5 working days after receipt of the Notice of Intent to Award:

- 1. Subcontractor List**
- 2. Contractor Questionnaire** including resumes of Contractor Key Personnel and Organization Chart for the project

### **00120.3 Required for Contract 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 Notice of Intent to Award:

- 1. Construction Contract**
- 2. Payment Bond**
- 3. Performance Bond**
- 4. Certificate of Insurance**  
(from carrier, listing Alaska Energy Authority and the City of Shishmaref as additional insured, and referencing the Contract number and name.)
- 5. Notice of Work required by Department of Labor**
- 6. Construction Schedules**

### **00120.4 Construction Closeout**

In order to complete the Contract, the successful Bidder must completely fill out and submit the following document to closeout and receive final payment:

- 1. Complete Construction Closeout Release**

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**Bid Schedule  
Shishmaref Bulk Fuel Upgrade**

<b>Item</b>	<b>Description</b>	<b>Quant.</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Extended Total Amount</b>
1	Mobilization / Demobilization	1	LS	\$	\$
2	Bulk Fuel Tank Farm Civil Site Work	1	LS	\$	\$
3	Bulk Fuel Tank Farm, Dual Product Header and Fill Pipelines, Retail and Fleet Dispensers	1	LS	\$	\$
4	Spill Response Equipment	1	LS	\$	\$
5	Decommission and Dispose of Existing Pipelines	1	LS	\$	\$
6	Decommission Existing City and Native Store Tank Farms	1	LS	\$	\$
7	Manifesting, Transport, and Disposal of RCRA Hazardous Waste	15	EA	\$	\$
8	Transport, and Disposal of State Regulated Non - Hazardous Waste	15	EA	\$	\$
9	Excavation and Handling of Petroleum Contaminated Soil	1	Contingent Sum	\$50,000	\$
<b>Total Base Bid, Sum of Items 1-9 Above</b>					
A	Additive Alternate A: Water Treatment Plant Fuel System Upgrades	1	LS	\$	\$
B	Additive Alternate B: Dispose of Decommissioned Tanks	1	LS	\$	\$
<b>Total Sum of Base Bid and Additive Alternates</b>					\$



**BID BOND**  
 Invitation to Bid 16004  
 Bulk Fuel Upgrade Project

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 Alaska Energy Authority (Authority), 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 for Bids therefore, and is required to furnish a bond in the amount stated above.

If the Principal's bid is accepted and he is offered the proposed contract for award, and if the Principal fails to enter into the contract, then the obligation to the Authority 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)**



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

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

<b>Surety C</b>	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.



## BID MODIFICATION

Invitation to Bid 16004  
Bulk Fuel Upgrade Project

Modification Number: \_\_\_\_\_

Note: All revisions shall be made to the unadjusted bid amount(s).  
Changes to the adjusted bid amounts will be computed by the Authority.

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

TOTAL REVISION: + / - \$ \_\_\_\_\_

\_\_\_\_\_  
Name of Bidding Firm

\_\_\_\_\_  
Responsible Party Signature

\_\_\_\_\_  
Date

Duplicate this form if additional pages are needed.

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**ALASKA INDUSTRIAL DEVELOPMENT AND EXPORT AUTHORITY  
AND ALASKA ENERGY AUTHORITY**

**CERTIFICATION OF CONTRACTOR AND LOWER-TIER PARTICIPANTS  
REGARDING DEBARMENT, SUSPENSION, AND OTHER INELIGIBILITY AND  
VOLUNTARY EXCLUSION**

Contractor

*PLEASE INSERT YOUR COMPANY'S NAME AND ADDRESS IN THIS BOX*

I, \_\_\_\_\_ hereby certify on behalf  
(Name and title of official)

of \_\_\_\_\_ that:  
(Name of contractor)

- (1) The prospective contractor and lower tier participant certifies, by submission of this bid or proposal, that neither it nor its "principals" [as defined at 49 C.F.R. § 29.105(p)] is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. In the event, your company or any principals become ineligible from participating in federally funded transactions, you are required to notify us immediately.
- (2) When the prospective contractor and lower tier participant is unable to certify to the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Executed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

By: \_\_\_\_\_

(Signature of authorized official)

\_\_\_\_\_  
(Title of authorized official)

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# CONTRACTOR'S QUESTIONNAIRE

Bulk Fuel Upgrade Project, on behalf of The City of Shishmaref Alaska

## A. FINANCIAL

1. Have you ever failed to complete a contract due to insufficient resources?

[ ] No [ ] Yes If YES, explain: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

2. Describe any arrangements you have made to finance this work: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## B. EQUIPMENT

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

ITEM	QUAN.	MAKE	MODEL	SIZE/ CAPACITY	PRESENT MARKET VALUE

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

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

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

---

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---

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

---

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**C. EXPERIENCE**

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

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

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2. List, as an attachment to this questionnaire, other construction projects you have completed, specifically projects in small communities in rural Alaska; the dates of completion; scope of work; and total contract amount for each project completed in the past 12 months. Also include résumé's of Key Personnel and an Organization Chart for the Project and any plans for recruiting or hiring local labor.

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

\_\_\_\_\_  
Name of Contractor

\_\_\_\_\_  
Name and Title of Person Signing

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**SUBCONTRACTOR'S LIST**

**Bulk Fuel Upgrade Project, on behalf of The City of Shishmaref Alaska**

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 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

I hereby certify that the listed licenses and registrations were valid at the time bids were received for this project. For contracts involving Federal-aid funding, Alaska Business License and Contractor Registration will be required prior to award of a subcontract.

\_\_\_\_\_  
Signature of Authorized Company Representative

\_\_\_\_\_  
Title

\_\_\_\_\_  
Company Name

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

\_\_\_\_\_  
Date

( )  
\_\_\_\_\_  
Phone Number







**CONSTRUCTION CONTRACT 16004**  
**Bulk Fuel Upgrade Project**  
*Sample*

**Project Name and Number**

This CONTRACT, between the Alaska Energy Authority (the Authority), acting as an agent for the **City of Shishmaref, Alaska**, and

*[SAMPLE]*

**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 Authority, 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: **October 13, 2017**. 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 Department shall have the right to recover **Five hundred dollars and no cents (\$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**



Bond No. \_\_\_\_\_

### PERFORMANCE BOND

For

**Bulk Fuel Upgrade Project, on behalf of The City of Shishmaref Alaska / 16004**

\_\_\_\_\_  
**Project Name and Number**

KNOW ALL WHO SHALL SEE THESE PRESENTS:

That \_\_\_\_\_  
of \_\_\_\_\_ as Principal,  
and \_\_\_\_\_  
of \_\_\_\_\_ as Surety,  
firmly bound and held unto the Authority 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 Authority, 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 Authority, on the \_\_\_\_\_ of \_\_\_\_\_, 20\_\_\_\_\_, for construction of the above-named project, said work to be done according to the terms of said contract.

Now, THEREFORE, the conditions of the foregoing obligation are such that if the said Principal shall well and truly perform and complete all obligations and work under said contract and if the Principal shall reimburse upon demand of the 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 \_\_\_\_\_, 20\_\_\_\_\_.

**Principal:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**By:** \_\_\_\_\_  
**Contact Name:** \_\_\_\_\_  
**Phone:** (    ) \_\_\_\_\_

**Surety:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**By:** \_\_\_\_\_  
**Contact Name:** \_\_\_\_\_  
**Phone:** (    ) \_\_\_\_\_

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

\_\_\_\_\_  
**Alaska Energy Authority Authorized Representative** \_\_\_\_\_ **Date**

See Instructions on Reverse

## **INSTRUCTIONS**

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



Bond No. \_\_\_\_\_

# PAYMENT BOND

For

**Bulk Fuel Upgrade Project, on behalf of The City of Shishmaref Alaska / 16004**

\_\_\_\_\_  
**Project Name and Number**

KNOW ALL WHO SHALL SEE THESE PRESENTS:

That \_\_\_\_\_  
of \_\_\_\_\_ as Principal,  
and \_\_\_\_\_  
of \_\_\_\_\_ as Surety,  
firmly bound and held unto the Authority 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 Authority, 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 Authority, on the \_\_\_\_\_ of \_\_\_\_\_, 20\_\_\_\_\_, for construction of the above-referenced project, said work to be done according to the terms of said contract.

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

IN WITNESS WHEREOF, we have hereunto set our hands and seals at \_\_\_\_\_, \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

**Principal:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**By:** \_\_\_\_\_

**Contact Name:** \_\_\_\_\_

**Phone:** (     ) \_\_\_\_\_

**Surety:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**By:** \_\_\_\_\_

**Contact Name:** \_\_\_\_\_

**Phone:** (     ) \_\_\_\_\_

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

\_\_\_\_\_  
**Alaska Energy Authority Authorized Representative**

\_\_\_\_\_  
**Date**

See Instructions on Reverse

## INSTRUCTIONS

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

# REQUEST FOR INTERPRETATION

---

Project: \_\_\_\_\_ R.F.I. Number: \_\_\_\_\_  
\_\_\_\_\_  
To: \_\_\_\_\_ From: \_\_\_\_\_  
\_\_\_\_\_  
Re: \_\_\_\_\_ Date: \_\_\_\_\_  
\_\_\_\_\_ A/E Project Number: \_\_\_\_\_  
\_\_\_\_\_ Contract For: \_\_\_\_\_

---

Specification Section: Paragraph: Drawing Reference: Detail:

---

Request:

Signed by:

Date:

---

Response:

Attachments

---

Response From: To: Date Rec'd: Date Ret'd:

---

Signed by:

Date:

---

Copies:  Owner  Consultants  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  File



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# SUBMITTAL TRANSMITTAL

Project: \_\_\_\_\_ Date: \_\_\_\_\_  
 \_\_\_\_\_ A/E Project Number: \_\_\_\_\_

**TRANSMITTAL** To (Contractor): \_\_\_\_\_ Date: \_\_\_\_\_ Submittal No. \_\_\_\_\_  
**A** From (Subcontractor): \_\_\_\_\_ By: \_\_\_\_\_  Resubmission

Qty.	Reference / Number	Title / Description / Manufacturer	Spec. Section Title and Paragraph / Drawing Detail Reference

- |  |   |
|--|---|
| <input type="checkbox"/> Submitted for review and approval                 | <input type="checkbox"/> Substitution involved - Substitution request attached  |
| <input type="checkbox"/> Resubmitted for review and approval               | <input type="checkbox"/> If substitution involved, submission includes point-by-point comparative data or preliminary details |
| <input type="checkbox"/> Complies with contract requirements               | <input type="checkbox"/> Items included in submission will be ordered immediately upon receipt of approval                    |
| <input type="checkbox"/> Will be available to meet construction schedule   |   |
| <input type="checkbox"/> A/E review time included in construction schedule |   |

Other remarks on above submission: \_\_\_\_\_  One copy retained by sender

**TRANSMITTAL** To (A/E): \_\_\_\_\_ Attn: \_\_\_\_\_ Date Rec'd by Contractor: \_\_\_\_\_  
**B** From (Contractor): \_\_\_\_\_ By: \_\_\_\_\_ Date Trnsmt'd by Contractor: \_\_\_\_\_

- |  |  |
|--|--|
| <input type="checkbox"/> Approved          | <input type="checkbox"/> Revise / Resubmit   |
| <input type="checkbox"/> Approved as noted | <input type="checkbox"/> Rejected / Resubmit |

Other remarks on above submission: \_\_\_\_\_  One copy retained by sender

**TRANSMITTAL** To (Contractor): \_\_\_\_\_ Attn: \_\_\_\_\_ Date Received by A/E: \_\_\_\_\_  
**C** From (A/E): \_\_\_\_\_  Other By: \_\_\_\_\_ Date Transmitted by A/E: \_\_\_\_\_

- |   |  |
|---|--|
| <input type="checkbox"/> Approved                     | <input type="checkbox"/> Provide file copy with corrections identified                         |
| <input type="checkbox"/> Approved as noted            | <input type="checkbox"/> Sepia copies only returned  |
| <input type="checkbox"/> Not subject to review        |  |
| <input type="checkbox"/> No action required           | <input type="checkbox"/> Point-by-point comparative data required to complete approval process |
| <input type="checkbox"/> Revise / Resubmit            |  |
| <input type="checkbox"/> Rejected / Resubmit          | <input type="checkbox"/> Submission Incomplete / Resubmit                                      |
| <input type="checkbox"/> Approved as noted / Resubmit |  |

Other remarks on above submission: \_\_\_\_\_  One copy retained by sender

**TRANSMITTAL** To (Subcontractor): \_\_\_\_\_ Attn: \_\_\_\_\_ Date Received by Contractor: \_\_\_\_\_  
**D** From (Contractor): \_\_\_\_\_ By: \_\_\_\_\_ Date Transmitted by Contractor: \_\_\_\_\_

Copies:  Owner  Consultants  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  One copy retained by sender

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# CHANGE ORDER REQUEST (PROPOSAL)

Project: \_\_\_\_\_ Change Order Request Number: \_\_\_\_\_  
\_\_\_\_\_  
From (Contractor): \_\_\_\_\_  
To: \_\_\_\_\_ Date: \_\_\_\_\_  
\_\_\_\_\_  
A/E Project Number: \_\_\_\_\_  
Re: \_\_\_\_\_ 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 proposed modifications to the Contract Documents based on Proposal Request No. \_\_\_\_\_.

Description of Proposed Change:

Attached supporting information from:  Subcontractor  Supplier  \_\_\_\_\_  \_\_\_\_\_

Reason For Change:

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

Attached pages:  Proposal Worksheet Summary: \_\_\_\_\_  
 Proposal Worksheet Detail(s): \_\_\_\_\_

Signed by: \_\_\_\_\_ Date: \_\_\_\_\_

Copies:  Owner  Consultants  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  File

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The Alaska Energy Authority

Contractor's Release

Issue Date: \_\_\_\_\_  
 Project No.: \_\_\_\_\_  
 Contract No.: \_\_\_\_\_

**Project Name:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
**Located at;** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Contract Compensation Summary	
<b>Final Amount:</b>	_____
Less Liquidated Damages:	_____
<b>Total Final Sum:</b>	_____
Less previous payments <b>OR</b>	
Estimate(s), 1 through _____	
Totaling:	_____
<b>Final Payment Due:</b>	_____

Pursuant to the terms of the written contract dated \_\_\_\_\_, \_\_\_\_\_, for the construction of \_\_\_\_\_, Project Number(s) \_\_\_\_\_, and in consideration of the total final sum of \_\_\_\_\_ Dollars ( \_\_\_\_\_ ) which has been or is to be paid under the said contract to (Contractor's Name)

located at \_\_\_\_\_ (hereinafter called the Contractor) or its assignees, if any, the Contractor, upon payment of the said sum by the Alaska Energy Authority (AEA) , does remise, release and discharge the AEA, its officers, agents and employees, of and from all liabilities, obligations, claims, and demands whatsoever under or arising from said contract, whether known or unknown and whether or not ascertainable at the time of the execution of this instrument except specified claims in stated amounts or in estimated amounts where the amounts are not susceptible of exact statement by the Contractor, as follows:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

The Contractor agrees, in connection with the claims which are not released as set forth above, that (s)he will comply with all of the provisions of the said contract, including without limitation those provisions relating to notification of the Contracting Officer and relating to the prosecution of claims.

IN WITNESS WHEREOF, this release has been executed this \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
 Witness

\_\_\_\_\_  
 Contractor:

\_\_\_\_\_  
 Witness

By: \_\_\_\_\_

Title: \_\_\_\_\_

(NOTE: In the case of a corporation, witnesses are not required, but certificate on reverse Side must be completed by a corporate officer other than the one who signs above.)

**CERTIFICATE**

I, \_\_\_\_\_, certify that I am the \_\_\_\_\_  
Name Official Title  
of the corporation named as Contractor in the foregoing release; that \_\_\_\_\_  
Name  
who signed said release on behalf of the Contractor was then \_\_\_\_\_  
Official Title  
of said corporation; that said release was duly signed for and in behalf of said corporation by authority of  
its governing body and is within the scope of its corporate powers.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name

IN WITNESS WHEREOF,  
I have set my hand and affixed my official seal this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

My Commission Expires: \_\_\_\_\_  
Notary Public

**ALASKA ENERGY AUTHORITY  
SECTION 00700  
GENERAL CONDITIONS**

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



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

ARTICLE 7 LAWS AND REGULATIONS

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

ARTICLE 8 OTHER WORK

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

ARTICLE 9 CHANGES

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

9.10 Interim Work Authorization

ARTICLE 10 CONTRACT PRICE; COMPUTATION AND CHANGE

- 10.1 Contract Price
- 10.2 Claims for Price Change
- 10.3 Change Order Price Determination
- 10.4 Cost of the Work
- 10.5 Excluded Costs
- 10.6 CONTRACTOR's Fee
- 10.7 Cost Breakdown
- 10.8 Cash Allowances
- 10.9 Unit Price Work
- 10.10 Determinations for Unit Prices

ARTICLE 11 CONTRACT TIME, COMPUTATION AND CHANGE

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

ARTICLE 12 QUALITY ASSURANCE

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

ARTICLE 13 PAYMENTS TO CONTRACTOR AND COMPLETION

- 13.1 Schedule of Values
- 13.2 Preliminary Payments
- 13.3 Application for Progress Payment
- 13.4 Review of Applications for Progress Payments
- 13.5 Stored Materials and Equipment
- 13.6 CONTRACTOR's Warranty of Title
- 13.7 Withholding of Payments
- 13.8 Retainage
- 13.9 Request for Release of funds
- 13.10 Substantial Completion
- 13.11 Access Following Substantial Completion
- 13.12 Final Inspection
- 13.13 Final Completion and Application for Payment
- 13.14 Final Payment

- 13.15 Final Acceptance
- 13.16 CONTRACTOR's Continuing Obligation
- 13.17 Waiver of Claims by CONTRACTOR
- 13.18 No Waiver of Legal Rights

ARTICLE 14 SUSPENSION OF WORK AND TERMINATION

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

ARTICLE 15 CLAIMS AND DISPUTES

- 15.1 Notification
- 15.2 Presenting Claim
- 15.3 Claim Validity, Additional Information & Authority's Action
- 15.4 Contracting Officer's Decision
- 15.5 Appeals on a Contract Claim
- 15.6 Construction Contract Claim Appeal
- 15.7 Fraud and Misrepresentation in Making a Claim

## **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 I of the Specifications which contain administrative and procedural requirements as well as requirements for temporary facilities which apply to Specification Divisions 2 through I6.

**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 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 Superintendence by CONTRACTOR:**

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

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

### **6.3 Character of Workers:**

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

#### **6.4 CONTRACTOR to Furnish:**

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

#### **6.5 Materials and Equipment:**

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

#### **6.6 Anticipated Schedules:**

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

6.6.2 Prior to submitting the CONTRACTOR's first Application for Payment, the CONTRACTOR shall submit to the Project Manager for review:

Anticipated schedule of Shop Drawing submissions; and

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

#### **6.7 Finalizing Schedules:**

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

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

## **6.8 Adjusting Schedules:**

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

## **6.9 Substitutes or "Or-Equal" Items:**

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

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

#### **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' "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 is 00800, Supplementary Conditions.

**11.4 Time Change:**

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

**11.5 Extension Due to Delays:**

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

## **11.6 Essence of Contract:**

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

## **11.7 Reasonable Completion Time:**

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

## **11.8 Delay Damages:**

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

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

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

For each calendar day that the work remains incomplete after the expiration of the Contract Time, liquidated damages in the amount as stated in 00800, Supplemental Conditions shall be assessed to the CONTRACTOR. If no money is due the CONTRACTOR, the AUTHORITY shall have the right to recover said sum from the CONTRACTOR, the surety or both. The amount of these deductions is to reimburse the AUTHORITY for estimated liquidated damages incurred as a result of the CONTRACTOR's failure to complete the work within the time specified. As liquidated damages, such deductions are not to be considered as penalties.

Permitting the CONTRACTOR to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the AUTHORITY of any of its rights under the Contract.

## **ARTICLE 12 - 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 I2.9.
- 13.7.4 The AUTHORITY's actual knowledge of the occurrence of any of the events enumerated in paragraphs I4.2.1.a through I4.2.1.k inclusive.
- 13.7.5 Claims have been made against the AUTHORITY or against the funds held by the AUTHORITY on account of the CONTRACTOR's actions or inactions in performing this Contract, or there are other items entitling the AUTHORITY to a set off.
- 13.7.6 Subsequently discovered evidence or the results of subsequent inspections or test, nullify any previous payments for reasons stated in subparagraphs 13.7.l through 13.7.5.
- 13.7.7 The CONTRACTOR has failed to fulfill or is in violation of any of his obligations under any provision of this Contract.

**13.8 Retainage:**

At any time the AUTHORITY finds that satisfactory progress is not being made it may in addition to the amounts withheld under 13.7 retain a maximum amount equal to 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.I, 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) 01650, 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 procurement costs. Following termination the CONTRACTOR shall not be entitled to receive any further balance of the amount to be paid under the Contract until the Work is fully finished and accepted, at which time if the unpaid balance exceeds the amount due the 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 01300**.
- 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 00800  
SUPPLEMENTAL CONDITIONS

The following Supplemental Conditions modify the General Conditions and any other referenced Contract provisions. Where any portion of the General Conditions is modified by these Supplemental Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph, of Clause shall remain in effect.

**SC 1 Project Schedule**

Invitation to Bid	May 4, 2016
Pre-bid Meeting	May 12, 2016
Bid Opening	May 25, 2016
Notice of Intent to Award on or about	May 31, 2016
Contract Award	10-days after intent to award letter
Substantial Completion date	September 22, 2017
Final Completion/Project Closeout	October 13, 2017

**SC 2 Working Hours**

Contractor will not permit the performance of Work before 7 am or after 11 pm without the Owner's written consent.

**SC 3 Liquidated Damages**

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 furnish materials and the doing and performance of the work before the date(s) stipulated in the bid schedule, 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 the amount stipulated below, such deduction to be made, or sum to be recovered, not as a penalty but as liquidated damages. The amount of liquidated damages shall be **\$500.00** per day, for each calendar day elapsing between the time stipulated for delivery and the actual date of delivery in accordance with the terms hereof.

**SC 4 Insurance, Section 5.4.2 d. of the General Conditions**

Contractor shall include Builder's at Risk Estimated Valued \$1,000,000; and Marine Cargo Carriage Insurance valued at \$530,000.

**SC 5 Wages and Compensation**

The Contractor is responsible to abide by all State wage requirements. The following links are given for reference only, Contractor to verify current status of any potential updates or modifications. Use the most recent information at time of Bid Date.

**Pamphlet 600** State of Alaska, Laborers' & Mechanics' Minimum Rates of Pay  
<http://www.labor.state.ak.us/lss/pamp600.htm> [April 2016]

Federal, Laborers' & Mechanics' Minimum Rates of Pay  
<http://www.wdol.gov/>

### **SC 6 Award**

Award shall be made to the lowest responsible and responsive Bidder in the aggregate.

### **SC 7 Offer Period**

Bids must remain valid for a period of 90-days unless otherwise specified in the Bid Schedule.

### **SC 8 Insurance and Bonding**

Reference Section 00700 General Conditions, Article 5 Contractor shall name Alaska Energy Authority (AEA) as additional insured and provide a Waiver of Subrogation. Payment and Performance in the amount of 100% are a requirement of this job.

### **SC 9 Special Damages**

A. In the event that the actions of the contractor prevent one or more project participants from taking on sufficient fuel during scheduled barge deliveries to sustain necessary operations through the winter months then the Contractor shall bear full financial responsibility for air delivery of fuel to meet the project participant needs.

B. In the event that the actions of the contractor prevent the operation of existing community retail fuel sales operations during regular business hours (Monday – Friday, 8am to 5 pm) then the contractor shall reimburse the Owner at the rate of \$1,000 per day (\$111 per operating hour) until such time as the dispensing facilities are back on line.

End of section

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

- I. General
- II. Non-discrimination
- III. Non-segregated Facilities<sup>3</sup>
- 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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**SECTION 01010**  
**SUMMARY OF WORK**

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- A. Related Requirements
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**1.02 RELATED REQUIREMENTS**

- A. Document 00700 - General Conditions: Provisions for use of site. Relations of Contractor-Subcontractors.
- B. Document 00800 - Supplementary Conditions Modifications to General Conditions (Document 00700) for this Contract.

**1.03 WORK COVERED BY CONTRACT DOCUMENTS**

- A. Work under this Contract comprises construction of new bulk fuel tank farm facilities and related fuel system upgrades, decommissioning and disposal of tanks, piping and equipment taken out of service as a result of this project, and associated activities in the community of Shishmaref Alaska in accordance with the contract drawings and specifications.
  - 1. **Basic Bid** – Provide all labor, materials and equipment required to construct Bid Items 1 through 9 as described in 1.04 Description of Bid Items below.
  - 2. **Additive Alternates** – Provide all labor, materials and equipment required to construct Additive Alternate Bid Items A through B as described in 1.04 Description of Bid Items below.

## 1.04 DESCRIPTION OF BID ITEMS

### A. Bid Item #1: Mobilization / Demobilization

1. The unit price Bid per lump sum for Mobilization/Demobilization shall include but not be limited to 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, prefabricated structures, equipment and personnel to and from the jobsite.
  - c. Erecting and maintaining all 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 01500 Construction Facilities and Temporary Controls, Section 01569 Construction Cleaning, and Section 01568 Erosion 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. Transportation of Authority provided bulk fuel tanks, catwalks, and ladders from their current location to the jobsite. Tanks and locations are as follows:
  - a. Five (5) 29,000-gallon nominal capacity, horizontal, single wall, aboveground storage tanks and one (1) 5,000-gallon nominal capacity, horizontal, dual product dispensing tank are located at:

Tidy Steel-Fab Ltd.  
44313 Progress Way  
Chilliwack, British Columbia  
V2R 0L1  
Canada  
604-793-9734
3. Mobilization/Demobilization costs for all subcontracted work shall be considered to be included.
4. Items which are not to be included in this item include but are not limited to:
  - 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.

5. 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 remaining 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.

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

**B. Bid Item #2: Bulk Fuel Tank Farm Civil Site Work**

1. The unit price Bid for Tank Farm Civil Site Work shall include but not be limited to full payment for all labor, material, transportation, freight, and equipment required to:
  - a. Complete earthwork related to the tank farm: Activities to complete this task include, removal of existing connex and equipment, all clearing and grubbing, waste disposal, dewatering, surface preparation, stockpiling, geotextile installation, soil stabilization and reinforcement, excavation, soil thawing, erosion control, culverts and drainage structures, fence and gates, and procurement, transportation, placement, compaction and finish grading of classified fill as required to construct foundation pads, access drives, and laydown areas for the bulk fuel tank farm, fleet and retail dispensers and related facilities, in accordance with the Contract Drawings and Specifications.
2. Measurement for payment shall be lump sum complete in-place.

**C. Bid Item #3: Bulk Fuel Tank Farm, Dual Product Header and Fill Pipelines, Retail and Fleet Dispensers.**

1. The unit price Bid per lump sum for Bulk Fuel Tank Farm, Dual Product Header and Fill Pipelines, Retail and Fleet Dispensers shall include but not be limited to full payment for all labor, material and equipment required to:
  - a. Construct earthen dike wall secondary containment: Activities to complete this task include, furnishing and installing local & imported fill, geotextile, liner, fence and gates, warning signs and information placards, extinguishers, drainage piping and sumps, and procurement, transportation, placement, compaction and finish grading of classified fill as required to construct a fully functional earthen dike wall secondary containment structure in accordance with the Contract Drawings and Specifications.
  - b. Install tanks, tank foundations, mechanical and electrical equipment: Activities to complete this task include, transporting and installing five (5) 29,000-gallon

nominal capacity, owner provided, horizontal, single wall, aboveground storage tanks and one (1) 5,000-gallon nominal capacity, owner provided, horizontal, dual product dispensing tank, furnishing and installing all required venting, gauging, water draw and pressure relief appurtenances, six (6) timber tank foundation systems, one steel pump cabinet and all associated pumps, piping, valves, fittings, meters, tags, light/utility poles, lighting, and electrical and mechanical controls in accordance with the Contract Drawings and Specifications.

- c. Install dual product marine header and fill pipelines serving proposed tank farm: Activities to complete this task include, all clearing and grubbing, trenching, backfill, welding, furnishing and installing all pipe, valves, fittings, supports, tags and cathodic protection components required to provide fully functional dual product marine header and tank farm fill pipeline assemblies to serve the proposed new tank farm in accordance with the Contract Drawings and Specifications.
  - d. Install single product marine header and fill pipeline serving existing School and AVEC Tank Farm Facilities: Activities to complete this task include, all clearing and grubbing, trenching, backfill, welding, furnishing and installing all pipe, valves, fittings, supports, tags and cathodic protection components required to provide fully functional single product marine header and tank farm fill pipeline assembly to serve the existing School and AVEC tank farm facilities in accordance with the Contract Drawings and Specifications.
  - e. Install retail and fleet dispensers: Activities to complete this task include, all excavation, hauling, welding, furnishing and installing all valves, fittings, meters, hose reels, nozzles, tags, steel and concrete structures, dual product dispenser, card reader, computer, video and intercom communication systems, lighting, and electrical and mechanical controls to provide fully functional retail sale and fleet dispensing facilities in accordance with the Contract Drawings and Specifications.
  - f. Maintain existing and/or establish temporary retail dispensing facilities as required to provide uninterrupted operation of the Native Stores retail fuel sales operations during normal business hours (8am to 5pm, Monday through Friday) in accordance with the Contract Drawings and Specifications.
2. Measurement for payment shall be lump sum complete in-place.

#### D. Bid Item #4: 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 within new connex van: Activities to complete this task include, the procurement of an 8-ft by 20-ft, new weather-tight connex van and all required spill response equipment listed on the Contract Drawings, packaging of the spill response equipment within the connex van, delivery, construction of shelving, installation of lighting, and placement and painting of the filled connex van in accordance with the Contract Drawings and Specifications.
2. Measurement for payment shall be lump sum complete in-place

E. Bid Item #5: Decommission and Dispose of Existing Pipelines

1. The unit price Bid for Decommission and Disposing of Existing Pipelines shall include but not be limited to full payment for all labor, material and equipment required to:
  - a. Decommission and dispose of existing above grade pipelines: Activities to complete this task include disconnecting above grade pipelines taken out of service as a result of this project, purging piping and appropriately disposing of all liquids and sludges, cutting of piping into maximum 10 ft lengths and transporting the cut pieces to the existing community landfill or, if directed by the Engineer, to a designated stockpile area located within 2 miles of the project site.
  - b. Decommission and abandon in place below grade fill pipelines: Activities to complete this task include disconnecting from above grade piping, purging piping and appropriately disposing of all liquids and sludges, capping piping below grade and abandoning in place in accordance with the Contract Drawings and Specifications.
2. Measurement for payment shall be lump sum complete in-place

F. Bid Item #6: Decommission Existing City and Native Store Tank Farms

1. The unit price Bid for Decommission Existing City and Native Store Tank Farms shall include but not be limited to full payment for all labor, material and equipment required to:
  - a. Decommission existing tanks: Activities to complete this task shall include filtering (particulate and water removal) and transferring all useable product from the tanks to be decommissioned to the appropriate new tanks or, if the tank farm is not complete, to Contractor Provided temporary storage, removing, filtering, and properly disposing of any accumulated oily water in the tanks, transfer of any accumulated sludge into new, sealed 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 connections, closing all penetrations with the exception of a vent, 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. Remove and dispose of existing dispensing equipment and enclosure: Activities to complete this task shall include decommissioning the dual product dispenser, dispenser enclosure, pumps and all related mechanical and electrical equipment taken out of service as a result of this project and transporting all equipment and related debris to the existing community landfill or, if directed by the Engineer, to a designated stockpile area located within 2 miles of the project site.
2. Measurement for payment shall be lump sum complete in-place

G. Bid Item #7: Manifesting, Transport and Disposal of RCRA Hazardous Waste

1. The unit price Bid for Manifesting, Transport and Disposal of RCRA Hazardous Waste shall include but not be limited to full payment for all labor, material and equipment required to:
  - a. Test, Label, Manifest, Transport and Dispose of sludge removed from the decommissioned 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 farm 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. Drums shall not contain significant free liquids (water/fuel).
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 #8: 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 but not be limited to full payment for all labor, material and equipment required to:
  - a. Test, label, transport and dispose of sludge removed from the decommissioned 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.

I. Bid Item #9: Excavation and Handling of Petroleum Contaminated Soil

1. The contingent sum unit price bid for Excavation and Handling of Petroleum Contaminated Soil at the existing Corporation tank farm site shall include but not be limited to full payment for all labor, material and equipment required to perform the work in accordance with Section 02084 Excavation and Handling of Contaminated Material.
2. Payment for this Bid Item will be made on a time and materials basis for authorized Work in accordance with Section 00700 Article 10.4 Cost of the Work up to the contingent sum value.

J. Additive Alternate A: Water Treatment Plant Fuel System Upgrades

1. The unit price Bid for Water Treatment Plant Fuel Upgrades shall include but not be limited to full payment for all labor, material and equipment required to:
  - a. Furnish and Install 12,000-gallon bulk tank: Activities to complete this task include, furnishing and installing one (1) 12,000-gallon nominal capacity, double wall aboveground storage tank with all required venting, gauging, water draw and pressure relief appurtenances, one (1) tank foundation system, specified fill material, fence and gates, warning signs and information placards, fire extinguishers, and all associated pumps, piping, hose reels, nozzles, valves, fittings, tags, lighting, and electrical and mechanical controls in accordance with the Contract Drawings and Specifications.
  - b. Install 3-inch above grade fill pipeline: Activities to complete this task include, all clearing and grubbing, welding, furnishing and installing all valves, fittings, tags and electrical components required to provide a fully functional steel tank farm fill pipeline between the proposed tank and the existing diesel barge fill pipeline in accordance with the Contract Drawings and Specifications.
  - c. Install new 500-gallon stand supported aboveground storage tank: Activities to complete this task include, furnishing and installing one (1) 500-gallon nominal capacity, aboveground storage tank and containment stand adjacent to the existing washeteria building complete with all required fill & draw piping, venting, gauging, water draw, pressure relief and level sensing appurtenances, warning signs and information placards, fence and gates, fire extinguishers, and all associated pumps, piping, valves, fittings, tags, lighting, and electrical and mechanical controls in accordance with the Contract Drawings and Specifications.
  - d. Connect to proposed 500-gallon above ground storage tank: Activities to complete this task include, furnishing and installing all pipe, welding, pipe supports, valves, fittings, tags and electrical components required to provide a fully functional 2-inch welded steel above grade fill pipeline between the proposed 12,000-gallon tank and the proposed 500-gallon above ground storage tank located adjacent to the Water Treatment Plant.
  - e. Decommission existing water treatment plant tanks: Activities to complete this task shall include visual inspection, filtering (particulate and water removal) and transferring all useable product from the tanks taken out of service as a result of this bid item to the appropriate new tanks or, if the new tank farms are not complete, to Contractor provided temporary storage, removing, filtering, and properly disposing of any accumulated oily water in the tanks, transfer of any accumulated sludge into new sealed 55-gallon steel barrels, cleaning the inside of the tanks, disposing of all rinsate and other waste materials generated during cleaning of the tanks, disconnecting and blanking off all piping connected to the tanks, closing all penetrations with the exception of a vent, 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.
2. Measurement for payment shall be lump sum complete in-place.



K. Additive Alternate B: Dispose of Decommissioned Tanks

1. The unit price Bid for Disposing of Decommissioned Tanks shall include but not be limited to full payment for all labor, material and equipment required to:
  - a. Dispose of Decommissioned Tanks: Activities to complete this task include cutting all decommissioned tanks into maximum 8ft by 10 ft pieces and transporting the cut pieces to the existing community landfill or, if directed by the Engineer, to a designated stockpile area located within 2 miles of the project site in accordance with the Contract Drawings and Specifications.
2. Measurement for payment shall be lump sum complete in-place

**1.05 CONTRACT METHOD**

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

**1.06 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 AUTHORITY to minimize conflicts.
- B. Notify the Authority immediately if conflicts will interfere with the progress of the work.

**1.07 SHUTOFFS / DISRUPTIONS TO SERVICE**

- A. No disruptions in retail fuel sales or electric power generation will be allowed.
- B. Work with the service provider to schedule any other disruptions for a time which minimizes impact on facility operations. Provide not less than 72 hours' notice to owner/operator of affected systems.

**1.08 CONTRACTOR'S USE OF PREMISES**

- A. Coordinate staging area with Owner prior to placing equipment or supplies at the project site. 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 and the Authority 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.

**1.09 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.

#### **1.10 ACCESS FOR TESTING AND INSPECTION**

- A. Provide access for AUTHORITY 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 01020

### INTENT OF DOCUMENTS

#### PART 1 - GENERAL

##### 1.01 REQUIREMENTS INCLUDED

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

##### 1.02 RELATED REQUIREMENTS

- A. Document 00700 - General Conditions

##### 1.03 SPECIFICATION FORMAT AND COMPOSITION

- A. Specifications are divided into Divisions and Sections for the convenience of writing and using. Titles are not intended to imply a particular trade jurisdiction. 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.

#### **1.04 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.

#### **1.05 COMMON TERMINOLOGY**

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

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

#### **1.06 CONFLICTS**

- ##### **A. Report any conflicts to Authority for clarification.**

**PART 2 – PRODUCTS**

Not Used

**Part 3 – EXECUTION**

Not Used

**END OF SECTION**

## **SECTION 01027**

### **APPLICATIONS FOR PAYMENT**

#### **PART 1 - GENERAL**

##### **1.01 REQUIREMENTS INCLUDED**

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

##### **1.02 RELATED REQUIREMENTS**

- A. Document 00700 - General Conditions: Article 13, Progress Payments, and Final Payment.
- B. Document 00800 – Supplementary Conditions.
- C. Section 01300 - Submittals: Submittal procedures.
- D. Section 01370 - Schedule of Values.
- E. Section 01701 - Contract Closeout Procedures: Final Payment.
- F. Section 01720 – Project Record Documents.

##### **1.03 FORMAT**

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

##### **1.04 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. Prepare Application for Final Payment as specified in Section 01701.

##### **1.05 SUBMITTAL PROCEDURES**

- A. Submit three copies of each Application for Payment at times stipulated in Contract.

- B. Submit under AUTHORITY accepted transmittal letter. See Section 01370 - Schedule of Values. Identify contract by AUTHORITY contract number.

**1.06 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. Show Application number and date, and line item by number and description.

**1.07 SUBMITTALS WITH APPLICATION FOR PAYMENT**

- A. Submit the following with each Application for Payment.
  - 1. Updated construction schedule as required by Section 01300 - Submittals.
  - 2. Updated Schedule of Values as required by Section 01370 - Schedule of Values.
  - 3. A minimum of 6 electronic photos showing progress for the pay period. Each photo shall be labeled identifying the subject matter and date.
  - 4. Evidence of transmittal of certified payrolls.
  - 5. A copy of all survey field notes and evidence that the Project Record Documents are current and in required condition.

**PART 2 – PRODUCTS**

Not Used

**Part 3 – EXECUTION**

Not Used

**END OF SECTION**

## **SECTION 01028**

### **CHANGE ORDER PROCEDURES**

#### **PART 1 - GENERAL**

##### **1.01 REQUIREMENTS INCLUDED**

- A. Procedures for processing Change Orders.

##### **1.02 RELATED REQUIREMENTS**

- A. Bid Schedule: Total amount bid for lump sum items
- B. Construction Contract: Total amount of Contract Price, as awarded
- C. Document 00700 - General Conditions: Article 9, Governing requirements for changes in the Work, in Contract Price, and Contract Time.
- D. Document 00800 - Supplementary Conditions: Modifications to Document 00700 - General Conditions.
- E. Section 01027 - Applications for Payment.
- F. Section 01300 - Submittals: Progress Schedules.
- G. Section 01370 - Schedule of Values.
- H. Section 01630 – Product Options and Substitutions.
- I. Section 01700 – Contract Closeout: Project Record Documents.

##### **1.03 SUBMITTALS**

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

##### **1.04 DOCUMENTATION OF CHANGE IN CONTRACT PRICE AND CONTRACT TIME**

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



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

#### **1.05 PRELIMINARY PROCEDURES**

- A. 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.

#### **1.06 CONSTRUCTION CHANGE AUTHORIZATION**

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

#### **1.07 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 Document 00700 – General Conditions
- C. These terms shall also apply to the proposals of subcontracts and allowances.

#### **1.08 UNIT PRICE CHANGE ORDER**

- A. For pre-determined Unit Prices and quantities, Change Order will be executed on a lump sum basis.

- B. For 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.

#### **1.09 COST OF THE WORK CHANGE ORDER**

- A. CONTRACTOR shall submit documentation required in Paragraph 1.04 of this Section on a daily basis for certification by the Authority. The 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 the AUTHORITY, the CONTRACTOR shall submit in final form an itemized account with support data of all costs. Support data shall have been certified by the 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 subschedules to adjust times for other items of Work affected by the change, and resubmit.
- C. Promptly enter changes in project record documents.

### **PART 2 - PRODUCTS**

Not Used

### **PART 3 - EXECUTION**

Not Used

**END OF SECTION**

**SECTION 01030**  
**CONSTRUCTION SURVEYING**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. This section is intended to establish a standard minimum level of acceptable field survey specifications and procedures to properly control the construction project.

**1.02 RELATED SECTIONS**

- A. Section 1720 - Project Record Documents

**1.03 SCOPE OF WORK**

- A. 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.
- B. 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 Engineer prior to its use.
- C. All survey work performed shall be under the direct supervision of a Professional Land Surveyor registered in the State of Alaska.

**PART 2 – PRODUCTS**

Not Used

**PART 3 – EXECUTION**

**3.01 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 Engineer shall be notified immediately. The Contractor is responsible for preserving and protecting all line stakes, grade stakes, reference points, and hubs. 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. All monumentation disturbed or removed shall be replaced with the same type of monument or a monument approved by the Engineer.
- 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" signifies the number of transit setups in the traverse and "30" signifies 30 seconds.

### C. 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 (0.1 feet multiplied by the square root of the distance in miles). 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 shall be used when establishing TBMs to verify correct elevation information. A sufficient number of TBMs shall be set to control the project with a maximum spacing of 800 feet. A TBM shall not be located further than 200 feet outside the construction limits of the project. All TBMs shall be located and be comprised of sufficient material such that their integrity will not be compromised throughout the life of the project.

### 3.02 FIELD NOTES

- A. The Contractor shall supply uniform, hard backed, write in rain survey field books. The Owner 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 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 owner upon completion of the work.
- B. All observations shall be recorded directly into project field books. All field books shall be in pencil. All field notes and drawings shall be completed and reduced before acceptance by the Owner. Control sketches and traverse data shall be graphic and show measured and recorded distances. 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 owner 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 Engineer by 12:00 PM the following workday. The Engineer 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 Engineer.

### 3.03 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. The diary shall contain the following information: date, crew,

type and location of work performed, work accomplished, orders from the Engineer and signature.

- B. This record shall be kept on the project site and submitted to the Engineer upon request. A copy of the diary shall be submitted to the Owner upon completion of the project.

### **3.04 CLEARING AND GRUBBING LIMITS**

- A. The Contractor shall stake the clearing and grubbing limits as required to accomplish all work as shown on the Contract Drawings and as directed and approved by the Engineer. Stakes shall be adjusted to avoid sharp breaks in the width of the clearing line.
- B. Distances shall be measured to the nearest foot and standard lath/flagging shall be placed to clearly designate the intended limits. Intervals for placement of lath/flagging shall vary based upon the terrain and foliage density, spacing of 50 to 100 feet will generally be adequate.

### **3.05 FUEL SYSTEM STAKING**

- A. The Contractor shall stake the fuel line alignment and grade for work to be done under the Contract. Two offset hubs and lath shall be set for each tee, header, valve, and angle point in alignment. The lath shall identify the feature being staked and state the elevation of the hub, and the offset distance to the center of the feature as shown on the Contract Drawings. The offsets shall be set at a reasonable distance to protect them from disturbance.
- B. At the time the fuel line centerline is staked, control points shall be set so that the line can be readily re-established when required. Each control point shall be visible to at least one other control point. Control points shall be placed in locations at which they are unlikely to be disturbed during construction. Measurements and sketches of the control points shall be kept in the field book.
- C. Grade Stakes
  - 1. Grade stakes shall be used where slope stakes are not required. The reference point shall be a standard wooden hub accompanied by a minimum three foot lath indicating the cut or fill, distance to the point, description of the point being cut or filled, and a distance from fuel line centerline to stake. The fuel line station shall be written on the back of the lath. Cuts and fills shall be given to the nearest 0.1-foot. A record of the staking elevations, the design grade, the location of stakes, the fuel line station of the stake and the feature which is being staked shall be made in the survey field book.

### **3.06 TANK PAD AND DRAINAGE STAKING**

- A. General
  - 1. Rough grade stakes shall be used for horizontal and vertical location of the following features:
    - a. driveway entrance
    - b. center of tank pad
    - c. culvert ends
    - d. ditch inflection point
    - e. centerline of ditch, at 20-foot offsets, at approximately 25-foot intervals around the circumference of the pad

- f. top edge of the pad

#### B. Slope Stakes

1. The drainage ditch and catchpoints encircling the tank pad shall be slope staked. Stakes shall be set at points where the cut or fill slopes intersect the surface of original ground. Interval distance between slope stakes shall be as directed by the Engineer. The information to be shown on the slope stakes is as follows:
  - a. Distance from the catch point to the point being staked
  - b. Percent of slope cut/fill
  - c. Amount of cut/fill
  - d. Stakes' location in reference to ditch centerline

If at any time the planned design grade is found to be unworkable in the field, the Engineer shall be notified immediately and all slope staking of the drainage ditch shall cease until further notice from the Engineer.

2. Staking notes shall show a sketch of the area with a record of the location of the slope stake in relation to the ditch centerline, the existing elevation shot at the catch point, the planned elevation that the slope stake is identifying, and the distance to the point being slope staked.
3. The use of hand levels for setting slope stakes shall be limited to one turning point up or down from the instrument to the catch point. Hand level turning points shall be clearly noted in the field book.
4. A reference stake shall be set for each slope stake. The reference stake shall be set a minimum of 10 feet and a maximum of 15 feet beyond the slope stake. The reference stake shall re-state the slope stake information for use if the original slope stake is disturbed or destroyed. A hub shall be driven flush with the ground at the reference stake and all elevations and distances referenced to the hub.

#### C. Finish Grade Stakes

1. Finish grade hubs shall be set to verify the top of pad elevation and driveway entrance elevation after tank foundation fill has been applied. Wooden hubs, painted or topped with colored whiskers, shall be set within five hundredths of a foot tolerance. Horizontal position of finish grade hubs shall be as determined by the Engineer.
2. The field book shall contain a sketch showing the approximate horizontal position of the set hub, the design finish grade elevation, and the elevation of the hub.

### 3.07 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.

### 3.08 ELECTRONIC DATA COLLECTION AND RADIAL SURVEYS

- A. When electronic data collection is used for radial stakeout, the following criteria shall be maintained and submitted:

1. A standard field book containing: date, weather conditions, instrumentation used, crew, project description and sketch, listing of turning points and control points used, and other information needed to reconstruct the survey activity.
2. A printout of the unedited output from the data collector or a copy of the field book entries to include: code descriptors, horizontal circle information, vertical circle information based on zenith angle and slope distance expressed in feet. Also, a sheet containing the explanation of the codes used to identify the various shots.
3. A printout 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. A plot and or line drawing showing the control points, point occupied, and the radial observations at a scale large enough to read the point number, elevation, point descriptions and coordinates.
5. If cross sectional data 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.

### **3.09 AS-BUILT SURVEYS, FIELD NOTES AND PROJECT RECORD DOCUMENTS**

- A. As-built survey measurements shall be recorded on a clean set of 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 01720.
- 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. When electronic data collection is used to obtain as-built information, the following information shall be maintained and submitted:
  1. A printout of the unedited, raw data from the data collector
  2. An explanation of all codes and abbreviations used
  3. A printout of the x, y, and z coordinates
  4. An electronic 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 Engineer and the

Engineer 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 for when the Engineer, 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 Engineer at the completion of construction activity, in accordance with Section 01720 Project Record Documents, of these Specifications.

**END OF SECTION**



## SECTION 01090

### REFERENCE STANDARDS

#### PART 1 – GENERAL

##### 1.01 REQUIREMENTS INCLUDED

- A. Quality assurance.

##### 1.02 RELATED REQUIREMENTS

- A. Document 00700 - General Conditions: Paragraph 3.4.2.

##### 1.03 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. 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 Engineer 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 Engineer 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 01126**

### **CONTRACTOR'S CERTIFICATION OF SUBCONTRACT**

#### **PART 1 - GENERAL**

##### **1.01 REQUIREMENTS INCLUDED**

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

##### **1.02 RELATED REQUIREMENTS**

- A. Document 00100 – Information to Bidders, Requirements of Apparent Low Bidder.
- B. Document 00430 – Subcontractor List
- C. Document 00700 – General Conditions: Paragraph 6.13.1, Subcontractor Certification and Approval.
- D. Section 01300 - Submittals: Procedures (in general).

##### **1.03 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.

##### **1.04 SUBMITTAL OF CERTIFICATION**

- A. CONTRACTOR shall submit the initial and all subsequent certification forms in accordance with the submittal requirements identified under paragraph 1.02 D of this Section.

##### **1.05 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 1.04 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.

**1.06 ACKNOWLEDGMENT OF CERTIFICATION**

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

**PART 2 - PRODUCTS**

Not Used

**PART 3 - EXECUTION**

Not Used

**END OF SECTION**

## **SECTION 01200**

### **PROJECT MEETINGS**

#### **PART 1 – GENERAL**

##### **1.01 REQUIREMENTS INCLUDED**

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

##### **1.02 RELATED REQUIREMENTS**

- A. Section 01010 – Summary of Work: Coordination of Work.
- B. Section 01300 - Submittals: Progress Schedules.
- C. Section 01340 - Shop Drawings, Product Data, and Samples.
- D. Section 01400 - Quality Control.
- E. Section 01700 - Contract Closeout: Project record documents.
- F. Section 01700 - Contract Closeout: Operation and maintenance data.

##### **1.03 PRECONSTRUCTION CONFERENCES.**

- A. AUTHORITY will administer preconstruction conference (at the AUTHORITY 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.

##### **1.04 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.

##### **1.05 PREINSTALLATION CONFERENCES**

- A. When required in individual Specification section, or directed by the AUTHORITY convene a pre-installation conference prior to commencing Work of the section.

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

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

**PART 2 – PRODUCTS**

Not Used

**PART 3 – EXECUTION**

Not Used

**END OF SECTION**

## **SECTION 01300**

### **SUBMITTALS**

#### **PART 1 - GENERAL**

##### **1.01 REQUIREMENTS INCLUDED**

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

##### **1.02 RELATED REQUIREMENTS**

- A. Section 01010 - Summary of Work: Work sequence.
- B. Section 01027 - Applications for Payment: Submittal of Applications.
- C. Section 01340 - Shop Drawings, Product Data, Samples: Submittal requirements.
- D. Section 01370 - Schedule of Values: Submittal of Schedule of Values.
- E. Section 01400 - Quality Control: Manufacturers' field service reports.
- F. Section 01400 - Quality Control: Testing reports.
- G. Section 01600 – Material and Equipment: Contractor's list of Products.
- H. Section 01700 - Contract Closeout: Project Record Documents, Warranties and Bonds: Closeout submittals.
- I. Section 01701 - Contract Closeout Procedures: Closeout submittals.

##### **1.03 PROCEDURES**

- A. Deliver submittals to AUTHORITY as directed.
- B. Transmit each item under AUTHORITY - accepted form. Identify Project, CONTRACTOR, Subcontractor, major Supplier, identify pertinent Drawing sheet and detail number, and Specification section number, as appropriate. Identify deviations from Contract Documents by submitting a AUTHORITY supplied 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 five copies in accordance with Document 00700 - General Conditions. Form and content shall be reviewed by the AUTHORITY. After review by AUTHORITY revise and resubmit as required. Submit subsequent updated schedules (10) days prior to each Application for Payment.
- D. Comply with progress schedule for submittals related to Work progress. Coordinate submittal of related items.
- E. After 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.
- 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, the AUTHORITY will not review the submittal and will immediately return submittal to CONTRACTOR. AUTHORITY will review a submittal no more than three times (incomplete or improper submittals count as one). CONTRACTOR shall pay all review costs associated with more than three reviews, unless a resubmittal is required due to new comments addressing previously submitted information.

#### **1.04 CONSTRUCTION PROGRESS SCHEDULES**

- A. Submit horizontal bar Gantt chart. 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.

#### **1.05 SCHEDULE OF VALUES**

- A. Submit in accordance with Section 01370 - Schedule of Values.

**1.06 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES**

- A. Submit in accordance with Section 01340 - 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.

**1.07 MANUFACTURER'S INSTRUCTIONS**

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

**1.08 QUALITY CONTROL DATA**

- A. Submit in accordance with Section 01400 – Quality Control, and individual specification sections.

**PART 2 - PRODUCTS**

Not Used

**PART 3 - EXECUTION**

Not Used

**END OF SECTION**



## **SECTION 01340**

### **SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES**

#### **PART 1 GENERAL**

##### **1.01 REQUIREMENTS INCLUDED**

- A. Procedures for submittals.

##### **1.02 RELATED REQUIREMENTS**

- A. Document 00700 - General Conditions: Definitions, and basic responsibilities of entities.
- B. Section 01010 - Summary of Work: Coordination of work and submittals.
- C. Section 01300 - Submittals: Schedules for submittals and submittal procedures.
- D. Section 01400 - Quality Control: Mockups, and samples for testing.
- E. Section 01630 - Product Options and Substitutions
- F. Section 01700 - Contract Closeout: Project Record Documents.

##### **1.03 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".

##### **1.04 PRODUCT DATA**

- A. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification section and Article number. Show reference standards, performance characteristics, and capacities; wiring 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.

##### **1.05 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.
- D. Label each sample with identification required for transmittal letter.
- E. Provide field samples of finishes at Project, at location acceptable to AUTHORITY, as required by individual Specification section. Install each sample complete and finished. Acceptable finishes in place may be retained in completed Work.

#### **1.06 MANUFACTURER'S INSTRUCTIONS**

- A. Manufacturer's instructions for storage, preparation, assembly, installation, start-up, adjusting, balancing, and finishing under provisions of Section 01400.

#### **1.07 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. Sign or initial each sheet of Shop Drawings and product data, and each sample label to certify compliance with requirements of Contract Documents. Notify AUTHORITY 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.

#### **1.08 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 letter designator. Example: 1st submittal "01010 1.08A" 2nd submittal 01010 1.08A - A".
- 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 number of opaque reproductions of shop drawings CONTRACTOR requires, plus four which will be retained by AUTHORITY.
- G. Submit number of copies of product data and manufacturer's instructions CONTRACTOR

requires, plus four copies which will be retained by AUTHORITY.

- H. Submit number of samples specified in individual Specifications sections.
- I. Submit under AUTHORITY accepted transmittal form letter. Identify Project by title and AUTHORITY Project number; identify Contract by AUTHORITY 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.

#### **1.09 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 AUTHORITY 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;

"No Exceptions Taken" - denotes that the submittal generally meets the requirements of the Contract Documents. "No Exceptions Taken" does not indicate a review of the CONTRACTOR's design except for general compliance with the requirements of the Contract Documents.

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

"Amend - 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 - Resubmit" - 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 the AUTHORITY 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 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.

### **Part 2 – PRODUCTS**

Not Used

### **Part 3 – EXECUTION**

Not used

**END OF SECTION**

**SECTION 01370**  
**SCHEDULE OF VALUES**

**PART 1 - GENERAL**

**1.01 REQUIREMENTS INCLUDED**

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

**1.02 RELATED REQUIREMENTS**

- A. Document 00700 - General Conditions. Schedule of Values.
- B. Section 01010 - Summary of Work: Work sequence.
- C. Section 01027 - Applications for Payment: Procedures for Applications for Payment.

**1.03 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 for listing component parts. Identify each line item by number and title of listed Specification sections.

**1.04 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. Section 01701 - Contract Closeout Procedures. Value of all required Substantial Completion Submittals and Closeout Submittals shall be \$25,000.
  - 2. No progress payments will be made for Substantial Completion Submittals and Closeout Submittals until **all** submittals have been submitted to and accepted by the AUTHORITY.

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

**1.05 SUBMITTAL**

- A. Submit four copies of Schedule 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 under AUTHORITY accepted form transmittal letter. Identify Project by AUTHORITY title and Project number; identify Contract by AUTHORITY Contract number.

**1.06 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 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 01400**  
**QUALITY CONTROL**

**PART 1 - GENERAL**

**1.01 REQUIREMENTS INCLUDED**

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

**1.02 RELATED REQUIREMENTS**

- A. Document 00700 - General Conditions: Article 12, inspection and testing required by governing authorities.
- B. Section 01300 – Submittals: Submittal of Manufacturer's Instructions.
- C. Section 01340 - Shop Drawings, Product Data, and Samples: Submittal of Manufacturer's Instructions.
- D. Individual Specification Sections: Quality Control Requirements.

**1.03 QUALITY CONTROL, GENERAL**

- A. The Contractor shall assure that all materials and completed construction conform to contract Plans, Specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors. The Contractor shall establish, provide, and maintain an effective Quality Control Program that details the methods and procedures that will be used.

**1.04 WORKMANSHIP**

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

**1.05 MANUFACTURERS' INSTRUCTIONS**

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

#### **1.06 MANUFACTURERS' CERTIFICATES**

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

#### **1.07 MOCKUPS**

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

#### **1.08 MANUFACTURERS' FIELD SERVICES**

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

#### **1.09 Test 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 01500**

### **CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**

#### **PART 1 - GENERAL**

##### **1.01 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.

##### **1.02 RELATED REQUIREMENTS**

- A. Section 01010 - Summary of Work
- B. Section 01568 – Erosion Control

##### **1.03 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.

##### **1.04 SUBMITTALS**

- A. Submit four copies of written Plan for providing any temporary facilities. Submit plan a minimum of 60 days prior to project startup unless otherwise specified in 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 Water Systems
  - 1. Furnish and install all necessary components and systems to provide water for construction activities, and potable water for Contractor's crews and field office personnel.

2. Contractor furnished items include, but are not limited to, all piping, valves, fittings, insulation, pumps, tanks, fixtures, water heaters, tie-ins, and service agreements.
3. Contractor to provide and pay for all water and temporary water system related components and fees.

#### B. Temporary Sanitation Systems

1. 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.

#### C. Temporary Electrical Systems

1. Furnish and install all necessary components and systems to provide 120/240 VAC single phase electrical service to the field office and required electrical service at all work areas.
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.

#### D. Temporary Heating Systems

1. 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.

#### E. Temporary Communication Systems (Telephone, Fax, and Internet)

1. 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: 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.
  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.

- 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 the authority 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. Temporary storage yard shall be constructed for storage of products that are not subject to damage by weather conditions.
- 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 divert sanitary and non-storm waste flow to a treatment facility. Contractor shall not cause or permit action to occur which would cause an overflow to an existing waterway.

C. Erosion Control:

1. As specified in Section 01568.

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, 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, with a material 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 01568**  
**EROSION CONTROL**

**PART 1- GENERAL**

**1.01 RELATED REQUIREMENTS**

- A. General Conditions and Supplementary Conditions
- B. Division 2 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.

**1.02 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.

**1.03 ENVIRONMENTAL PROTECTION**

- A. 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.

**PART 2 – PRODUCTS**

Not Used

**PART 3 - EXECUTION**

**3.01 EROSION CONTROL**

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

**END OF SECTION**

## **SECTION 01569**

### **CONSTRUCTION CLEANING**

#### **PART 1 - GENERAL**

##### **1.01 REQUIREMENTS INCLUDED**

- A. Cleaning and disposal of waste materials, debris, and rubbish during construction.

##### **1.02 RELATED REQUIREMENTS**

- A. Document 00700 - General Conditions: Article 6, CONTRACTOR's Responsibilities - Materials and Equipment, and Maintenance During Construction.
- B. Section 01700 - Contract Closeout: Final Cleaning
- C. Individual Specifications Sections: Specific cleaning for Product or Work.

#### **PART 2 - PRODUCTS**

##### **2.01 EQUIPMENT**

- A. Provide containers for deposit of waste materials, debris, and rubbish.

#### **PART 3 - EXECUTION**

##### **3.01 GENERAL CLEANING**

- A. Maintain areas under CONTRACTOR's control free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

##### **3.02 DISPOSAL**

- A. Collect and remove waste materials, debris, and rubbish from site periodically and dispose of in accordance with all Federal, State and local regulations.

**END OF SECTION**



## **SECTION 01600**

### **MATERIAL AND EQUIPMENT**

#### **PART 1 - GENERAL**

##### **1.01 REQUIREMENTS INCLUDED**

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

##### **1.02 RELATED REQUIREMENTS**

- A. Section 01090 – Reference Standards.
- B. Section 01400 – Quality Control: Submittal of manufacturers' certificates.

##### **1.03 PRODUCTS**

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

##### **1.04 TRANSPORTATION AND HANDLING**

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

## **1.05 STORAGE AND PROTECTION**

- A. Handle and store materials for construction, products of demolition, and other items to avoid damage to 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 01630

### PRODUCT OPTIONS AND SUBSTITUTIONS

#### PART 1 - GENERAL

##### 1.01 REQUIREMENTS INCLUDED

- A. CONTRACTOR's options in selection of products.
- B. Products list.
- C. Requests for substitution of products.

##### 1.02 RELATED REQUIREMENTS

- A. Document 00700 - General Conditions: Article 6, Substitutes or "Or-Equal" Items.
- B. Document 00800 - Supplementary Conditions: Substitutions
- C. Section 01010 - Summary of Work: Coordination of Construction.
- D. Section 01340 - Shop Drawings, Product Data, and Samples: Product Data Submittals.
- E. Section 01701 - Contract Closeout Procedures: Project Record Documents.

##### 1.03 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 "B")

##### 1.04 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.

##### 1.05 PRODUCTS LIST

- A. Within 15 days after date of Notice to Proceed, transmit four copies of a list of products which are proposed for installation, including name of manufacturer.
- B. Tabulate products by Specifications section number, title, and Article number
- C. For products specified only by reference standards, give manufacturer, trade name, model

or catalog designation, and reference standards.

- D. 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.

#### **1.06 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 determine acceptability of substitutions.

#### **1.07 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 01340.
- D. List similar projects using product, dates of installation, and names of design Engineer(s) and 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.

#### **1.08 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.

#### **1.09 SUBMITTAL PROCEDURES**

- A. Submit five copies of complete request for substitution.
- B. AUTHORITY 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 01340.

#### **PART 2 - PRODUCTS**

Not Used

#### **PART 3 - EXECUTION**

Not Used

**END OF SECTION**

**SECTION 01700**  
**CONTRACT CLOSEOUT**

**PART 1 - GENERAL**

**1.01 REQUIREMENTS INCLUDED**

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

**1.02 RELATED REQUIREMENTS**

- A. Section 00700 - General Conditions: Fiscal provisions, legal submittals, and other administrative requirements.
- B. Section 01720 – Project Record Documents

**1.03 CLOSEOUT PROCEDURES**

- A. Comply with Section 01701 – Contract Closeout Procedures.

**1.04 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.

**1.05 ADJUSTING**

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

**1.06 PROJECT RECORD DOCUMENTS**

- A. Comply fully with the requirements of Section 01720 – Project Record Documents.

**1.07 SPARE PARTS AND MAINTENANCE MATERIALS**

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in

individual Specification Sections.

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

#### **1.08 WARRANTIES**

- A. As a condition precedent to Final Payment, all guaranties and warranties as specified under various sections of the Contract Documents shall be obtained by the CONTRACTOR and delivered to the 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.
- D. 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.

#### **1.09 OPERATIONS AND MAINTENANCE (O&M MANUALS)**

- A. Provide four O&M Manuals.
- B. Submit data in bound 8-1/2 x 11 inch text pages, ring binders with durable plastic covers.
- C. Prepare binder cover with printed title "OPERATIONS AND MAINTENANCE DATA", title of project, and subject matter of binder.

- D. Binder contents shall be divided with plastic page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- E. 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.
- F. Submit one (1) draft copy of completed volumes five (5) working days prior to Substantial Completion inspection. Revise and resubmit as necessary.
- G. Submit four (4) sets of revised final approved manuals within 15 days of Substantial Completion inspection or date of approval of draft operations and maintenance manuals.

## **PART 2 – PRODUCTS**

Not Used

## **PART 3 - EXECUTION**

Not Used

**END OF SECTION**



## SECTION 01701

### CONTRACT CLOSEOUT PROCEDURES

#### PART 1 - GENERAL

##### 1.01 REQUIREMENTS INCLUDED

- A. Administrative provisions for Substantial Completion and for Final Acceptance.

##### 1.02 RELATED REQUIREMENTS

- A. Document 00700 - General Conditions: Fiscal provisions, and additional administrative requirements.
- B. Section 01010 - Summary of Work.

##### 1.03 SUBSTANTIAL COMPLETION SUBMITTALS

- A. Submit the following prior to requesting a Substantial Completion Inspection:
  - 1. Project Record Documents: Under provisions of Section 01700.
  - 2. Operation and Maintenance Data (O&M Manual): Under provisions of Section 01700.
  - 3. Spare Parts and Maintenance Materials: Under provisions of Section 01700.

##### 1.04 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 promptly 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.

#### **1.05 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.

#### **1.06 REINSPECTION FEES**

- A. Should status of completion of Work require more than two reinspections 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.

#### **1.07 CLOSEOUT SUBMITTALS**

- A. Project Record Documents: Under provisions of Section 01700.
- B. Warranties and Bonds: Under provisions of Section 01700.
- C. Operations and Maintenance Manuals: Under provisions of Section 01700.
- D. Evidence of Payment: In accordance with Conditions of the Contract.
- E. Consent of Surety to Final Payment.
- F. Certificate of Release.

#### **1.08 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.
- C. See Section - 01370.1.04.G for minimum value for Contract Closeout Submittals.

**1.09 APPLICATION FOR FINAL PAYMENT**

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

**PART 2 - PRODUCTS**

Not Used

**PART 3 - EXECUTION**

Not Used

**END OF SECTION**

## **SECTION 01720**

### **PROJECT RECORD DOCUMENTS**

#### **PART 1 – GENERAL**

##### **1.01 REQUIREMENTS INCLUDED**

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

##### **1.02 RELATED REQUIREMENTS**

- A. Document 00700 - General Conditions: Record Documents.
- B. Section 01010 - Summary of Work: Record survey.
- C. Section 01340 – Shop Drawings, Product Data, and Samples.
- D. Section 01701 - Contract Closeout Procedures.
- E. Individual Specifications Sections: Manufacturer's certificates and certificates of inspection.

##### **1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES**

- A. In addition to requirements in General Conditions, maintain at the site for AUTHORITY 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 01720.1.03.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 the AUTHORITY and at time of each Application for Payment submit complete collection of record documents to the 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.

#### **1.04 RECORDING**

- A. Record information on a set of black line opaque Drawings, and in a copy of a Project manual, provided by AUTHORITY.
- B. Using felt tip marking pens or colored pencil, maintaining separate colors for each major system, clearly describe changes by note and by graphic line, as required. Date all entries. Call attention to entry by a "cloud" around area or areas affected.
- C. Thoroughly coordinate all changes within Record Documents, making adequate and proper entries on each Specification Section and each sheet of Drawings and other Documents where such entry is required to properly show change or selection.
- D. When a change within Record Documents is referenced to another document, such as a 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.

### **1.05 SUBMITTALS**

- A. Upon submittal of the completed Record Documents, make changes in Record Documents as required by the Authority.
- B. Transmit with cover letter in duplicate, listing:
  - 1. Date.
  - 2. 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 01732**  
**SELECTIVE DEMOLITION**

**PART 1 – GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, and other Division 1 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. This Section includes the following:
  - 1. Demolition and removal of selected site elements.
  - 2. Repair procedures for selective demolition operations.
- B. Related Sections include the following:
  - 1. Section 01010 – Summary of Work
  - 2. Section 02082 – Decommissioning Fuel Storage Tanks and Piping

**1.03 DEFINITIONS**

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

**1.04 MATERIALS OWNERSHIP**

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

**1.05 SUBMITTALS**

- A. Schedule of Selective Demolition Activities: Indicate the following:
  - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
  - 2. Interruption of utility services.
  - 3. Coordination for shutoff, capping, and continuation of utility services.
- B. Pre-demolition Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be



misconstrued as damage caused by selective demolition operations. Submit before Work begins.

- C. Retain record submittal below, if applicable. Landfill records may be required by Owner when discarded demolished materials contain hazardous wastes.

#### **1.06 QUALITY ASSURANCE**

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI A10.6 and NFPA 241.
- C. Predemolition Conference: Conduct conference at Project site to review methods and procedures related to selective demolition including, but not limited to, the following:
  - 1. Inspect and discuss condition of construction to be selectively demolished.
  - 2. Review structural load limitations of existing structure.
  - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

#### **1.07 PROJECT CONDITIONS**

- A. Conduct selective demolition so Owner's operations will not be disrupted. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
- B. Maintain access to existing entry ways, and other adjacent occupied or used facilities.
- C. Do not close or obstruct entry ways and equipment or other occupied or used facilities without written permission from authorities having jurisdiction.
- D. Owner assumes no responsibility for condition of areas to be selectively demolished.
- E. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- F. Storage or sale of removed items or materials on-site will not be permitted.
- G. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

#### **1.08 PRODUCTS**

Not Used

#### **1.09 REPAIR MATERIALS**

- A. Use repair materials identical to existing materials.
- B. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible. Use materials whose installed performance equals or surpasses that of existing materials.

- C. Comply with material and installation requirements specified in individual Specification Sections.

## **1.10 EXECUTION**

Not Used

## **1.11 EXAMINATION**

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Engineer.

## **1.12 UTILITY SERVICES**

- A. Existing Utilities:
  - 1. Maintain services indicated to remain and protect them against damage during selective demolition operations.
  - 2. Limit hours of interruption, if applicable.
  - 3. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Engineer and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Engineer and to authorities having jurisdiction.
  - 4. Provide at least 72 hours' notice to Engineer if shutdown of service is required during changeover.
- B. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
  - 1. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
  - 2. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

## **1.13 PREPARATION**

- A. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walkways, and other adjacent occupied and used facilities.

- C. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to facilities to remain.
- D. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
- E. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
- F. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
- G. Cover and protect equipment that has not been removed.
- H. Temporary Shoring: Provide and maintain shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
- I. Strengthen or add new supports when required during progress of selective demolition.

#### **1.14 POLLUTION CONTROLS**

- A. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

#### **1.15 SELECTIVE DEMOLITION**

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
- B. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
- C. Maintain adequate ventilation when using cutting torches.
- D. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
- E. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
- F. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- G. Dispose of demolished items and materials promptly.
- H. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
- I. Removed and Salvaged Items: Comply with the following:

1. Clean salvaged items.
  2. Pack or crate items after cleaning. Identify contents of containers.
  3. Store items in a secure area until delivery to Owner.
  4. Transport items to Owner's storage area designated by Owner.
  5. Protect items from damage during transport and storage.
- J. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Engineer, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.
- K. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.
- L. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

#### **1.16 PATCHING AND REPAIRS**

- A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.

#### **1.17 DISPOSAL OF DEMOLISHED MATERIALS**

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

**END OF SECTION**

## **SECTION 02010**

### **SUBSURFACE CONDITIONS**

#### **PART 1 – GENERAL**

##### **1.01 RELATED REQUIREMENTS**

- A. Section 02200 - Excavation and Embankment

##### **1.02 SOIL REPORTS**

- A. General:

1. Any data on soil and/or subsurface conditions shown in the Contract Drawings or Specifications is not to be taken as a representation, but is based on limited information and is at best only an opinion; consequently, such data cannot be considered precise or complete.
2. The information contained in the soils report may not be representative of the actual soil conditions at the time or location of the Contractor's work, and the Contractor is solely responsible for costs associated with interpretations made from the information and there is no guarantee as to its completeness, accuracy, or precision.

- B. Existing Reports:

1. A copy of the soils investigation report for the Project is available upon request.
2. The report is for informational purposes only, and is not a part of the Contract Documents.

- C. Additional Investigation:

1. Contractor is encouraged to visit the site and acquaint himself with site conditions before submitting a Bid, and the submission of a Bid shall be prima facie evidence that he has done so.
2. Prior to bidding, Contractor may make his own sub-surface investigations, as approved by the Engineer and Authority, to satisfy himself with site and subsurface conditions.

##### **1.03 QUALITY ASSURANCE**

- A. The Contractor shall make no deviations from the Contract Documents without specific written approval from the Authority.
- B. The Contractor shall be responsible for obtaining approval from responsible agency or property owner before performing any exploratory excavations.

**END OF SECTION**

## **SECTION 02081**

### **SPECIAL PROJECT PROCEDURES FOR MAINTAINING FUEL STORAGE AND DISPENSING DURING CONSTRUCTION**

#### **PART 1 – GENERAL**

##### **1.01 SCOPE OF WORK**

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

##### **1.02 RELATED REQUIREMENTS**

- A. Section 01300 – Submittals
- B. Section 01500 – Construction Facilities and Temporary Controls
- C. Section 02082 – Decommissioning of Fuel Storage Tanks and Piping.

##### **1.03 REFERENCES**

- A. 18 ACC 75 Article 075 Secondary Containment Requirements for Aboveground Oil Storage and Surge Tanks.
- B. 2009 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

##### **1.04 SUBMITTALS**

- A. 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.

##### **1.05 PROCEDURES**

- A. Contractor shall establish and maintain temporary bulk fuel storage, truck fill and retail dispensing facilities as required to provide uninterrupted operation of The Shishmaref Native Store's residential delivery and retail fuel sales operations.
- B. Dispensing and sales operations shall be performed by Shishmaref Native Store Employees.
- C. 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 the Authority 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 of or damage to this property.

#### **1.06 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**

#### **2.01 LINERS**

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

### **PART 3 – EXECUTION**

#### **3.01 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.
- B. Removal of temporary storage facility shall be in accordance Section 01500 3.5 – Removal of Temporary Facilities.

**END OF SECTION**

## **SECTION 02082**

### **DECOMMISSIONING FUEL STORAGE TANKS AND PIPING**

#### **PART 1 – GENERAL**

##### **1.01 SECTION INCLUDES**

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

##### **1.02 RELATED SECTIONS**

- A. Section 01300 - Submittals
- B. Section 02084 - Excavation and Handling of Contaminated Material.

##### **1.03 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

##### **1.04 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.
- 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.



## **1.05 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.

## **1.06 ENVIRONMENTAL REQUIREMENTS**

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

## **1.07 DECOMMISSIONING AND DISPOSAL REQUIREMENTS**

- A. The existing fuel storage tanks identified in the Drawings shall be decommissioned by this project. If Additive Alternate B is awarded, the decommissioned tanks will be disposed of as part of this project. The Drawings indicate approximate capacities, diameters, heights or lengths, product currently stored in each tank, location and owner of the tank. Requirements for decommissioning and disposal tasks are provided in Section 01010 Summary of Work, Part 1.04.

## **PART 2 – PRODUCTS**

### **2.01 MATERIALS**

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

## **2.02 LINER SEAMING**

- A. If field seaming is required, then all seams and joints must be bonded by a qualified technician.

## **PART 3 – EXECUTION**

### **3.01 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 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. The Contractor shall implement a confined space entry permit system before any worker enters each tank. The Contractor shall monitor the tank atmosphere for toxicity, oxygen levels, and explosive vapors.
- 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 (per Drawing Sheets)
  3. Owner of tank
  4. Date of Removal

The consolidation of sludge from tanks containing different products or owned by different entities will not be allowed without prior written approval of the Engineer and 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.

- D. Appropriate Personal Protection Equipment will be used to protect workers from work site hazards.

- E. All tanks shall be rendered unusable by the Contractor at the time of decommissioning. This could include cutting nozzles below the liquid line of the tanks, or other approved means. Ladders on any tanks shall be cut off to prevent unauthorized access to the top of the tanks. If holes are cut into the side of the tanks for cleaning or other personnel access, plate cut from the tank shall be tack welded back in place to prevent further unauthorized access into the tank after decommissioning is completed.
- F. Dispose of Decommissioned Tanks: Activities to complete this task include cutting decommissioned tanks into maximum 8ft by 10 ft pieces and transporting the cut pieces to a contractor provided final disposal site. Contractor is responsible for obtaining all permits, written permissions, and other approvals as necessary to dispose of the cut steel in an approved manner in accordance with the Contract Drawings and Specifications. See also Section 01010 Summary of Work to identify tanks to be decommissioned and disposed of.

### **3.02 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.

### **3.03 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.

#### **3.04 FIELD QUALITY CONTROL**

- A. All monitoring equipment must be calibrated daily in accordance with the manufacture's requirements.
- B. The Contractor Safety Officer is responsible for implementing the OSHA requirements for worker safety on the work site. This includes, but is not limited to, confined entry, atmospheric monitoring, and proper personal protection equipment.

**END OF SECTION**

## SECTION 02084

### EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. If the Contractor encounters contaminated soils during performance of the work He shall immediately stop work in the affected area and notify the Owner for instructions.
- B. Contractor shall not perform any unauthorized excavations. Any contaminated soils exposed as the result of unauthorized excavation shall be stockpiled in accordance with this specification at Contractor's expense.
- C. The discovery of contaminated soils shall not be cause for Contractor delay of work or equipment/worker standby time claims so long as there is other work that can be performed by the Contractor.
- D. This section describes procedures for stockpiling petroleum-contaminated soils.
- E. Contractor may be required to independently contract an environmental specialist experienced in dealing with contaminated sites. This specialist will develop a plan for handling contamination that will be approved by the Authority and by the Alaska Department of Environmental Conservation. Environmental specialist must be approved by the Authority prior to contracting the work.
- F. Contractor is responsible for contamination that results from his own work or operations.
- G. This specification is applicable to pre-existing contaminated soils.

##### 1.02 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. 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response

##### 1.03 DELIVERY, STORAGE, AND HANDLING

- A. All contaminated soil with visible free product encountered during excavation shall be contained and covered in accordance with the long-term stockpile requirement of 18 AAC 75 Section 370.
- B. Stockpile location shall be approved by the Owner.

##### 1.04 ENVIRONMENTAL REQUIREMENTS

- A. All contaminated soil stockpiles must be covered in accordance with 18 AAC 75 Section 370.
- B. Soil liners and covers must withstand 80 mile per hour winds, petroleum emersion, direct sunlight, and -40° F temperatures.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. All liners must meet 18 AAC Section 370 requirements.
- B. Personal Protection Equipment must be appropriate for hazardous encountered on the work site and meet requirements in 29 CFR Subpart I, Sections 1910.132- 1910.139.
- C. 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.

### **2.2 LINER SEAMING**

- A. If field seaming is required, then all seams and joints must be bonded by a qualified technician.

## **PART 3 - EXECUTION**

### **3.1 EXCAVATION AND HANDLING**

- A. Appropriate Personal Protection Equipment will be used to protect workers from work site hazards.
- B. Soil excavated with visible free product shall be contained and covered in accordance with the long term stockpile requirements of 18 AAC 75 Section 370.

**END OF SECTION**

## **SECTION 02100**

### **CLEARING & GRUBBING**

#### **PART 1 – GENERAL**

##### **1.01 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.

##### **1.02 RELATED REQUIREMENTS**

- A. Section 02140 - Dewatering and Control of Surface Water
- B. Section 02200 - Excavation and Embankment

##### **1.03 DEFINITIONS**

- A. Clearing: Includes cutting all brush, trees and stumps, to within 6 inches of natural ground, chipping the cuttings, and evenly spreading the chipped material over the cleared area surrounding the tank farm. 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 – MATERIALS**

Not used.

#### **PART 3 – EXECUTION**

##### **3.01 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 Project Manager.
  - 1. Locate, identify and protect utilities from damage.
  - 2. Verify with the OPR any vegetation to remain.

##### **3.02 PROTECTION**

- A. Provide protection as necessary to prevent damage to existing improvements and utilities indicated to remain.
- B. Protect improvements on adjoining properties and on project site.
- C. Protect trees, plant growth and features designated to remain.

- D. Protect survey benchmarks, property corners, survey monuments and existing work from damage or displacement.
- E. 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.

### **3.03 USE AND DISPOSAL OF GRUBBED MATERIAL**

- 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 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 of 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 02140**

### **DEWATERING AND CONTROL OF SURFACE WATER**

#### **PART 1 – GENERAL**

##### **1.01 SCOPE OF WORK**

- A. This Section describes the requirements for dewatering and the control of surface water during construction.

##### **1.02 SYSTEM DESCRIPTION**

- A. Dewatering and temporary diversion works shall be designed by and be the sole responsibility of the Contractor.

#### **PART 2 – MATERIALS**

##### **2.01 GENERAL**

- A. Selection of equipment and materials to perform the work is at the option of the Contractor.

#### **PART 3 – EXECUTION**

##### **3.01 GENERAL**

- A. The construction area shall be maintained in a relatively dry condition during the placement of fill materials.
- B. Remove ponded water and limit water flowing or infiltrating into the work area to the extent that the quality of work is not compromised.
- C. Surface and subsurface 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.
- D. Discharge from dewatering operations shall be returned to natural drainage routes. Settling pits, silt fences, straw dikes, or other appropriate measures shall be utilized to prevent highly turbid waters from entering existing ponds, streams, or wetlands.

**END OF SECTION**

## **SECTION 02200**

### **EXCAVATION AND EMBANKMENT**

#### **PART 1 – GENERAL**

##### **1.01 SCOPE OF WORK**

- A. This Section describes general requirements for all types of earthwork and is applicable to all earth work required on the Project.

##### **1.02 RELATED REQUIREMENTS**

- A. Division 1 Specifications
- B. Section 02010 - Subsurface Conditions
- C. Section 02275 - Geotextile Fabric and Geomembrane Liner

##### **1.03 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 soils testing 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's 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: One (1) gradation analysis and one (1) moisture/density (compaction curve) test samples shall be taken at each Classified Fill material

source to be used in the work, and report of test results shall be submitted to the Project Manager.

- b. If the Contractor changes the source and/or stockpile from which materials are obtained or 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, one (1) additional gradation analysis and one (1) moisture/density (compaction curve) test samples shall be taken, and report of test results shall be submitted to the Project Manager.
- c. 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 Authority.

## 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 born by the Contractor.

## 1.04 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 subconsultant.
  - 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. Borrow pit excavation plan indicating proposed areas of excavation.
8. 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 Authority.
2. During construction, the Authority 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 Authority. 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.

## **1.06 MATERIAL SOURCES**

- A. Classified Fill: There are no known borrow sources for Type I fill material in Shishmaref. Contractor shall be responsible for procuring and transporting all classified fill required for this project. Contractor responsibilities shall include, but not be limited to, procurement of fill, transportation, testing, offloading, storage and placement. The Owner is not responsible for fill lost during the transportation or barge unloading process.
- B. Locally Available Sand: The Contractor shall coordinate as necessary with the borrow pit surface and subsurface property owners, shall acquire all necessary permits and/or material sales agreements, and shall pay all required fees, royalties, and other costs associated with pit access and material extraction.
- C. The Contractor shall be responsible for all costs associated with locating, procuring, and transporting, testing, storing, placing and compacting fill material for the work. The Authority is not responsible for fill lost during transportation.

## **PART 2 – PRODUCTS**

### **2.01 CLASSIFIED FILL MATERIALS**

- A. Classified fill Material shall meet the requirements for Type I material listed below and contain no organic matter, muck, peat, frozen materials, vegetation, debris or other unsuitable or deleterious matter. Classified fill material shall have a liquid limit no

greater than 25 and plasticity index not greater than 6 as determined by AASHTO T-89 and T-90.

B. Reusable Excavation:

1. Reusable Excavation shall be an approved, locally available, compactable, mineral soil, and shall contain no organic matter, muck, peat, frozen materials, vegetation, debris or other unsuitable or deleterious matter.
2. Reusable Excavation must have a moisture content which allows for proper workability and compaction in accordance with the specifications.

C. Type I Fill Material:

1. Type I fill material shall be imported crushed gravel consisting of sound, tough, durable rock fragments of uniform quality. The material shall be free of clay balls, vegetative matter, or other deleterious matters.
2. Crushed aggregate shall meet the following requirements:

Degradation Value (ATM T-13):	45 Min
Percent Fracture (ATM T-4):	50 Min (Single Face)

3. The Crushed Aggregate shall conform to the following gradation as determined ATM T-7:

<u>U.S. Standard Sieve Size</u>	<u>Percent Passing, by Weight</u>
1 inch	100
No. 4	35-65
No. 10	25-55
No. 200	4-10

D. Sand Fill

1. Sand fill material shall be obtained locally as described in Material Sources above.
2. It shall contain no organic matter, muck, peat, frozen materials, clay balls, vegetation, debris or other unsuitable or deleterious matter.

**PART 3 – EXECUTION**

**3.01 GENERAL**

- A. Notify Project Manager of any discrepancies between Contractual requirements and site conditions prior to start of Work.
- B. Contractor shall locate all existing underground utilities in the vicinity prior to excavation.
- C. Carefully layout work to minimize disruption to existing surfaces.

- D. 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.
- E. 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.
- F. All work shall be performed in accordance with OSHA requirements.
- G. Barricade open excavations to prohibit public entry.
- H. 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.
- I. 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.
- J. Work in inclement weather at Contractor's risk.
- K. 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.
- L. 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.
- M. 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.
- N. No separate payment for any excavation shall be made. All excavation shall be incidental to the Bid Item being performed.

### **3.02 EXCAVATION**

- A. Excavate to lines and grades shown on the Contract Drawings.
- 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 outside of the work area. 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. Unauthorized Excavation:

1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or neat-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.

### **3.03 SITE PREPARATION**

- A. Clear and grub the construction area in accordance with Section 02100 of the Specifications and the Contract Drawings.
- B. Tank farm 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; leaving the surface smooth and even.
- D. Fill with locally available sand and classified material as shown on the drawings and compact to specified density and to a level, uniform surface before the placement of subsequent layers.
- E. 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.

### **3.05 EMBANKMENT CONSTRUCTION**

- A. Construct embankments using imported Type I fill material and local Sand as shown on the Contract Drawings.
- B. Borrow Pit Operation
  - 1. All borrow pits shall be kept neat and orderly. Work pits in a systematic manner. Keep borrow pits graded to drain and take all necessary precautions to minimize erosion. The Contractor shall prepare a written excavation plan and review the plan with the Project Manager prior to any excavation from the borrow pit. Leave all overburden and surplus excavation in the borrow pit. Maintain access roads as necessary at Contractor's expense. Excavation at the borrow pits shall be limited to the depth which will permit the area to drain to the surrounding area at the completion of work.
- C. 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 3.06 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.

### **3.06 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 or to the "Maximum Attainable Density" as determined by the Engineer in the field.
- B. "Maximum Attainable Density" shall only be used with the written approval of the Engineer.
- C. Correct improperly compacted areas or lifts if soil density tests indicate inadequate compaction.



- D. 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.
- E. 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 Authority.
- F. 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.

### **3.07 GRADING**

- A. Existing ground contours shown on the Contract Drawings are based upon limited design 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.

### **3.08 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.

### **3.10 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 02222**

### **TRENCHING AND BACKFILL**

#### **PART 1 – GENERAL**

##### **1.01 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.

##### **1.02 RELATED REQUIREMENTS**

- A. Section 02084 - Excavation and Handling of Contaminated Material
- B. Section 02200 - Excavation and Embankment
- C. Section 15191 - Fuel Piping System
- D. Section 16110 - Conduits and Fittings

##### **1.03 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.

##### **1.04 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 Authority, 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.

## **1.05 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 unit price Bid for these items to cover expenses incurred for certified testing and no additional compensation will be allowed.

## **PART 2 – MATERIALS**

### **2.01 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.

### **2.02 LOCATOR/WARNING TAPE**

- C. Metallic Locator/Warning tape shall be capable of being inductively detected electronically. 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: Fuel 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**

### **3.01 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 the local electrical 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.

### **3.02 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 Authority.
- E. If the excavation encounters contaminated soils proceed in accordance with Section 02084 Excavation and Handling of Contaminated Material.

### **3.03 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 the Authority, 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.

### **3.04 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 02220 Excavation and Embankment, 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 Authority.

### **3.05 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 02275**

### **GEOTEXTILE FABRIC AND GEOMEMBRANE LINER**

#### **PART 1 – GENERAL**

##### **1.01 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 geotextile fabrics and geomembrane liners, as shown on the Contract Drawings.

##### **1.02 RELATED REQUIREMENTS**

- A. Section 02200 - Excavation and Embankment

##### **1.03 SUBMITTALS**

- A. General: Conform to Section 01340, Shop Drawings, Product Data and Samples.
- B. Furnish Manufacturer's Information and design data, including complete product installation instruction.

##### **1.04 DELIVERY, STORAGE AND HANDLING**

- A. General Requirements: Conform to Section 01600, Material and Equipment.
- B. Packaging and Identification Requirements:
  - 1. Geotextile rolls and folded geomembrane bundles 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.

##### **1.05 QUALITY ASSURANCE**

- A. Manufacturer: The manufacturer of the geogrid, geotextile and geomembrane 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. Weather Limitations: All work shall be performed under weather conditions recommended by the manufacturer.

**PART 2 – MATERIALS**

**2.01 GEOTEXTILE FABRIC**

A. 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.



B. Geomembrane Liner

1. The geomembrane liner shall be 23-oz per square yard black, 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.
2. Geomembrane liners shall be ordered as one piece units. Seams shall be factory welded and certified prior to shipment. Field seams are not allowed.
3. Field verify size required and include excess to prevent binding and excessive stress.
4. Liner shall be protected and crated to prevent any damage during shipping.
5. Provide an unfolding map that indicates where the liner bundle needs to be positioned to allow for ease in unfolding at the site.
6. Install liner in accordance with the manufacturer's instructions.
7. Install liner between non-woven geotextile layers for protection.
8. 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	METHOD
Grab Strength	450 lbs	ASTM D-751
Trapezoid Tear Strength	75 lbs	ASTM D-1117
Puncture Strength	600 lbs	ASTM D-751
Low Temperature Flexibility	-30oF	ASTM D-2136
Ply Adhesion	10 lbs	ASTM D-751

9. Acceptable Brands
  - a. Cooley L1023DEP

**PART 3 – EXECUTION**

**3.01 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. When necessary, overlaps shall be 3’ minimum at all joints.
3. Construction vehicles will not be allowed to travel directly on the fabric.
4. Take due care to ensure that fabric is not damaged during construction activities.
5. Fabric damaged to a degree that compromises its intended capabilities shall be replaced with same approved geotextile fabric at no additional cost to the Authority.

### **3.02 INSTALLATION OF GEOMEMBRANE LINER**

A. Geomembrane Liner Installation

1. Position folded Geomembrane bundle on top of non-woven geotextile fabric within tank farm area in accordance with unfolding map to be provided by the manufacturer.
2. Only those liners which can be anchored and installed during the same day shall be unpacked and placed into position.
3. Begin installation on the upwind side of the project and proceed in the downwind direction whenever possible. The leading edge of the liner shall be secured at all times with sandbags sufficient to hold it down during high winds.
4. After geomembrane liner is unfolded and in place, install non-woven geotextile over membrane in accordance with the Contract Drawings.

### **3.03 FILL PLACEMENT**

- A. Fill or backfill placement shall be in accordance with Section 02200 Excavation and Embankment.
- B. A minimum of 6 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.

### **3.04 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 24 inches of overlap around the edges of the torn area. Care shall be taken that the patch remains in place during subsequent fill placement.

### **3.05 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 representative 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 the Authority 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 02830**  
**CHAINLINK FENCE AND GATES**

**PART 1 – GENERAL**

**1.01 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.

**1.02 REFERENCES**

- A. The fence and materials shall be in accordance with this Specification, the Contract Drawings and with the following:
  - 1. FS RR-F-191 – Federal Specifications and Standards. Fencing, Wire and Post, and Fabric.

**1.03 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.

**1.04 SUBMITTALS**

- A. Submit under provisions of Section 01300.
- 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.

**1.05 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.
- B. Fence materials and installation shall conform to the chainlink fence manufacturer's institute standard specifications except as modified here in.

## **1.06 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.

## **1.07 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 – MATERIALS**

### **2.01 NEW FENCING MATERIALS, POSTS AND ACCESSORIES**

- A. Zinc-Coated Steel Wire Fabric:
  - 1. Type 1, 2-inch mesh, 9 gauge, and 6-foot height.
  - 2. Provide barbed and twisted selvage at top and bottom for all fabric.
  - 3. Provide 3 strands of 12.5 gage, 4 point Class III barb wire over top of entire fence including gates.
- B. Barbwire:
  - 1. Provide 3 strands of 12.5 gage, 4 point Class III barbed wire over top of entire fence including gates.
  - 2. Mount barbwire to straight Barbwire Arm Post Cap with eye; Hoover #CL-BAP-25S-OAE or approve equal.
- C. Tension Wire for Top and Bottom of Fabric:
  - 1. 7 gauge, coil spring steel Class III bottom tension wire.
- D. Top Rail (Class 1, zinc-coated steel pipe, Grade A or B):
  - 1. Minimum 18' long 1-5/8-inch diameter full-weight pipe top rails with 6-inch long couplings.
- E. Posts and Braces (Class 1, zinc-coated steel pipe, Grade A or B):
  - 1. Line Posts: 2-3/8-inch O.D. X 10-foot long and weight of 3.12 lb/ft.
  - 2. Gate, End, Corner and Pull Posts: 2-7/8-inch O.D. X 12-foot long and weight of 4.64 lb/ft.

3. Max spacing of Pull Posts is 75 feet.
4. Each Pull Post shall be supported with a diagonal Brace Rail to the adjacent Line Post.
5. Post Brace Rail: 1-5/8-inch O.D. and weight of 1.84 lb/ft; and 3/8-inch truss rods with tighteners for each terminal post.

F. Gates:

1. Size and type shown on Drawings.
2. Gates shall be constructed so that they may be operated by one person.
3. 1-7/8-inch diameter commercial quality (CQ-20) gate frames complete with locking frost-free latches, stops, keepers, and heavy pattern post and gate frame hinges.
4. Gate sections 6 feet wide and wider shall have either intermediate members and/or diagonal truss rods or shall have tubular members as necessary to provide rigid construction, free from sag or twist.
5. Gate sections less than 6 feet wide shall have truss rods and/or intermediate braces.
6. Gate fabric shall be the same design and height of line fence fabric; furnished with twisted selvage top and bottom.
7. Gate fabric shall be attached to the gate frame by method standard with the manufacturer except that welding will not be permitted.
8. All hardware shall be zinc-coated.
9. Latches and other gate appurtenances shall be of sufficient strength and design to assure easy, trouble free operation.
10. Latches:
  - a. Latches shall be plunger bar type of full gate height with positive locking gravity mechanism to secure the gate.
  - b. Latches shall be arranged for pad-locking so that the padlock will be accessible from both sides of gates.

G. Accessories: Ferrous accessories shall be zinc-coated steel.

1. Provide heavy-pressed steel or malleable fittings for all attachments.
2. Tension/Stretch bars: 3/16-inch x 3/4-inch flat bar
3. Tension bar bands: 1/8-inch x 1-inch with 3/8-inch carriage bolt.
4. Wire Ties and Clips: 9 gauge.
5. Truss Rods: 3/8-inch diameter.

H. 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**

### **3.01 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.

### **3.02 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. Wrap buried portions of posts with three (3) wraps of greased, 10 mil visqueen prior to backfilling.
- D. Testing:
  - 1. Fence post rigidity shall be tested by applying a 50-pound force on the post, perpendicular to the fabric, at 5 feet above ground
  - 2. Post movement measured at the point where the force is applied shall be less than or equal to  $\frac{3}{4}$ -inch from the relaxed position.
  - 3. Every tenth post shall be tested for rigidity; when a post fails this test, further tests on the next four posts on either side of the failed post shall be made. Posts failing the rigidity test shall be buried deeper or anchored with a minimum of 1 cubic foot of 2500 psi concrete placed at the base of the post.

### **3.03 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 12 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.

#### **3.04 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 line posts.
- D. Diagonal braces shall form an angle of approximately 40 to 50 degrees with the horizontal.

#### **3.05 TOP RAIL AND TENSION WIRES**

- A. Pass top rail through line post tops and join rail sections with sleeve couplings. Fasten top rail to terminal posts with pressed steel fittings.
- B. Tension wires shall be installed along the bottom of the fence line and attached to the terminal posts of each stretch of the fence.
- 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.

#### **3.06 GATES**

- A. Install gate frame plumb with tops of posts level with each other.
- B. Set socket for the cane or foot bolt as shown on the Contract Drawings.

#### **3.07 INTERMEDIATE CLIPS**

- A. Install as detailed in the Contract Drawings



- B. Intermediate clips shall be installed at the midspan of each bottom tension wire, between posts.

**END OF SECTION**

## **SECTION 02890**

### **SIGNS**

#### **PART 1 – GENERAL**

##### **1.01 SCOPE OF WORK**

- A. This Section covers the furnishing and installation of signs at the bulk tank farm, intermediate tanks, dispensing area, and marine header.
- B. The Contractor shall furnish all signs and fasteners.

##### **1.02 RELATED REQUIREMENTS**

- A. Section 01300 - Submittals
- B. Section 02830 – Chain Link Fence and Gates

##### **1.03 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”.

##### **1.04 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.
- C. Submit one (1) sample for approval of each type of fastener used to install, hang or otherwise fasten signs.

#### **PART 2 – MATERIALS**

##### **2.01 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 220 High Performance vinyl background as indicated on the Contract Drawings, or as appropriate for the application, as manufactured by Warning Lights of Alaska or approved equal.

## **2.02 SIGNS**

- A. Provide signs as indicated on the Contract Drawings

## **PART 3 – EXECUTION**

### **3.01 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 9 gage steel hog rings or steel wire ties.

**END OF SECTION**

## **SECTION 02930**

### **SEEDING**

#### **PART 1 – GENERAL**

##### **1.01 RELATED WORK SPECIFIED ELSEWHERE**

- A. Division 1 Specifications
- B. Section 02200 - Excavation and Embankment

##### **1.02 SUBMITTALS**

- A. A statement signed by the vendor certifying that each lot of seed has been tested by a recognized seed testing laboratory within 6 months before the date of delivery to the Project.
- B. Certification from grower certifying grass species.

##### **1.03 SCOPE OF WORK**

- A. Areas grassed and/or seeded prior to construction and excavated or otherwise disturbed during construction operations shall be restored to their original condition.
- B. The following areas shall be seeded in accordance with this section:
  - 1. Previously vegetated areas of local material sources.
  - 2. Roadway sideslopes, including that for any haul roads to remain after construction activities.
  - 3. Previously vegetated areas disturbed by construction activities.
  - 4. All other areas defined on the Contract Drawings.

##### **1.04 REFERENCE**

- A. Roadway Seeding - Refer to "A Revegetative Guide for Conservation Use in Alaska," May 1991, published by Cooperative Extension Service of the University of Alaska Fairbanks.

#### **PART 2 – PRODUCTS**

##### **2.01 SEED**

- A. Grass seed of the type hereinafter specified shall conform to the standards of State Department of Agriculture.
- B. Seed shall be furnished in standard containers on which shall be shown the following information:

1. Common name of seed
2. Lot number
3. Net weight
4. Percentage of purity
5. Percentage of germination (in case of legumes percentage of germination to include hard seed)
6. Percentage of weed seed content and inert material clearly marked for each kind of seed in accordance with applicable state and federal laws.

C. Grass Seed Mix and Application Rates (broadcast method):

1. Procure and apply a seed mix approved for the Shishmaref Region by the Alaska Division of Agriculture; Plant Materials Center

## **2.02 FERTILIZER**

A. General:

1. Fertilizer shall be a standard commercial grade of organic or inorganic fertilizer of the kind and quality specified herein. It may be separate or in a mixture containing the percentage of total nitrogen, available phosphoric acid, and water-soluble potash in the amounts specified.
2. All fertilizers shall be furnished in standard unopened containers with weight, name of plant nutrients, and manufacturer's guaranteed statement of analysis clearly marked in accordance with state and federal laws.
3. Fertilizer shall be ground to a fineness as required for the method of application.

B. Fertilizer Analysis and Application Rates:

1. Total Nitrogen: 60 lbs per acre
2. Available Phosphoric Acid: 100 lbs per acre
3. Water Soluble Potash: 50 lbs per acre

## **PART 3 – EXECUTION**

### **3.01 GRASS SEEDING**

- A. Seeding shall be performed as soon as practicable after ground disturbing activities.
- B. Seeding shall not be performed during windy weather or when the ground is frozen, excessively wet or otherwise untillable.

C. Seedbed Preparation:

1. Sideslopes shall be no steeper than 2 horizontal to 1 vertical and shall be compacted and tracked by a dozer to reduce erosion.
2. The tracked ground surface shall be covered with an erosion control blanket (North American Green S75, or approved equal) in accordance with the manufacturer's recommendations.

D. Grass seed shall be applied at the rates specified above.

E. Fertilizer shall be applied at the rates specified above.

F. Seeding Time:

1. The exact time for seeding will be determined by actual weather conditions.
2. The normal satisfactory period for seeding shall be considered between May 15 and July 15 unless otherwise authorized by the Authority.

G. When weather conditions are such that satisfactory results are not likely to be obtained for any stage of the seeding operations, the Contractor shall stop the work and it shall be resumed only when the desired results are likely to be obtained or when approved alternates or corrective measures and procedures are adopted.

H. The Contractor shall protect all seeded areas from erosion until final inspection and acceptance has been made and until such time as grass leaves are visible to the eye.

I. Areas damaged by erosion shall be repaired by the Contractor at his own expense.

### **3.02 WATERING**

A. Duration:

1. The Contractor shall water all seeded areas a minimum of three times each week or often enough to maintain a moist seed bed to promote healthy seed germination, whichever provides the greater watering frequency, for a duration of 30 days.
2. Watering shall cease at first hard frost in the Fall and shall resume upon ground thaw the following Spring.
3. If at any time during the maintenance period weather conditions (such as extended period with no rain or continuous drying winds) cause the root zone to dry out, the Engineer may direct the Contractor to water all seeded areas.
4. Any supplemental watering shall be done immediately at no additional cost the Owner.

B. Water application shall be applied at a rate that will provide moisture penetration throughout the entire root zone with a minimum of water run-off and no erosion.

- C. Should soil conditions be encountered not conducive to water absorption, the Contractor shall take whatever corrective actions that may be required to correct this condition, without additional cost the Owner.

### **3.03 FINAL INSPECTION**

- A. Final inspection for seeded areas shall not be made until 30 days following completion of all seeding and fertilizing as specified.
- B. Damage caused by the Contractor to areas which have been seeded shall be repaired and/or replaced by the Contractor at his own expense.

### **3.04 GUARANTEE**

- A. Guarantee of planting and seeding shall continue for one year from date of final acceptance.
- B. Contractor shall replace all seeded areas as required during the guarantee period.
- C. Guarantee shall include both materials and labor.
- D. Replacements shall be the same as originally planted.

**END OF SECTION**

## SECTION 03300

### CAST-IN-PLACE CONCRETE

#### PART 1 – GENERAL

##### 1.01 SCOPE OF WORK

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

##### 1.02 RELATED REQUIREMENTS

- A. Contract Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

##### 1.03 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

##### 1.04 SUBMITTALS

- A. Product Data:
  - 1. Air-entraining admixture
  - 2. Water reducing admixture
  - 3. Concrete joint sealer
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, bent bar diagrams, bar arrangement, splices and laps, and supports for concrete reinforcement.
- D. Submit inspection and testing agency for approval.
- E. Submit results of field quality-control (Section 3.07) test and inspection reports.

##### 1.05 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.
  - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.



- B. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
- C. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

## **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending, damage and excessive corrosion.

## **PART 2 – MATERIALS**

### **2.01 FORM-FACING MATERIALS**

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces.
  - 1. Plywood, metal, or other approved panel materials.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
  - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

### **2.02 STEEL REINFORCEMENT**

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 installed in accordance with ACI 318.

### **2.03 REINFORCEMENT ACCESSORIES**

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete.

### **2.04 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 I or III.
- B. Normal-Weight Aggregates: ASTM C 33. Provide aggregates from a single source.
  - 1. Maximum Coarse-Aggregate Size: 1 inch nominal.
  - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

- C. Water: ASTM C 94/C 94M and potable.

## **2.05 ADMIXTURES**

- A. Air-Entraining Admixture: ASTM C 260.
- B. Corrosion Inhibitor: Master Builders Rheocrete 222, or approved equal.

## **2.06 CURING MATERIALS**

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.

## **2.07 CONCRETE MIXTURES**

- A. Concrete mix design shall conform to ACI 318 for durability and quality.
- B. Proportion normal-weight concrete mixture as follows:
  - 1. Minimum Compressive Strength: 3000psi at 28 days, for Type I cement.
  - 2. Maximum Water-Cementitious Materials Ratio: 0.45.
  - 3. Minimum Cement Content: 6 sacks per cubic yard.
  - 4. Slump Limit: 4 inches, plus or minus 1 inch.
  - 5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery.
- C. Use accelerating admixtures in cold weather only when approved by the Project Manager. If approved, use of admixtures will not relax cold weather placement requirements.

## **2.08 FABRICATING REINFORCEMENT**

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

## **2.09 CONCRETE MIXING**

- A. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
  - 1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.

2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

## **2.10 CONCRETE ANCHOR ADHESIVE**

- A. Concrete anchor adhesive shall be a two-component high-solids, epoxy-based system supplied in manufacturer's standard cartridge and dispensed through a static-mixing nozzle supplied by the manufacturer. The adhesive anchor shall have been tested and qualified for performance in cracked and uncracked concrete per ICC-ES AC308. Adhesive shall be set-xp, epoxy-tie, adhesive from Simpson strong-tie, or approved equal. Anchors shall be installed per manufacturer's instructions.

## **PART 3 – EXECUTION**

### **3.01 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 forms tight enough to prevent loss of concrete mortar.
- C. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- D. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- E. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

### **3.02 REMOVING AND REUSING FORMS**

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Project Manager.

- D. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- E. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- F. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

### **3.03 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. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
- C. Deposit concrete continuously in one layer so 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.
- D. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  - 1. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
  - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
  - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

### **3.04 MISCELLANEOUS CONCRETE ITEMS**

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

### **3.05 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.

### **3.06 CONCRETE SURFACE REPAIRS**

- A. Defective Concrete: Repair and patch defective areas when approved by Project Manager. Remove and replace concrete that cannot be repaired and patched to Project Manager's approval.
- B. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
  - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
  - 2. Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
  - 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Project Manager.

### **3.07 FIELD QUALITY CONTROL**

- A. Testing and Inspecting: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
- B. Inspections:
  - 1. Steel reinforcement placement.
  - 2. Verification of use of required design mixture.
  - 3. Concrete placement, including conveying and depositing.
  - 4. Curing procedures and maintenance of curing temperature.
- C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
  - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture.
  - 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M.
  - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
7. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
8. Test results shall be reported in writing to Project Manager, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Project Manager but will not be used as sole basis for approval or rejection of concrete.
10. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Project Manager. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Project Manager.
11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
12. Correct deficiencies in the Work that test reports and inspections indicate does not comply with the Contract Documents.

**END OF SECTION**

**SECTION 05120**  
**STRUCTURAL STEEL**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- 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, pump cabinets, dispenser enclosures, and other miscellaneous steel fabrications.

**1.02 RELATED REQUIREMENTS**

- A. Contract Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.03 SUBMITTALS**

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data or manufacturer's specifications and installation instructions for following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).
  - 1. Structural steel, including certified copies of mill reports covering chemical and physical properties.
  - 2. Structural steel coating system.
- C. Shop drawings including complete details and schedules for fabrication and assembly of structural steel members, procedures, and diagrams.
  - 1. Include details of cuts, connections, camber, holes, and other pertinent data. Indicate welds by standard AWS symbols and show size, length, and type of each weld.
- D. Welder's certifications.

**1.04 QUALITY ASSURANCE**

- A. Codes and Standards: Design, fabrication and erection shall comply with the most current provisions of the following standards of practice, except as otherwise indicated:

1. American Institute of Steel Construction (AISC) "Code of Standard Practice for Steel Buildings and Bridges."
  2. AISC "Specifications for Structural Steel Buildings," including "Commentary."
  3. American Welding Society (AWS) D1.1 "Structural Welding Code - Steel."
- B. Qualifications for Welding Work: Qualify welding procedures and welding operators in accordance with AWS "Qualification" requirements.
1. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests.
  2. If recertification of welders is required, retesting will be Contractor's responsibility.

### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials to site at such intervals to ensure uninterrupted progress of work.
- B. Store materials to permit easy access for inspection and identification. Keep steel members off ground by using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration. If bolts and nuts become dry or rusty, clean and re-lubricate before use.
1. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. At contractor's expense, repair or replace damaged materials or structures as directed.

## **PART 2 – MATERIALS**

### **2.01 PRODUCTS**

- A. Metal Surfaces, General: For fabrication of work that will be exposed to view, use only materials that are smooth and free of surface blemishes including pitting, rust and scale seam marks, roller marks, rolled trade names, and roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating, and applying surface finishes.
- B. Structural Steel Shapes, Plates, and Bars: ASTM A36
- C. Structural Tubing: A500
- D. Unfinished Threaded Fasteners: ASTM A325, Grade A, regular low-carbon steel bolts and nuts.
1. Provide hexagonal heads and nuts for all connections.
- E. Electrodes for Welding: Use AWS 5.1 E70XX electrodes. Comply with AWS Code.



## 2.02 FABRICATION

- A. Shop Fabrication and Assembly: Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings.
  - 1. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence that will expedite erection and minimize field handling of materials.
  - 2. Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs, and other defects.
- B. Connections: Weld or bolt shop connections, as indicated.
- C. Bolt field connections, except where welded connections or other connections are indicated. Use ASTM A 307 bolts.
- D. Welded Construction: Comply with AWS Code for procedures, appearance and quality of welds, and methods used in correcting welding work. Minimum weld shall be 3/16".
- E. Assemble and weld built-up sections by methods that will produce true alignment of axes without warp.
- F. Holes for Other Work: Provide holes required for securing other work to structural steel framing and for passage of other work through steel framing members, as shown on final shop drawings.
- G. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame-cut holes or enlarge holes by burning. Drill holes in bearing plates.
- H. Tolerances: Structural component tolerances shall be +/- 1/8 inch and as required to adequately support loads.

## 2.03 STEEL COATING

- A. **Hot-dip Galvanizing:** Galvanize stairs, panel supports, dispenser and hose reel enclosure, barge header support and all other structural steel shapes, plates, bolts and hardware in accordance with ASTM A123, G90 and ASTM A153. 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. Miscellaneous Steel Structures
  - 1. Prime miscellaneous steel structures prior to shipping from factory. After fabrication, sandblast or wire brush all steel to clean bare metal. Prime with universal red oxide primer, Devco Rustguard 4140, or approved equal, to 1.5 mils minimum dry film thickness. Color: Red.

2. After field fabrication is complete, top coat primed miscellaneous steel structures with two coats of alkyd enamel, Devoe Speed Enamel 4318, or approved equal, to 4 mils dry film thickness. Color: Haze Gray except where noted.
3. Coat miscellaneous steel structures in accordance with Section 15175 Aboveground Fuel Storage Tanks, Part 2.04 – Coating Systems, unless otherwise noted on Contract Drawings or Specifications.

## **2.04 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**

### **3.01 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.

### **3.02 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 06130

### TIMBER CONSTRUCTION

#### PART 1 – GENERAL

##### 1.01 SCOPE OF WORK

- A. This Section includes construction using timbers including, but not limited to, connex foundation, tank foundations, and above ground pipe & conduit supports.

##### 1.02 RELATED REQUIREMENTS

- B. Contract Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

##### 1.03 DEFINITIONS

- A. Timbers: Lumber of 3 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.

##### 1.04 SUBMITTALS

- A. Product Data: For timber.
  - 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, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
- B. Approval letters for fastener material selection from wood preservation and fastener manufacturer.

##### 1.05 QUALITY ASSURANCE

- A. Timber Standard: Comply with AITC 108, "Standard for Heavy Timber Construction."

##### 1.06 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 – MATERIALS**

### **2.01 TIMBER, GENERAL**

- 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. Timber Species and Grade: Hem-fir or hem-fir (North); No. 2 or better, NLGA, WCLIB, or WWPA.
- C. Preservative Treatment:
  - 1. Pressure treatment in accordance with AWPA standard C2, 0.60 minimum retention, rated for ground contact.
  - 2. Preservative Chemicals: Acceptable to authorities having jurisdiction and one of the following:
    - a. Copper Azole – Type A (CBA-A).
    - b. Copper Azole – (CA-B)
    - c. Ammoniacal copper zinc arsenate (ACZA).
  - 3. Timber materials shall be treated with 0.41PCF of CBA-A or 0.21PCF of CA-B wood preservative.
  - 4. Use process that includes water-repellent treatment.
  - 5. Application: Treat all timber construction, unless otherwise indicated.

### **2.02 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.

## **2.04 WOOD PRESERVATIVE**

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

## **PART 3 – EXECUTION**

### **3.01 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 cut ends and bore holes in accordance with AWWA standard M4.

### **3.02 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 11951**  
**SPILL RESPONSE EQUIPMENT**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section includes standard spill response equipment and Connex for storing this equipment.

**1.02 RELATED REQUIREMENTS**

- A. Section 01300 – Submittals
- B. Section 06130 - Timber Construction

**1.03 REFERENCES**

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

**1.04 SUBMITTALS**

- A. Submit under provisions of Section 01300.
- 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. Product substitutions must be approved by the Project Manager.
- E. All equipment and materials shall be new unless indicated otherwise.

**1.06 GENERAL**

- A. Contractor is responsible for providing spill response equipment as specified and in accordance with this Section.
- B. Connexes shall be placed on timber foundations in the locations indicated on the Contract Drawings. Provide six (6) 6 inch x 6 inch x 10 foot pressure treated timbers equally spaced for each conex for the timber foundation.
- C. Place smaller items inside overpack drums. If items will not fit within 3 overpack drums then Contractor shall provide additional drums as necessary.



- D. Permanently label all overpack drums "SPILL RESPONSE KIT" with minimum 3-inch high letters.
- E. Place all spill response equipment, including overpack drums, inside Connexes.
- F. Contractor shall provide shelving within the Connex as required to adequately store, organize and support the specified spill equipment, extra facility parts and associated facility tools.

## **PART 2 – MATERIALS**

### **2.01 SPILL RESPONSE EQUIPMENT**

- A. Provide all spill response equipment as specified in this Section or as noted on the Contract Drawings.
- B. Connex shall be new standard 20-foot long shipping container, steel construction, not insulated. Connex shall be in new condition. Connex doors shall operate freely without binding or excessive resistance, and Connex exterior shall have minimal rust.
- C. Absorbent Material:
  - 1. Can be natural or synthetic.
  - 2. Shall repel water and absorb hydrocarbons only.
  - 3. Minimum hydrocarbon absorption rate shall be 0.23 gallons per square foot.
- D. Smart Ash incinerator shall be as specified, no substitutes.

## 2.02 SPILL RESPONSE EQUIPMENT

Quantity	Item/Description
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### Absorbent Material and Containers

1 EA	Secondary truck fill containment: Collapsible min. 10'x28' vehicle rated containment system capable of containing 1,000 gallons minimum. Aire Quick Snap Berm – XR5 or approved equal.
1 EA	Secondary truck fill containment: Base mat constructed of 18-ounce vinyl for collapsible containment with foot print 2' wider and longer than contained area. Collapse-A-Tainer ground tarp #PAK129 or approved equal.
3 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 gallons/bale
13 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 ankle
4 EA	Goggles, UVEX Futura
4 EA	Hardhats, Bullard Traditional, with 6-point ratchet suspension, orange

### Recovery Equipment

2 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: Goulds 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
8 EA	Fire Extinguishers, Portable, Type 4A-80BC
1 EA	Connex, 20 foot, lockable
10 EA	Padlocks, keyed-alike

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Place pressure treated timbers equally spaced over required area. Embed timbers halfway into ground and level tops with adjacent timbers.
- B. Install connexes on top of timbers.
- C. Place spill response items in overpack drums. Alternatively place items on shelves inside connex. Shelving must be sufficiently strong to hold specified equipment, spare facility parts and associated tools.
- D. Connex shall be lockable and lock and key system provided.

**END OF SECTION**

**SECTION 15175**  
**ABOVEGROUND FUEL STORAGE TANKS**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section includes the furnishing of all labor, tools, equipment, and materials necessary to fabricate, coat, package for shipment, deliver, and install:
1. One (1) five thousand (5,000) gallon, single wall, dual compartment, horizontal, steel, skid mounted, aboveground storage tank for diesel and gasoline service- See Tank Shop Drawings **(Authority Provided)**
  2. Five (5) twenty nine thousand (29,000) nominal gallon, single wall, horizontal, steel, aboveground storage tanks for diesel and gasoline service- See Tank Shop Drawings. **(Authority Provided)**
  3. One (1) twelve thousand (12,000) gallon, double wall, horizontal, steel, skid mounted, aboveground storage tank for diesel service- Outer tank dimensions shall be in accordance with the Contract Drawings. **(Contractor Provided)**
  4. Two (2) five hundred (500) gallon, single wall, horizontal, steel, aboveground storage tanks for diesel service with stand and integrated spill containment basin- Outer tank dimensions shall be in accordance with the Contract Drawings. **(Contractor Provided)**
- B. All tanks shall be new and constructed in accordance with this Specification and the Contract Drawings, and shall be furnished with the fittings and appurtenances specified herein. **Authority Provided Tanks are NOT equipped with fittings and appurtenances. Contractor to provide and install all required components for a functioning code compliant system. Authority provided tanks are to be shipped to the jobsite by Contractor. Tank locations are provided in Section 01010.**
- C. The tanks shall, at a minimum, meet the requirements of the most current edition of Underwriters Laboratories Inc. (UL) Standard for Safety UL 142, "Steel Aboveground Tanks for Flammable and Combustible Liquids." Protected tanks shall meet all requirements of the most current edition of UL 2085.
- D. All tanks must be UL listed and labeled horizontal tanks as indicated with welded head and shell joints.

**1.02 RELATED REQUIREMENTS**

- A. Section 01300 - Submittals
- B. Section 01340 - Shop Drawings, Product Data, and Samples
- C. Section 01700 - Contract Closeout
- D. Section 05120 - Structural Steel
- E. Section 15193 - Fuel Tank Appurtenances

### 1.03 REFERENCES

- A. The latest revision of the following standards of the American Society for Testing and Materials (ASTM), and other listed standards, are hereby made part of this Specification. The publications may be referred to in the text by basic designation only.
- B. Reference to a particular organization's standards shall be in accordance with those standards unless more restrictive criteria is listed herein or on the Contract Drawings.
- C. Where Contract Drawings or Specifications call for material or construction of a better quality or larger sizes than required by the codes, rules and regulations listed below, the provisions of the Contract shall take precedence.

ASTM A 36	Standard Specification for Carbon Structural Steel
ASTM A 283	Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
ASTM A 570	Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality
OSHA	Occupational Safety and Health Administration; Chapter 20, Fixed Ladders
UL 142	Steel Aboveground Tanks for Flammable and Combustible Liquids
UL 2085	Protected Aboveground Tanks for Flammable and Combustible Liquids

### 1.04 SUBMITTALS

- A. Submit material samples and manufacturer's literature in accordance with Section 01300 Submittals and Section 01340 Shop Drawings, Product Data, and Samples.
- B. Shop Drawings:
  - 1. Submit 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.
  - 2. Submit material lists with catalog cuts for any proposed substitutions.
- C. Packing Lists: The Contractor shall submit shipping packing lists, detailing all materials shipped and referencing the crate number each component is in. The packing lists will be provided to the Authority prior to the delivery date of the tanks.
- D. The Contractor shall submit the following for approval prior to the start of tank erection:
  - 1. Shop Drawings.
  - 2. Tank Painting Schedule – See Section 2.04.

### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Packing, Shipping and Handling:

1. Packaging must meet the shipping requirements of all anticipated carriers and shall prevent abrasion, scratching or damage of the materials during overland transport and ocean barge shipment. Exterior ladders, catwalks and pipe supports shall be packaged and shipped separately from tanks. Packaging shall be sufficient to prevent damage during shipping. Extra care shall be taken to protect tank stand offs to ease field installation of bolt on components.
  2. All threaded tank openings shall be sealed for shipping with plastic or tin plugs. All flanged tank openings shall be blind flanged for shipment. Provide provision for relief of excess pressure/vacuum, which may damage the tank, while preventing precipitation or salt water spray from entering tank. Minimum vent opening shall be ½" diameter.
  3. Lifting connections shall be provided in accordance with the Drawings and as required for proper tank handling.
  4. Shipping crates shall be clearly labeled with community name and crate number in large, waterproof, lettering for easy identification at the construction site. Two (2) packing lists shall be securely attached to each shipping container (one inside and one outside) in watertight, re-sealable, plastic bags.
- B. Storage: The packaging shall provide adequate protection for the fabricated materials and appurtenances for outside storage at the site throughout the construction project.

#### **1.06 QUALITY ASSURANCE**

- A. Tank manufacturers shall have a minimum of 10 years' experience including the manufacture of at least five similar tanks in the previous three years.
- B. Testing: Provide independent testing firm to perform testing and inspection for tank welding.
- C. Tank Leak Test: Provide tank integrity testing in the form of a hydrostatic test in accordance with UL 142.

#### **1.07 DESIGN REQUIREMENTS**

- A. General:
  1. Horizontal tank design criteria shall be in accordance with the current International Building Code, International Fire Code, the most current criteria of the American Society of Civil Engineers, and the most current edition of Underwriters Laboratories Inc. (UL) Standard for Safety UL 142, "Steel Aboveground Tanks for Flammable and Combustible Liquids":
    - a. Specific Gravity = 1.0
    - b. Classification of Structure: Category IV, Essential Facility (ASCE/SEI 7-10) "Minimum Design Loads for Buildings and Other Structures".
    - c. Importance Factors (IBC, ASCE 7)
      - i. Seismic = 1.5
      - ii. Snow = 1.20
      - iii. Wind = 1.15

- d. Design Loading:
  - i. Seismic = Zone 3
    - $S_1 = .378$
    - $S_s = .105$
  - ii. Ground Snow load = 60 PSF
  - iii. Wind = 120 MPH Exposure D
- 2. The tanks shall be designed, or supplemented, for anticipated shipping and handling loads. Lifting connections shall be provided where shown on the Drawings, and where required for shipping and handling. The lifting eyes shall be capable of fully supporting the static weight of the completed tank (empty) without damage to the tank.
- 3. The tanks shall include the nozzles and fittings shown on the Contract Drawings. Provide water draw assemblies and clock gage stilling wells on all tanks as detailed on the Contract Drawings.
- 4. Tank dimensions and capacity shall be as shown on the Contract Drawings.
- 5. The Lowest One Day Average Temperature for Shishmaref is  $-12$  degree F.

## **1.08 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 – MATERIALS**

### **2.01 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 NEW TANK IS PROHIBITED.

### **2.02 PRODUCTS**

- A. Steel - Steel Sheets, Plates and shapes shall meet the requirements of Section 05120 Structural Steel of these Specifications.
- B. Threaded Penetrations – Threaded penetrations shall be female pipe thread, size as indicated.

- C. Flanged Penetrations – Flanged penetrations shall be class 150#, size as indicated.
- D. Gaskets - Gaskets shall be Buna-N.

## 2.03 TANKS AND APPURTENANCES

### A. Factory Coated welded steel fuel storage tanks:

#### 1. Tank Joints:

##### a. Head and shell joints for horizontal cylindrical tanks:

- i. Primary tank head joints shall incorporate double welded full fillet lap joints in accordance with UL 142 Figure 6.2, No. 6,
- ii. Secondary tank head joints shall incorporate single welded full fillet lap joints in accordance with UL 142 Figure 6.2 No. 4.
- iii. Primary and secondary tank shell joints shall be double welded in accordance with UL 142 Figure 6.1 No. 1 or No. 2.
- iv. Seams on the ends of all horizontal tanks shall be either vertical or horizontal. Skewed seams shall be cause for rejection of tanks.

#### 2. Horizontal Tank Ladders and Catwalks:

- a. Equip horizontal tanks with exterior bolt on ladders and catwalks as shown on the Contract Drawings. All bolt on components shall be designed and constructed in accordance with federal OSHA, International Building Code, International Fire Code and UL 142 requirements.
- b. Exterior ladder and catwalk components shall be shop assembled for field installation and hot dipped galvanized. Design shall permit field installation of exterior ladders and catwalks without field welding.
- c. Verify fit of bolt-on ladder components to tanks prior to painting tanks; remove and package separately for shipping.

#### 3. Pipe/conduit standoffs:

- a. Equip tanks with all, fittings, supports and appurtenances as shown on the Contract Drawings.
- b. All components shall be designed and constructed in accordance with the Specifications and applicable Federal OSHA, 2003 International Building Code, 2006 International Fire Code and UL 142 requirements.

#### 4. Horizontal tank saddles and skids:

- a. All horizontal tanks to be provided with integral steel saddles and skid foundations in accordance with UL 142, Section 31 and the Contract Drawings.
- b. Skids shall be suitable for skidding empty tanks without damage.
- c. Provide minimum W8x35 skid foundations.
- d. Skids to extend 12" beyond each end of tank assembly, be capped with a ½ inch thick end plate at 45 degree angle to horizontal, and be provided with 4" diameter Schedule 80 steel pipe tow bars at each end to allow dragging of the tank and lifting from one end with no damage to the tank assembly.



- e. Saddles to be seal welded to tank - bolt on or strap on saddles will not be accepted. Space saddles as shown on the Contract Drawings. Maximum saddle spacing shall be 10 FT measured center to center.
  - f. Skid and saddles shall be constructed such that the vertical distance between the bottom of the tank skid and the bottom of the tank is no greater than 11 inches.
5. Tank Labeling
- a. All tanks shall be labeled in accordance with the requirements of the IFC Chapter 34 and NFPA 704. Each end of dual-compartment tanks shall be labeled for volume (gallons) and product type. All tank penetrations shall be labeled in accordance with the Contract Drawings in 2" high black lettering.

## 2.04 COATING SYSTEMS

### A. Tanks and Appurtenances

1. All ladders, ladder cages, catwalks and railings shall be hot dipped galvanized in accordance with ASTM A123, G90.
  - a. 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.
2. The tank exterior, saddles, skids, fittings, nozzles, and standoff supports shall be shop coated in accordance with the following specification and in accordance with the coating manufacturer's recommendations.
  - a. Surfaces to be coated: All exterior surfaces of tanks, including bottom of vertical tanks, nozzles, skids, pipe supports, fittings, pipe and interior and exterior surfaces of hose reel cabinet.
  - b. Surfaces not coated: Flange and nozzle faces, penetration threads, flange and manhole bolts.
  - c. 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.
  - d. Coatings:
    - i. Prime Coat- Devoe Catha-Coat 302H (3 mils minimum dry finish thickness (DFT))
    - ii. Intermediate Coat – Devoe Bar-Rust 236 (5-6 mils minimum DFT)
    - iii. Top Coat- Devoe Devthane 389 (2-3 mils DFT)
  - e. Coat Colors: All coats shall be contrasting colors. Top coat color shall be white.
  - f. 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.
  - g. Touch-up Paint: Provide 10 gallons each (20 gallons total) of prime 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.
3. Inspection and Testing: The Project Manager may be present during the coating process and may perform random tests. Any deficiencies identified during the inspection shall be corrected at the Contractor's expense.

## **PART 3 – EXECUTION**

### **3.01 TANK PLACEMENT**

- A. Install new aboveground storage tanks in accordance with the Contract Drawings, the referenced publications, and the manufacturer's written instructions, checklists, and warranty requirements for each system component.

### **3.02 COATING REPAIR**

- A. Any damage to the factory-applied coating shall be repaired and restored to the original finish in strict compliance with the manufacturer's recommendations.

### **3.03 WARRANTY**

- A. The Contractor shall warrant the tanks against any defects in workmanship and materials for a period of one year from the date of shipment.
- B. In the event any such defect should occur, the Authority or Project Manager shall report it in writing to the Contractor during the warranty period.

**END OF SECTION**

## SECTION 15191

### FUEL PIPING SYSTEM

#### PART 1 – GENERAL

##### 1.01 SCOPE OF WORK

- A. This Section includes fuel piping system materials, equipment, supports, and accessories. The intent of this specification, along with other specifications, and the accompanying Contract Drawings is to provide a complete and workable facility with complete systems as shown, specified and required by applicable codes.

##### 1.02 RELATED REQUIREMENTS

- A. Section 01300 - Submittals
- B. Section 01340 - Shop Drawings, Product Data, and Samples

##### 1.03 PERFORMANCE REQUIREMENTS

- A. Minimum Working-Pressure Rating: Unless otherwise indicated, minimum pressure requirement for fuel oil piping is 150 psig
- B. Design Service Conditions: All fuel tank appurtenances shall be rated for the following service conditions:
  - 1. Fluid; Gasoline and Diesel fuel
  - 2. Operating temperature range: -50 degree F to 120 degree F.
- C. Any reference standards that do not comply with these service conditions shall be brought to the Project Manager's attention immediately.

##### 1.04 REFERENCES

- A. The latest editions of the publications listed below form a part of this specification to the extent referenced.
- B. ASTM A333 Seamless and Welded Steel Pipe for Low-Temperature Service
  - 1. ASME B16.5 Flanges and Flanged Fittings
  - 2. ASME B16.9 Factory-Made Wrought Steel Butt welding Fittings
  - 3. ASME B16.11 Forged Fittings, Socket-Welding and Threaded
  - 4. ASME B31.3 Chemical Plant and Petroleum Refinery Piping
  - 5. ASME B31.4 Liquid Transportation Systems For Hydrocarbons and Other Liquids

6. ASME BPV IX Boiler and Pressure Vessel Code; Section IX, Welding and Brazing Qualifications

**1.05 SUBMITTALS**

- A. Submit under provisions of Section 01300.
- 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.
- E. Welding Procedure Qualification Records (PQRs) and Welding Procedure Specification.
- F. Pipe coating process and schedule.
- G. Inspection and Testing Procedures and Results.

**1.06 DELIVERY, STORAGE AND HANDLING**

- A. Contractor is responsible for protection of all material, equipment, and apparatus provided from damage during transportation, storage and installation processes.
- B. Material, equipment or apparatus damaged because of improper storage or protection will be rejected and replaced at Contractor's expense.

**PART 2 – MATERIALS**

**2.01 GENERAL**

- A. Materials shall be new unless otherwise specified. All items of the same type shall be of the same manufacturer.

**2.02 PIPE**

- A. Seamless carbon steel pipe, Grade B, with plain bevel ends, meeting the requirements of ASTM A106B.
  - 1. 3-inch diameter and larger within diked areas: Schedule 40
  - 2. All other piping: Schedule 80
  - 3. Except 1 inch diameter and smaller shall be schedule 160
- B. Pipe nipples: Type 304 stainless steel, threaded schedule to match adjoining piping.

- C. Buried Piping: Shall be schedule 80 and coated with 17 mils minimum DFT fusion bonded epoxy (FBE) coating, 3M Scotchkote 134 or approved equal.
  - 1. Provide mastic lined heat shrink sleeve or tape for all pipe joints and fittings of the same thickness as the pipe coating as a minimum, Raychem WPC 100 M for pipe joints and Flexclad for fittings, or approved equal.
  - 2. Extend sleeves and wrap a minimum of 2 inches over pipe coatings.
  - 3. Prior to backfilling rest coating with an electronic holiday detector, repair all defects and retest.
- D. Cathodic Protection: Buried pipe shall be cathodically protected with pairs of sacrificial magnesium anodes installed at a maximum of 400-feet per pair or as indicated in Contract Drawings. Anodes shall be MAG-BAG 17# anodes with two 12 gauge wire leads. Cad weld leads to pipe.

### **2.03 PIPE FITTINGS**

- A. Pipe fittings for 2-inch and larger piping: Seamless wrought carbon steel, meeting the requirements of ASTM A234. Flanges shall be ANSI B16.5 150-pound raised face, ASTM A105 forged steel weld neck type bored to match inside diameter of mating piping.
  - 1. Provide A320 Grade L7 galvanized or 316L stainless steel studs or bolts, nuts and washers for all flange connections, unless otherwise noted.
  - 2. Elbows shall be long radius, unless otherwise noted.
- B. Pipe fittings for welded pipe smaller than 2-inch: Forged carbon steel socket weld type, ASTM A105, 3000-pound minimum.
- C. Pipe fittings for threaded piping: Forged carbon steel, threaded type, ASTM A105, 3000-pound except where specifically noted.
- D. Flanges: ASME Class 150 raised face flanges, ASTM 105 forged steel. Bore shall match the pipe in which the flange is installed.
- E. Flange Gaskets: Gaskets shall be 1/8" thick spiral wound, stainless steel, filled fuel resistant gaskets rated for -50° F service with a carbon steel centering ring. Provide 1/8" thick full faced non-asbestos fiber composite gaskets and flat faced flanges where required for connection to equipment.
- F. Dielectric Isolation Flange Kits: Provide where indicated on the project drawings and at all transitions from above to below grade. Fuel rated full face fiber gaskets, with nylon bushings and washers. Calpico EQDW or approved equal.
- G. Flange nuts and studs shall be ASTM A320 Grade L7, plated, case hardened, and corrosion resistant.

- H. All pipe and fittings shall be Grade WPB, full penetration butt welded, schedule to match the piping in which fitting is installed.
- I. Threaded fittings are not allowed except where shown on the Contract Drawings, or where required for connection to equipment.
- J. Perform all welding in accordance with ASME section IX and API 1104 for welding procedure and performance qualification. Visually inspect weld joints in accordance with API 1104.
- K. Provide flanged connections as required to allow removal of individual components.

## **2.04 PIPE COATING SYSTEM**

### **A. Above Grade 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 4140, or approved equal, to 1.5 mils minimum dry film thickness. Color: Red.
- 2. After field fabrication is complete, top coat primed pipe and fittings with two coats of alkyd enamel, Devoe Speed Enamel 4318, or approved equal. 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. 2-inch length of each pipe to be left uncoated for welding. After welding, prepare and finish affected area per painting specification above.
- 4. 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.
- 5. Labels: After painting, 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 decal stickers. Maximum flow direction arrow spacing shall be 10 feet measured along pipe length, minimum of one arrow per pipe segment. Color for decals shall be black lettering on white background. Periodically label each pipe run, 50-feet minimum, 150 feet maximum.

### **B. Below Grade Pipe:** All buried piping shall be FBE coated steel as noted in 2.02.

## **2.05 VALVES**

- A. Flanged Gate Valves: Carbon steel body, ANSI 150# raised face flanged ends, flexible disc, steel trim, lockable handle 150 psig minimum working pressure. Crane Class 150, model 47, or approved equal.
- B. Swing Check Valves: (2" and larger) Carbon steel body, ANSI 150# raised face flanged ends, steel disc and trim, 150 psig minimum working pressure. Crane Class 150, model 147, or approved equal. (1") Bonney forge bolted bonnet full/reduced threaded swing check valve.

- C. Flanged Ball Valves: Reduced port carbon steel uni-body, ANSI150# raised face flanged ends, stainless steel ball and trim, glass filled Teflon seat, graphite seals, lockable handle, 150 psig minimum working pressure, compliant with NACE MR0175 Fire Safe and API 607. PBV model C-5410-31-2236-FT-NL, no substitutes. Provide all-weather padlock for each valve, all padlocks to be keyed alike for each Owner.
- D. Flanged Pressure Relief Valves: Steel body, ANSI 150# raised face flange inlet and outlet, ½" soft seat orifice, closed cap, size and pressure setting as indicated. Hydroseal 1FLARV 00, or approved equal.
- E. Threaded Ball Valves: Carbon steel body, threaded ends, stainless steel ball and trim, PTFE seat, graphite seals, lockable handle, 150 psig minimum working pressure, NACE MR0175 conformance, fire safe per API 607. PBV C5312-38-2236-GL-NL, no substitutes. Provide all-weather padlock for each valve, all padlocks to be keyed alike.
- F. Anti-Siphon Valves: Normally closed, bronze body, with special expansion relief set at 25 psig. Valve set to open at 20 feet head pressure. Morrison Bros Figure 910ER-7215AP with expansion relief, or approved equal.
- G. 2" Actuated Ball Valve: ASME class 150 2-inch flanged ball valve with ASTM A350 grade LF2 body, Teflon seats and seals with maximum 360 in-lbs operating torque at minus 50 degrees F. Nutron model T3-R20R01L2 ball valve with factory mounted actuator as specified below, no substitutes.
  - 1. Actuator for Non-Hazardous Locations: NEMA 4 enclosure without manual override. Shaft extension, PTC self-regulating heater, Exxon Beacon 325 severe cold grease, 600 in-lbs output torque, 10 sec stroke time. Rated for operation to minus 50 degrees F. 115 VAC, single phase. RCS model SXR-0994, no substitutes.
  - 2. Actuator for Hazardous Locations: PTC self-regulating heater, NEMA 7 enclosure without manual override does shaft extension, Exxon Beacon 325 severe cold service grease, 115 VAC, 650 in-lbs torque, 10 sec. stroke time, actuator rated to -50 degrees F. RCS model SXR-1023, no substitutes.
- H. 3" Three-Way Valve: ANSI 150-pound flanged ends, carbon steel body CS body, SS plug and cover, "D-style" plug flow arrangement for 180 degree rotation, Graphoil Fire-Safe packing, cover gasket, and lever operator with lock brackets. Permaseal model valve, part#: PPS,3(or 4 for 4-inch),F1,CS,Y3,T,FS\*LV\*LXX010-180 Greaves Co. Inc, or approved equal.
- I. Fuseable link oil valve - ASME Class 150 1-inch fusible link valve, machined brass body. Fusible link to automatically close when exposed to heat above 160 degrees F. Fiomatic FIB400F, or approved equal.
- J. Motorized Valves: ASME Class 150 2-inch flanged ball valve with ASTM A350 grade LF2 body, teflon seats and seals with maximum 360 in-lbs operating torque at minus 50 degrees F. Nutron Model T3-R20R01L2 ball valve with factory mounted actuator as specified below, no substitutes.

1. Actuator for non-hazardous locations: NEMA 4 enclosure without manual override shaft extension, ptc self regulating heater, Exxon Beacon 325 severe cold grease, 600 in-lbs output torque, 10 sec stroke time. Rated for operation to minus 50 degrees F. 115 VAC, single phase. RCS Model SXR-0994, no substitutes
2. Actuator For Hazardous Locations (Explosion Proof): NEMA 7 enclosure without manual override shaft extension, ptc self regulating heater, Exxon Beacon 325 severe cold grease, 600 in-lbs output torque, 10 sec stroke time. Rated for operation to minus 50 degrees F. 115 VAC, single phase. RCS Model MAR 49-10-7-120-HT-2AS actuator, no substitutes. Provide explosion proof actuators at locations indicated.

## **2.06 EQUIPMENT NAMEPLATES AND OPERATIONAL TAGS**

- A. 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.
- B. 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.
- C. 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 (e.g. BV-1, MV-3, etc), normal operating condition (normally open or closed), component owner and any additional information required for proper operation.

## **2.07 MISCELLANEOUS PIPING ACCESSORIES**

- A. 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.
- B. 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.

- C. Strainers: Carbon steel body, bottom clean-out Y-strainer with blow off tapping plug, ANSI 150-pound class raised face flanged ends. Provide #10 screen. 150 psig working pressure. Mueller Model 781, or approved equal.
- D. Flex Fittings: Type 304 stainless steel corrugated inner core with Type 304 stainless steel wire double braided outer cover, ASME Class 150 fixed flange by floating flange ends with 18" live length unless a different length is indicated. 150 psig minimum working, factory tested to 225 psig minimum. Provide factory test certification for each flex. Metraflex Metra-Mini, or approved equal.
- E. Fuel Filter - 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.

## 2.08 PIPE SUPPORTS AND FASTENERS

- A. Support Strut: Cold formed mild steel channel strut, hot dipped galvanized finish and slotted back unless specifically indicated otherwise.
  - 1. Standard strut: 12 gauge, 1-5/8 inch by 1-5/8 inch, Unistrut P1000T (HG), or approved equal.
  - 2. Double strut: 12 gauge, 1-5/8 inch by 3-1/4 inch, Unistrut P1001T(HG), or approved equal.
  - 3. Shallow strut: 14 gauge, 1-5/8 inch by 13/16 inch, Unistrut P4100T (HG) or approved equal.
  - 4. Solid back strut (plain, unfinished black): For welding to tanks or structures, 12 gauge, 1-5/8 inch by 1-5/8 inch, unfinished black steel, Unistrut P1000 (PL), or approved equal.
  - 5. Paint in accordance with Specifications.
- B. Fittings and Accessories: Provide galvanized or zinc plated carbon steel fitting, brackets, channel nuts and accessories designed specifically for use with supplied strut.
- C. Pipe Clamps: Galvanized carbon steel two-piece pipe clamp designed to support pipe tight to strut. Unistrut P-11## series or approved equal.
- D. Pipe Straps: Carbon steel two-hole pipe strap. Unistrut P2558, or approved equal.
- E. Fasteners:

1. Bolts, nuts and washers: Galvanized or zinc plated carbon steel unless stainless steel is specifically shown. Stainless steel: Type 304.
2. Lags: Hot dipped galvanized steel unless stainless steel is specifically shown. Stainless steel: Type 3.

F. Do not use Stainless Steel in contact with Galvanized items.

## **PART 3 – EXECUTION**

### **3.01 PREPARATION**

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare piping connections to equipment with flanges or unions as shown in the Contract Drawings.
- D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

### **3.02 INSTALLATION**

- A. Install in accordance with manufacturer's instructions and applicable codes and standards.
- B. Route piping in an orderly manner and maintain gradient.
- C. Group piping whenever practical at common elevations.
- D. 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.
- E. 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.
- F. Make threaded joints using pipe joint compound applied to the male threads. Hercules Grip, no substitution.
- G. Coat flange gaskets with anti-seize compound prior to assembly.
- H. Provide non-conducting dielectric connections wherever jointing dissimilar metals. Provide dielectric flange kits at all transitions between aboveground and buried piping.
- I. Support piping and equipment as shown on the Contract Drawings using specified supports and fasteners. If not detailed on the Contract 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.

Pipe Size	Maximum Support spacing
1-1/2 inch	9 ft
2 inch	10 ft
2-1/2 inch	11 ft
3 inch	12 ft
4 inch	14 ft

- J. 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.
- K. Do not use stainless steel in contact with galvanized supports.
- L. Provide clearance for installation of insulation and access to valves and fittings.

### 3.03 EQUIPMENT NAMEPLATES AND OPERATIONAL TAGS

- A. Label contents of all Nameplates: Fasten nameplates on or adjacent to component with approved adhesive.
- B. Operational Tags: Fasten tags to components using metallic zip-ties, double safety wire, or other approved means.

### 3.04 UTILITY MARKERS

- A. Continuous glass fiber and resin reinforced marker, one-piece, vandal and vehicle impact resistant. Provide Carsonite CUM 375 or approved equal.
- 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.
- C. Above Grade Pipe: Install utility markers every 50 feet along the pipe as shown on the Contract Drawings.

### 3.05 TESTING

- A. 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.
- B. It is cautioned that air testing is hazardous in nature, as air is compressed and may be released explosively should the piping system rupture.
- C. Should water be used for testing, all water must be removed after the test.

- D. Contractor shall be responsible for protecting life and property during testing. Protect and isolate items that may be damaged by the test pressure.
- E. Prior to painting or concealing, test piping as follows:
1. Isolate and pressure test each run of piping with compressed air at 125 psig minimum pressure for a minimum of one hour. Provide blind flanges, threaded caps or plugs at each end of the test section as needed. Test 100% of welds visually for leaks with a leak detection solution. Do not conceal pipe joints before pressure testing is complete. Isolate equipment and components rated for lesser pressures so as not to damage these.
  2. Pressure test piping system again after all equipment is installed at 75 psig for a minimum of one (1) hour, or the maximum rated pressure of the weakest component, whichever is less. Test 100% of welds and pipe joints for leaks with a leak detection solution. Piping system shall maintain pressure for one hour minimum.
  3. 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.
  4. Pressure shall be maintained for sufficient time to complete the visual inspection of all joints but shall be not be less than one (1) hour.
  5. Care shall be taken to ensure that these pressures are not applied to vented tanks.
  6. Submit written procedures for testing, including test pressures, equipment to be used and items to be tested.
  7. Cut out, reweld and retest all leaking welded joints. Install new gaskets on any flanged joints that were taken apart.
  8. Repair any leakage found and retest until system proves leak-free. Retesting after the repair of defects shall be performed at no cost to the Authority.
  9. After final system assembly, perform an additional leak test using fuel at 50 psig.
  10. Repair all defects.
  11. Certified test results shall be submitted to the Project Manager for approval.
  12. Test certification shall include gauge pressure, air temperature, time, date, witness, and pipeline identification.

**END OF SECTION**

## SECTION 15192

### PUMPS AND EQUIPMENT

#### PART 1 – GENERAL

##### 1.01 SCOPE OF WORK

- A. This Section includes fuel pumps and associated equipment. The intent of this specification, along with other specifications, and the accompanying Contract Drawings is to provide a complete and workable facility with complete systems as shown, specified and required by applicable codes.

##### 1.02 PERFORMANCE REQUIREMENTS

- A. Minimum Working-Pressure Rating: Unless otherwise indicated, minimum pressure requirement for fuel oil piping is 150 psig
- B. Design Service Conditions: All fuel tank appurtenances shall be rated for the following service conditions:
  - 1. Fluid; Gasoline and Diesel fuel
  - 2. Operating temperature range: -50 degree F to 120 degree F.
- C. Any reference standards that do not comply with these service conditions shall be brought to the Project Manager's attention immediately.

##### 1.03 SUBMITTALS

- A. Submit under provisions of Section 01300.
- 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.

#### PART 2 – MATERIALS

##### 2.01 PUMPS

- A. Transfer Pumps: 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: Submersible explosion proof turbine pump with intake screen, integral leak detector specifically designed for pumping gasoline or diesel fuel, internal

pressure relief and check valves. 208/230 VAC, single phase, 3/4 hp motor. Provide Red Jacket NO. P75S1 with trapper intake screen, or approved equal.

## **2.02 RETAIL DISPENSING EQUIPMENT**

- A. Electronic retail dispenser: UL Listed two hose, lighted, white panel, dual product electronic retail dispenser (gasoline and diesel) for use with remote submersible pump. Pressure delivery dispensing unit displaying money per sale, gallons per sale and price per gallon. Provide internal 30 micron spin-on filter and 12 spare elements. Dispenser shall be certifiable for retail sales. Prior to delivery, replace factory applied standard grease in with a severe cold arctic-grade lubricant. Two hose dual-product dispenser, Bennett 3K 3822 SNR-27 Dispenser, No substitutes.
- B. Fuel System Controller: Remote Controller shall have pre and post pay, sales capabilities, volume display, cost display and totalizing functions. Console shall be complete with power supply, controller interface, receipt printer, interconnect box and mechanical relay boards for controlling the dual product dispenser. Supply cable as necessary to install. TMS EZ Console System with the TMS EZ Radio Frequency Control System for Bennett 3K Dispensers, No substitutes. Note: Manufacturer's representative shall travel to Shishmaref and provide a minimum four (4) hours of training to local operators on operation of controller system.
- C. Retail Dispensing Facility Arctic Hose: 3/4 inch diameter with 3/4 inch NPT connections at each end. Provide two 18 foot long sections of hose with retail dispenser. Goodyear Arctic Ortac or approved equal.
- D. Retail Dispensing Facility Breakaway Connection: UL Listed 3/4 inch breakaway fitting. EBW model# 679-137 with hose connection, or approved equal.
- E. Retail Dispensing Shear Valve: UL Listed 1-1/2 inch x 1-1/2 inch dispenser shear valve with fusible link. Morrison Bros Co. model 636F, or approved equal.
- F. Retail Dispensing Facility Hose Swivel: UL Listed 3/4 inch NPT x 3/4 inch NPT swivel. OPW model no. 45M-0492, or approved equal.
- G. Retail Dispensing Hose Nozzle: UL listed automatic shut off, automotive fueling nozzle with hold open latch and color coded handle, red for gasoline and green for diesel. OPW 11BP-0300, and 11BP-0100, or approved equal.
- H. Provide weather resistant cover for the electronic retail dispenser that provides full functionality when installed. Cover shall be secured with Velcro and be equipped with a clear cover over the dispenser display. Provide shop drawings from Alaska Tent & Tarp, or approved equal.

## **2.03 BULK 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, resettable register, non-resettable 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. Fleet Dispensing Facility Arctic Hose: 1 ½ inch diameter with 1 ½ inch NPT connections at each end. Provide 30 foot long section of hose with each hose reel assembly. Goodyear Arctic Ortac or approved equal.
- C. Fleet Dispensing Breakaway Connection: UL listed 1 1/2-inch breakaway fitting. OPW model no. 66SP-5150 with hose section OPW model no. 66H-1300 or approved equal.
- D. Fleet Dispensing Hose Swivel: UL listed hose swivel. PT Coupling model F0B150MF, or approved equal.
- E. Fleet Dispensing 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.
- F. Fleet Dispensing Hose Reel: Spring rewind hose reel capable of holding 40 feet of 1 ½ inch I.D. hose. Reel shall be top rewind. Hannay 922-25-26A (Top Rewind) with utility hose rollers and ball stop for 1 ½ arctic hose, or approved equal.
- G. Fleet Dispensing 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.
- H. 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.

## **2.04 ACCESSORIES**

- A. Fire Extinguishers: Portable with a rating of 3A-40BC. The location, installation, and containment of all extinguishers shall be in accordance with these Contract Drawings and with the IFC.

## **2.05 COATING SYSTEMS**

- A. Coat in accordance with Section 05120 Structural Steel, Part 2.03 – Steel Coating, unless otherwise noted on Contract Drawings or Specifications.

## **PART 3 – EXECUTION**

### **3.01 EXAMINATION**

- A. Check equipment for damage that may have occurred during shipment. Repair damaged equipment as approved or replace with new equipment.

### **3.02 PREPARATION**

- A. Protect bright finished shafts, bearing housings, and similar items until in service. No rust will be permitted.

### **3.03 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 16 Specifications.

### **3.04 TESTING**

- A. At completion of installation, demonstrate that pumps will deliver specified capacity.

**END OF SECTION**



## SECTION 15193

### FUEL TANK APPURTENANCES

#### PART 1 – GENERAL

##### 1.01 SCOPE OF WORK

- A. This Section includes fuel tank appurtenances. The intent of this specification, along with other specifications, and the accompanying Contract Drawings is to provide a complete and workable facility with complete systems as shown, specified and required by applicable codes.

##### 1.02 PERFORMANCE REQUIREMENTS

- A. Design Service Conditions: All fuel tank appurtenances shall be rated for the following service conditions:
  - 1. Fluid; Gasoline and Diesel fuel
  - 2. Operating temperature range: -50 degree F to 120 degree F.
- B. Any reference standards that do not comply with these service conditions shall be brought to the Project Manager's attention immediately.

##### 1.03 SUBMITTALS

- A. Submit under provisions of Section 01300.
- 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.

#### PART 2 – MATERIALS

##### 2.01 GENERAL

- A. Provide tank accessories as required and as shown on the Contract Drawings. Coordinate connections to the tank.

##### 2.02 TANK ACCESSORIES & APPURTENANCES

- A. Manholes: 24-inch nominal size, 5/16-inch steel lid (single punch), 1/4" mild steel ring with 7-inch riser height, Clay & Bailey MR820-0600 or approved equal. Provide complete set of bolts and Buna-N gasket for lid.

- B. Normal Vent: Tee vent with screens and threaded connection. Clay & Bailey, Figure 300, or approved equal.
- C. Pressure/Vacuum Whistle Vents: Aluminum body and hood, stainless steel screens and float, brass internals, Viton seals. 3" FTP connection for 29,000 gallon tanks and 2" FTP for other tanks, 8 oz/square inch pressure setting, 1 oz/square inch vacuum setting. High intensity whistle alarm on rise of float at adjustable level. Morrison Figure 922, or approved equal.
- D. Heavy Emergency Vents: UL listed, aluminum body, brass seat, cast iron cover, flanged connections, sized in accordance with UL 142. Set to open at 16 ounces per square inch pressure. 8" size – 500,000 CFH relief capacity at 2.5 psig. 10" size – 800,000 CFH relief capacity at 2.5 psig. Morrison Figure 244-F with flanged adapter, or approved equal. Loose manholes not permitted.
- E. Vent Caps: Aluminum tee-style body, 20 mesh stainless steel screen, 2-inch FPT connection. Morrison Figure 155, or approved equal.
- F. Gauge Hatch: Brass cap, brass adapter, and brass chain, Buna-N gasket, 2-inch FPT connection. Morrison Figure 307, or approved equal.
- G. Float Switches: See also "Electrical Equipment Schedule" in the Contract Drawings.
  - 1. Critical High, High and Low level float switch combination: Float activated magnetic level switch with three actuation set points. 3-inch ASME class 150 raised face flanged tank connection. Actuation set points shall be as indicated on the Contract Drawings. UL listed for Class 1 Division 1 hazardous environments. Custom Switches Inc. Model LS-1900 Type 7, or approved equal.
  - 2. High or low level float switch: Float activated magnetic level switch with one actuation set point. 3-inch ASME class 150 raised face flanged tank connection. Actuation set point shall be as indicated on the Contract Drawings. UL listed for Class 1 Division 1 hazardous environments. Custom Switches Inc. Model LS-1900 Type 2, OAE.
- H. Liquid Level Gauge: Clock-style gauge with readout in feet and inches up to 12 feet, accurate to ¼-inch over full scale. Aluminum body, 2-inch MPT connection, stainless steel float sized to pass through 2-inch bung opening. Morrison Figure 818 or approved equal.
- I. Sample Hatch: Brass body with threaded brass cap and chain. Cap shall be lockable. Morrison Model No. 178, or approved equal.
- J. Overfill Prevention Valve (500 gallon tank) - 2-inch NPT float-type mechanical shut-off valve. Anodized aluminum body, closed cell buna-n float, brass plunger, stainless steel linkage. Provide adapter for installation on a 4" NPT pipe nozzle with 2" FPT inlet. Provide with aluminum drop tube cut to length at 45 degrees as required to terminate 6 inches above tank bottom. Morrison figure 9095-A or approved equal.
- K. Spill Containment Manhole (500 gallon tank) - 7 gallon capacity 12 gauge steel spill containment manhole with hinged and locking cover and power coated finish. 1/4" steel

base with 4" double-tapped fnpt connection and internal brass containment drain valve. Provide 2" hose coupling with cap, fill limiting valve as specified above and 2" drop tube. Pomoco 311ast or approved equal.

### **2.03 COATING SYSTEMS**

- A. Not Used

## **PART 3 – EXECUTION**

### **3.01 EXAMINATION**

- A. Coordinate tank connection sizes with all tank appurtenances

### **3.02 INSTALLATION**

- A. Install tank appurtenances in accordance with applicable codes and per the manufacturer's installation instructions.
- B. Select emergency vent size in accordance with UL 142. Loose bolted flanged manholes are not permitted for use as emergency vents.
- C. Provide bushings where required.

### **3.03 TESTING**

- A. Calibrate level gauges to the tank and verify correct readings.
- B. Check operation of fill alarms and overfill protection valves prior to completion of the work.

**END OF SECTION**

**SECTION 16010**  
**GENERAL ELECTRICAL PROVISIONS**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. Provide the labor, materials, equipment and test equipment necessary to furnish, install, and place into operation the power, motor, lighting, control, alarm, and associated electrical systems of this Contract. Connect motors, meters, panels, sensors, switches, and outlets or any other electrical device installed or provided as part of the project. Mark and identify circuits, terminal boards, equipment, enclosures, etc. with identification numbers, wire numbers, nameplates, and warning signs. Test, adjust and calibrate equipment and start-up all electrical equipment and its associated mechanical attachments as necessary to place the project into operation.
- B. Provide and install all control equipment and wiring to instruments and devices installed by others.
- C. Where the work of several crafts is involved, coordinate all related work to provide each system in complete and in proper operating order.
- D. Cooperate with all others involved in the project, with due regard to their work, to promote rapid completion.
- E. Local Conditions: The Contractor shall thoroughly familiarize himself with the work as well as the local conditions under which the work is to be performed. Schedule work with regard to seasons, weather, climate conditions, and all other local conditions which may affect the progress and quality of work.

**1.02 RELATED REQUIREMENTS**

- A. This Section applies to all Division 16 work and part of all other Division 16 sections.
- B. See Divisions 1 and 2 of which contain information and requirements that apply to work specified herein.
- C. Contractor shall review the Contract Documents and Specifications for equipment furnished by other crafts but installed in accordance with this Section. Bring questionable or obscure items, apparent conflicts between plans, specifications, governing codes and/or utility regulations to the attention of the Project Engineer. Codes, ordinances, regulations, manufacturer's instructions or standards take precedence when they are more stringent or conflict with the Contract Documents and Specifications.
- D. It shall be the responsibility of the Contractor to provide electrical service to, connection and/or interconnection of various units of equipment supplied by others. The Contractor shall not be required to set in place or align motors or devices supplied as an integral part of equipment provided by others.
- E. See also the following Sections:

1. Section 01300 – Submittals
2. Section 15175 - Aboveground Fuel Storage Tanks
3. Section 15191 - Fuel Piping System
4. Section 15192 - Pump and Equipment
5. Section 15193 - Fuel Tank Appurtenances

### **1.03 WORKMANSHIP**

- A. Installation of all Work shall be made so that its several component parts shall function as a workable system complete with all accessories necessary for its operation.
- B. All material and equipment shall be installed in accordance with the manufacturer's recommendations, instructions and/or installation drawings and in accordance with NECA standards.
- C. Materials and equipment shall be new and shall conform to applicable industry standards, NEMA standards and Underwriter's Laboratories (UL) standards.

### **1.04 ELECTRICAL SUPPLY**

- A. Electrical power for this project is furnished by Alaska Village Electric Cooperative (AVEC).
- B. The Contractor shall furnish new utility services as indicated on the Contract Drawings. All Utility work shall be performed in accordance with the applicable AVEC requirements.
- C. The Contractor shall contact the power company and shall include in his bid all power company charges associated with constructing a power utility service to the project. The Contractor shall pay all power company charges for materials, labor, one time non recurring construction costs (sometimes called excess facilities charge), and other costs assessed by the power company whether or not indicated on the Contract Drawings or specified.
- D. In addition to the above, the Contractor shall include in his bid all of the materials and labor required to provide the power supplies, including materials recommended or required by the power company, installation of materials furnished by the power company, etc., whether or not indicated on the Contract Drawings or specified.
- E. The Contractor shall coordinate installation of the electrical supply with the power company. The Utility will inspect the installation for compliance with its requirements and the Contractor shall be required to correct any deficiencies noted by the Utility at no additional cost to the AUTHORITY.

### **1.05 CODES AND STANDARDS**

- A. Codes: Perform all work in strict accordance with all applicable national, state, and local codes; including, but not limited to the latest legally enacted or adopted editions of the following specifically noted requirements; including all State and local amendments to these codes:

1. NFPA 70, National Electric Code - NEC
  2. ANSI-22, National Electrical Safety Code - NESC
  3. International Building Code – IBC
  4. International Fire Code – IFC
  5. Uniform Building Code - UBC
  6. Uniform Fire Code - UFC.
- B. Standards: Reference to the following standards infers that installation, equipment, and materials shall be within the limits for which it was designed, tested, and approved, in conformance with the current publications and standards of the following organizations:
1. American National Standards Institute - ANSI
  2. American Society for Testing and Materials - ASTM
  3. American Society of Heating, Refrigerating and Air Conditioning Consultants - ASHRAE (Standard 90-75)
  4. Factory Mutual - FM
  5. Institute of Electrical and Electronics Consultants - IEEE
  6. National Electrical Contractors Association - NECA
  7. National Electrical Manufacturers' Association - NEMA
  8. National Fire Protection Association - NFPA
  9. UL 508A, Underwriters Laboratory - UL

#### **1.06 PERMITS**

- A. Secure and pay for all fees, permits, etc. required by local and State agencies and all local utility companies.

#### **1.07 SPECIFIC TERMINOLOGY**

- A. Streamlining: In many instances, the products, reference standards, and other itemized specifications have been listed without verbiage. In these cases, it is implied that the Contractor shall provide the products and perform in accordance with the references listed.
- B. "Accessible" means arranged so that an appropriately dressed man 6-foot 2 inches tall, weighing 250 pounds, may approach the area in question with the tools and products necessary for the work intended, and may then position himself to properly perform the task to be accomplished, without disassembly or damage to the surrounding installation.
- C. The word "Contractor" as used in Division 16 specifications shall mean "Electrical Contractor."

- D. The word "General Contractor" as used in Division 16 specifications shall mean the Contractor responsible for the project.
- E. "Engineer or Project Manager" is the Authority's Representative as defined in the General Conditions of the Contract.
- F. "Furnish" means to purchase material as shown and specified, and cart the material to an approved location at the site or elsewhere as noted or agreed, to be installed by supporting crafts.
- G. "Install" means to set in place and connect, ready for use and in complete and properly operating finished condition, material that has been furnished.
- H. "Product" is a generic term which includes materials, equipment, fixtures, and any physical item used on the project.
- I. "Provide" means furnish all products, labor, sub-contracts, and appurtenances required and install to a complete and properly operating, finished condition.
- J. "Rough-in and Connect" means provide an appropriate system connection such as conduit with "J" boxes, wiring, switches, disconnects, etc., and all wiring connections. Equipment furnished is received, uncrated, assembled and set in place under the Division in which it is specified.
- K. "Serviceable" means arranged so that the component or product in question may be properly removed and replaced without disassembly, destruction, or damage to the surrounding installation.

#### **1.08 DRAWINGS, SPECIFICATIONS & SYMBOLS**

- A. The Contract Drawings and Specifications are complementary; what is shown on one is as binding as if called for in both. Do not scale the Contract Drawings. Locations of devices, fixtures, and equipment are approximate unless dimensioned.
- B. The Contract Drawings are partly diagrammatic and do not show precise routing of conduits or exact location of all products, and may not show in minute detail all features of the installation; however, provide all systems complete and in proper operating order.
- C. Drawing symbols used for basic materials, equipment and methods are commonly used by the industry and should be universally understood. Special items are identified by a supplementary list of graphical illustrations, or called for on the Contract Drawings or in the specifications.
- D. The electrical "legend" on the Contract Drawings is a standardized version and all symbols shown may not be used. Use the "legend" as a reference for the symbols used on the Contract Drawings.

#### **1.09 SUBMITTALS, MANUALS AND SHOP DRAWINGS**

- A. Submit to the Engineer for review and approval, as soon as practical after the date of notice to proceed and before commencement of installation or fabrication of any

materials or equipment, product manuals containing catalog numbers, wiring diagrams, rough-in dimensions, performance data, detailed drawings, and instructions for installing, operating and maintaining the material and equipment proposed for installation in the electrical work.

- B. The manuals shall be supplied to the Engineer for review and approval in the quantities indicated in Division 1 specifications before any electrical equipment is shipped to the job site. Record ("As Built") drawings of the work shall be provided upon completion of the work and shall be folded and punched for insertion into the manual after they are reviewed and approved by the Engineer.
- C. Submittals and manuals for the electrical system shall consist of hard cover, three-post, expandable metal hinge binders labeled with the job name and the Contractor's name with an index and tab dividers clearly identifying each major type of material and equipment by item, name or designation used on the Contract Drawings.
- D. Any drawings required to be prepared by the Contractor or his agent shall be of standard size no larger than 22-inch by 34-inch and with symbols similar to those used herein, with either the vendor's or Agency border. If legible, submittals on half size (11x17) bond paper are acceptable. Submittal shall also include a single copy of a ".pdf" file and a ".dwg" file with a ".ctb" file for printing. Drawings shall be prepared using AutoCAD V.2010 or later.
- E. Submit all electronic media including cut sheets, O&M information and instructions in either MS Word (.doc) or Adobe (.pdf) format on a CD formatted for reading on Intel-based PCs (not MAC).
- F. Provide manufacturer's installation, operation, maintenance, and service information, shop drawings, etc., for each panel, switchboard, motor control center, and equipment items furnished under the electrical work. Assemble and index each section listing the contents individually on the tab divider for that section. Compile a spare parts list and a supplier's index for each section and assemble in the section provided. Assemble records of all tests, measurements, and calibration settings made for each device. See Section 01300, Submittals.
- G. Submittals: Provide submittals for all products and systems described in Division 16 specifications and shown on the Contract Drawings to demonstrate compliance with the requirements of the project. Submit data not later than 60 days after Award of Contract. Furnish equipment submittals in the manner described elsewhere in these specifications. In addition, include data for review, and organize data, as noted below:
  - 1. Specific reference and/or drawings reference for which literature is submitted for review with an index, following specification format, and item by item identification.
  - 2. Manufacturer's name and address, and supplier's name, address, and phone number.
  - 3. Catalog designation or model number with rough-in data and dimensions.
  - 4. Operation characteristics.
  - 5. Complete customized listing of characteristics required. Indicate whether item is "As Specified" or "Proposed Substitution." Indicate any deviations on submittal. Mark out



all non- applicable items. The terminology "As Specified" used without this customized listing is not acceptable.

6. Wiring diagrams for the specific system.
7. Coordination data to check protective devices.
8. Working construction Drawings (Shop Drawings).

#### H. Submittal Data:

1. Prior to the submission of the required shop drawings, hold a meeting with all the trades and check the shop drawings for discrepancies, dimensional errors, omissions, contradictions, and departures from the Contract requirements. The shop drawings shall then be corrected and submitted to the Engineer with appropriate notes.
2. With prior permission from the Engineer, partial submittals will be considered for review provided that they are complete sections, as listed below:
  - a. Individual Special Systems (Control Panels, etc.)
  - b. Lighting Fixtures, Lamps and Accessories
  - c. Service, Disconnects
  - d. Raceways, Fittings, and Supports
  - e. Wire and Cable
  - f. Wiring Devices
3. Mark submittal literature and shop drawings clearly and bind 8-1/2-inch by 11-inch literature in three- hole loose-leaf binders by individual sets.
4. Submittal review is for general design and arrangement only and does not relieve the Contractor from any of the requirements of the Contract Documents. Submittals will not be checked for quantity, dimension, fit or proper technical design or operation of manufactured equipment.
5. Where allowed, substitutions will be reviewed using the criteria /manufacturer's data of the specified component.
6. Where deviations of substitute product or system performance have not been specifically noted in the submittal by the Contractor, provision of a complete and satisfactory working installation of equal quality to system specified is the sole responsibility of the Contractor.

### 1.10 TESTS

- A. **FACTORY TESTS:** All control panels will be tested prior to shipping. Panel operation will be demonstrated using simulated inputs and alarm conditions. Tests will be observed by ENGINEER and will not be shipped until panel(s) meet the functional and technical

requirements established in the specifications and drawings. Successful operation as determined by the ENGINEER will be acknowledged in writing.

- B. FIELD TESTING: The CONTRACTOR shall prepare and submit a test plan for review and approval by the ENGINEER.
1. Field testing cannot take place without an approved test plan.
    - a. The Test Plan shall outline the tests planned for each item of equipment.
    - b. The Test Procedures shall identify the test equipment to be utilized, the action of each test step and the expected result so that a test technician who has no knowledge of the details of the equipment design shall be able to successfully conduct the test.
  2. In the presence of the ENGINEER,
    - a. Test the equipment and electrical circuits for proper connection, continuity, and absence of undesirable shorts and grounds.
    - b. Test wire and cable installation, when complete and again 72 hours prior to energization of the system.
    - c. Check for continuity, visual damage, marking, and proper phase sequence before performing insulation testing.
      - i. Megger bus work, switches, breakers and circuits phase-to-phase and phase-to-ground disconnecting and reconnecting equipment which cannot be meggered otherwise.
      - ii. The minimum acceptable steady-state value is 50 megohms. Ambient temperature and humidity during testing shall be recorded.
  3. Verify operation, calibration, and settings of the meters, relays and indicating devices.
  4. Check all auxiliary equipment, i.e., heaters, thermostats, lights, and all illuminated indicating devices and lamps, and all audible alarm devices to verify that they function properly.
  5. Take distribution equipment test load readings after all loads are connected. Obtain the maximum reading for each phase and neutral with all lighting, appliances, motors (as applicable use largest combination), and other loads connected to the panels in service.
  6. Test the resistance of the grounding electrodes in the presence of the ENGINEER.
    - a. The measurement shall be done with a ground ohmmeter or the IEEE Standard No. 550, Paragraph 3.42 method.
    - b. Testing shall be performed during normal dry weather conditions with at least 5 non-rain days elapsing prior to the test.
    - c. Measured resistance of the electrode to ground exceeding 3 ohms shall require supplemental electrode additions until electrode resistance to ground is less than 3 ohms.

- d. Maximum equipment ground impedance is 25 ohms.
  - 7. Check fuses with an ohmmeter; ring out wiring and busing; check operation of control and safety interlocks.
  - 8. Test motor driven equipment motors before energization. Insulation test shall consist of megohmmeter check phase-to-ground, per IEEE Standard 43 or manufacturer's recommendations.
  - 9. Load test each motor of motor driven equipment showing the following:
    - a. Nameplate ratings (horsepower), (speed), (voltage), (phase), (ampere rating of motor at full load).
    - b. Measured load in amperes on lines 1-2.
  - 10. Load test pump motors, noting the operating conditions at the time of the test. Motor test data shall show suction and discharge conditions (pressure, temperature, humidity, to where such conditions affect load).
  - 11. Overload heaters shall be checked and the size on each phase shall be noted at this time on the test sheet.
- C. Report all test results in writing. Where tests disclose problem areas, retest after the defect has been corrected.
  - D. Demonstrate to the AUTHORITY that the electrical installation is working by operating all electrical systems and equipment. Simulate control inputs, responses to outputs and alarm conditions and their acknowledgement, artificially where necessary, for complete system tests.
  - E. Operate the electrical systems until acceptance of the work. Instruct The AUTHORITY's employees in the correct operation of all electrical and control systems under your jurisdiction.
  - F. Any rework or repair of equipment required during or as a result of the testing shall be done by the Contractor at no additional expense to the AUTHORITY.
  - G. The Contractor shall furnish to the AUTHORITY at the time the project is accepted, any special tools, calibration equipment, and testing apparatus specified or furnished by the equipment manufacturer for the proper adjustment and maintenance of the electrical equipment provided.

#### **1.11 CODES AND INSPECTIONS**

- A. Electrical work shall be installed in accordance with the latest edition of the National Electric Code and local and state codes in legal force in the project area.
  - 1. If the Contractor observes that the Contract Drawings and/or Specifications are at variance with such codes and regulations, he shall promptly notify the ENGINEER in writing.

2. Should the Contractor perform any work in non-compliance with the above-mentioned codes and regulations without such notice to the ENGINEER, the Contractor shall bear all costs arising therefrom.
- B. The above codes are referenced to establish minimum requirements and wherever this specification requires higher grades of material or workmanship than required by the codes, this specification shall prevail.
  - C. All electrical work shall be performed by Alaska licensed Journeyman Electricians or licensed Apprentice Electricians under the direct supervision of a licensed Electrical Administrator.
  - D. Submit written proof of all Journeyman and Apprentice Electricians' current licenses.
  - E. Submit certification for tests and inspections required by the electrical inspector having jurisdiction. Certificates of approval that are issued shall be transmitted to the AUTHORITY with a copy to the ENGINEER.
  - F. The Contractor shall pay all costs and fees required by inspecting and other agencies required for his work.
  - G. Cooperate with the ENGINEER and provide assistance at all times for the inspection of the electrical work performed under this Contract. Remove covers, operate machinery, or perform any reasonable work which, in the opinion of the ENGINEER, will be necessary to determine the completeness, quality, or adequacy of the work.

#### **1.12 COORDINATION**

- A. Electrical Contract Drawings are partly diagrammatic and it is not the intent to show in detail all features of work or exact physical arrangement of equipment. The location of outlets and equipment are approximate unless dimensioned. The exact locations and routing of conduits shall be governed by structural conditions and physical interferences and by the location of electrical terminations on equipment. Equipment shall be located and installed so that it will be readily accessible for operation and maintenance.
- B. If conduit is placed incorrectly with respect to equipment connections or if equipment connections are relocated without appropriate changes in the electrical work, and the resulting work is not coordinated, the work affected shall be removed and re-installed at the Contractor's expense, even if removal and replacement of structural and/or mechanical parts of the work are necessary.
- C. The Contractor shall schedule his work to coordinate through the General Contractor and with all other subcontractors, power and telephone utilities in order to maintain job progress and to avoid conflicts with equipment installation or work done by the various trades.
- D. The Contractor is responsible for maintaining required clearspace. Should the Contractor become aware of a clearspace violation or if the installation of electrical equipment as shown produces a clearspace violation, notify the ENGINEER in writing before proceeding with the installation.

### **1.13 LOCATIONS**

- A. All work performed in classified areas shall be done in strict compliance with Articles 500, 501, 514 and 515 of the NEC.
- B. Hazardous Locations: The following classifications have been assigned per NEC.
  - 1. Class 1, Division 1
    - a. Extends 5' in all directions around all Gasoline tank vents.
    - b. Area inside the Dual Dispenser and inside and below the pan basin.
  - 2. Class 1, Division 2
    - a. Extends 10' in all directions around all Gasoline tanks.
    - b. Space inside dike level to the top of dike.
    - c. The area 18" above grade and within 20' of the Gasoline Header.
    - d. The area 18" above grade and within 20' of the Dual Dispenser.
    - e. The area 18" around the perimeter of the Dual Dispenser enclosure.
    - f. The area within 10' if the gasoline side of the Dual Product Dispenser Tank (T1A).
- C. Hazardous boundaries have been placed on the drawings. All electrical penetration of hazardous boundaries shall be provided with seal-off fittings. Locations for seal-off fittings on all conduit penetrating classified locations shall be as required by code and shall be field determined by the Contractor.
- D. Wet Locations: Wet locations shall include all areas underground (below grade), in direct contact with the earth, areas subject to saturation with water or other liquids from splashing, surface water, exposed to the weather and unprotected.

### **1.14 RECORD DRAWINGS**

- A. Reference requirements stated elsewhere in these specifications.
- B. In addition to other requirements, mark up a clean set of Contract Drawings as the work progresses, to show the dimensioned location and routing of all electrical work which will become permanently concealed. Show routing or work in permanently concealed blind spaces within the facility. Show complete routing and sizing of any significant revisions to the systems shown.
- C. Maintain Record drawings in an up-to-date fashion in conjunction with the actual progress of installation. "Record" progress mark-ups shall be available on-site for examination by the Engineer at all times.
- D. Provide "As-built" Shop Drawings of each type of control panel.

- E. Prepare wiring diagrams on reproducible media using AutoCAD V2009 or later for all individual special systems as installed. Identify all components and show all wire and terminal numbers and connections.
- F. Prior to substantial completion, deliver these full size (22"x34") hard copy drawings and their electronic files, on CD, in both .dwg and full size .pdf format to the Engineer and obtain a written receipt.

#### **1.15 OPERATING INSTRUCTIONS**

- A. Prior to final acceptance, CONTRACTOR shall instruct the OWNER and AUTHORITY on the proper operation and maintenance of all electrical systems and equipment under this contract. Make available a qualified technician for each component of the installation for this instruction. Give these operating instructions after the operation and maintenance manuals have been furnished to the ENGINEER.

#### **1.16 OPERATION AND MAINTENANCE MANUALS**

- A. Provide two (2) copies of Operation and Maintenance Manuals in the manner described elsewhere in these specifications for the training of the Authority's personnel. In addition, organize manual and include data and narrative as noted below. Bind each manual in a hard-backed loose-leaf binder. Provide a non-password protected .pdf file of each manual in its entirety on a CD in addition to the required hard copies.
- B. Provide a separate chapter for each section of the electrical specifications with subchapters for each class of equipment or system. Provide a table of contents for each chapter, and each major item in each chapter, to indicate the page number of each. Label all pages to assure correct placement in manual. Identify each piece of equipment with its associated nameplate number, i.e. pump P-1, etc.
- C. Operating Sequence Narrative:
  - 1. In each chapter, describe the procedures necessary for personnel to operate the system and equipment covered in that chapter.
  - 2. Describe procedures for start-up, operation, emergency operation and shutdown of each system. If a particular sequence is required, give step- by-step instructions in that order.
  - 3. Describe all seasonal adjustments which should be accomplished for each system.
  - 4. Provide the above descriptions in typewritten, simple outline, narrative form.
- D. Maintenance Instructions:
  - 1. Provide complete instructions and a schedule of preventive maintenance, in tabular form, for each product.
  - 2. Schedule shall include recommended frequency of performance for all routine cleaning, inspection and lubrication with recommended lubricants.
  - 3. Provide instructions for minor repair or adjustments required for preventive maintenance routines.

4. Provide all information of a maintenance nature covering warranty items, etc., which have not been discussed in the manufacturer's literature or the operating sequence narrative.
  5. Provide complete informational data for all the spare and replacement parts for each product and system. Properly identify each component by part number and manufacturer.
- E. Manufacturers' Brochures: Include manufacturers' descriptive literature covering all products used in each system, together with illustrations, exploded views and renewal parts lists. Highlight all applicable items and instructions, or mark-out non-applicable items. Brochure bearing submittal review stamp are not acceptable.
- F. Shop Drawings: Provide a copy of all corrected, approved shop drawings for the project either with the manufacturers' brochures or properly identified in a separate subsection.

#### **1.17 INSTRUCTION OF OPERATING PERSONNEL**

- A. Provide services of qualified representative of supplier of each item or system listed below to instruct AUTHORITY and 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.
  1. Electrical Distribution Equipment: 4 hours
  2. Alarm and Control Panels: 4 hours per panel
- C. Have approved operating and maintenance data, and parts lists for all equipment on hand at the time of instruction.

#### **1.18 WARRANTY**

- A. The Contractor shall guarantee all work executed under this contract to be free from defects in materials and workmanship for a period of one (1) year from beneficial occupancy.
- B. Any faulty materials or workmanship shall be repaired or replaced by the Contractor to the satisfaction of the Owner or Authority at no additional cost during the warranty period.

#### **1.19 PROJECT COMPLETION AND DEMONSTRATION**

- A. Tests: During final inspection, conduct operating tests for approval.
- B. Demonstrate installation to operate satisfactorily in accordance with requirements of Contract Documents. Should a portion of installation fail to meet requirements of Contract Documents, repair or replace items failing to meet requirements until items can be demonstrated to comply.

- C. Have instruments available for measuring, voltage and current values and for demonstration of continuity, ground, or open circuit conditions. Furnish personnel to assist in taking measurements and making tests.
- D. In the event that systems are not complete and fully operational at the time of Final Inspection, all costs of any subsequent inspections shall be borne by the Contractor at no additional cost to the AUTHORITY.

## **1.20 CERTIFICATE OF COMPLETION**

- A. Submit, at time of request for Final Inspection, a completed letter in the following format:

I, \_\_\_\_\_(Name), of \_\_\_\_\_(Firm), certify that the Electrical Work is complete in accordance with Contract Drawings and Specifications, and authorized change orders (copies of which are attached hereto), 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 log attached.
2. Operating manuals completed and instructions of operating personnel performed \_\_\_\_\_(Date). \_\_\_\_\_(Signed)  
Engineer
3. Record drawings up-to-date and ready to deliver to Engineer.
4. Emergency systems tested and fully operational.
5. All other tests required by Specifications have been performed.
6. All systems are fully operational. Project is ready for Final Inspection.

\_\_\_\_\_ (Signed) \_\_\_\_\_(Title) \_\_\_\_\_ (Date)

### **PART 2 – MATERIALS**

Not used.

### **PART 3 – EXECUTION**

Not used.

**END OF SECTION**



**SECTION 16100**  
**BASIC MATERIALS AND METHODS**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section describes specific requirements, products, and methods of execution which are typical throughout the Electrical Work of this Project. Additional requirements for the specific systems will be found in the Division specifying those systems.

**1.02 RELATED REQUIREMENTS**

- A. Section 16010 – General Electrical Provisions
- B. All other Division 1, 2, 15 and 16 Specifications

**1.03 COORDINATION**

- A. Layout all the work in advance and avoid conflict with other Work in progress. Physical dimensions shall be determined from Civil and Structural plans. Verify locations for junction boxes, disconnect switches, stub-ups, etc., for connection to equipment furnished by others, or in other Divisions of this Work.

**1.04 SERVICEABILITY OF PRODUCTS**

- A. Furnish all products to provide the proper orientation of serviceable components to access space provided.
- B. Coordinate installation of all products to allow proper service areas for any items requiring periodic maintenance inspection or replacement.
- C. Replace or relocate all products incorrectly ordered or installed.

**1.05 ACCESSIBILITY OF PRODUCTS**

- A. Arrange all work to provide access to all serviceable and/or operable products. Layout work to optimize net usable access space within confines of space available. Advise ENGINEER, in a timely manner, of areas where proper access or required clearspace cannot be maintained. Furnish Layout Drawings to verify this claim, if requested.
- B. Provide access doors in ceilings, walls, floors, etc., for access to J-boxes, automatic devices, and all serviceable or operable equipment in concealed spaces.

**PART 2 – MATERIALS**

**2.01 MATERIALS FURNISHED IN DIVISION 16**

- A. All products furnished and installed in permanent construction shall be new, full-weight, standard in every way, and in first class condition.
- B. All equipment furnished by the CONTRACTOR shall be listed by and shall bear the label of Underwriters' Laboratories, Incorporated, (UL) or of an independent testing laboratory acceptable to the local Code- enforcement agency having jurisdiction.

- C. Products shall be identical with apparatus or equipment which has been in successful operation for at least two years. All products of similar class or service shall be of one manufacturer.
- D. Capacities, sizes, and dimensions given are minimum unless otherwise indicated. All systems and products proposed for use on this project shall be subject to review for adequacy and compliance with Contract Documents.

## **2.02 MATERIALS FURNISHED IN OTHER DIVISIONS**

- A. Controls, including conduit, wiring, and control devices required for the operation of systems furnished in other Divisions shall be installed in accordance with Division 16 Specifications.
- B. All equipment furnished by the CONTRACTOR shall be listed by and shall bear the label of Underwriters' Laboratories, Incorporated, (UL) or of an independent testing laboratory acceptable to the local Code-enforcement agency having jurisdiction.
- C. All work on the project that falls under the jurisdiction of the electrical trade shall be performed by Licensed Electricians in possession of Alaska State Fitness Cards in conformance with the Electrical Specifications.
- D. Provide complete wiring and power connections to equipment requiring electrical power but specified under other Divisions of the Specifications. Equipment shall include but is not limited to motors, pumps, dispensing equipment, feeders, connections, disconnects, motors running overcurrent protection, etc.
- E. Contractor to review equipment submittals from other trades prior to installation and electrical rough-in. Verify location, size, connections and that equipment is ready for electrical connection.
- F. Make wiring connections in control panel or in wiring compartment of pre-wired equipment in accordance with the manufacturer's instructions.
- G. Provide interconnecting wiring and disconnects where required.
- H. Where starters are provided as part of a packaged product, overcurrent heaters shall be provided.

## **2.03 ENCLOSURE RATINGS**

- A. Unless noted otherwise, enclosures, junction boxes and other equipment shall be installed in accordance with the following schedule:
  - 1. Exterior, Non-hazardous – NEMA 4X Non-metallic
  - 2. Exterior, Hazardous – NEMA 7 (Class 1, Group D) and NEMA 4 or 4X

## **2.04 IDENTIFICATION**

- A. Equipment Labels and Nameplates:
  - 1. Provide rigid engraved labels and nameplates of three-layered laminated plastic 1/16-inch thick with white letters on a black or gray background unless otherwise noted.
    - a. Label for electrical distribution, control equipment and loads served shall be black letters on white background.
    - b. Label for emergency equipment shall be white letters on a red background.

2. Securely attach labels or nameplates to equipment fronts with minimum two screws or rivets, per label, unless rating of panel is affected, use epoxy or applicable adhesives.
3. Temporary markings are not permitted on equipment. Repaint trims housings, etc., where markings cannot be readily removed. Refinish defaced surfaces.
4. No labeling abbreviations will be permitted without prior approval.
5. Label and Nameplate Locations:
  - a. Provide 1/2-inch minimum height letters on following equipment:
    - I. Service disconnects (red background).
    - II. Secondary feeder breakers in distribution equipment. Designation as required by load served.
    - III. Special equipment housed in cabinets, as designated on plans, on outside of door.
  - b. Provide 1/4-inch minimum height letters on:
    - I. Disconnects and starters for motors or fixed appliances - (include item designation and branch feeder circuit number); and
    - ii. Designated electrical equipment.
    - iii. Panel boards.
  - c. Provide 1/8-inch minimum height letters on:
    - I. Individual switches.
    - II. Motor starters.
    - III. Loads served.
- B. Branch Circuit Panelboard Schedules: Provide neatly typed schedule (odd numbered circuits on left side or top, even on right side or bottom) under plastic jacket or protective cover to protect the schedule from damage or dirt. Securely mount on inside face of panelboard door. Define briefly, but accurately, nature of connected load (i.e., Lighting, interior; receptacles, work bench; etc.) as approved.
- C. Empty Conduits: Provide tags with typed description of purpose, and location of opposite end, wired to each end of conduits provided for future equipment.
- D. Conduits: Mark all conduits entering or leaving panels with indelible black marker with the circuit numbers of the circuits contained inside.
- E. Junction Boxes: Mark with indelible black marker the circuit numbers of wiring on all junction boxes with sheet steel covers.
- F. Conductors:
  1. Branch circuit conductors shall be color coded as indicated in Section 16120, Wire and Cable.
  2. Control and alarm circuit conductors
    - a. Field conductors shall be identified by destination panel and terminal block designations.

- b. Internal (Control Panel) numbering system shall provided by the Contractor. The numbering system shall assign each logical conductor set a unique identification number that will be reflected on the as-built drawings.

## **PART 3 – EXECUTION**

### **3.01 STORAGE AND HANDLING**

- A. All items shall be delivered and stored in original containers, which shall indicate manufacturer's name, the brand, and the identifying number.
- B. Items subject to moisture and/or thermal damage shall be stored in a dry, heated place.
- C. All items shall be covered and protected against dirt, water, chemical and/or mechanical damage.

### **3.02 PROTECTION OF PRODUCTS**

- A. The Contractor shall be held responsible for products to be installed under this Contract.
- B. The Contractor will be required to make good, at his own cost, any injury or damage which said products may sustain before Final Acceptance.

### **3.03 INSTALLATION**

- A. All products shall be installed by skilled craftsmen. The norms for execution of the work shall be in conformity with NEC Chapter 3 and the NECA "Standards of Installation," which herewith is made part of these Specifications.
- B. **WORKING SPACE AND REQUIRED CLEARANCES ABOUT ELECTRIC EQUIPMENT (600 VOLTS, NOMINAL, OR LESS):** Sufficient access and working space shall be provided and maintained about all electric equipment to permit ready and safe operation and maintenance of such equipment.
  1. **WORKING CLEARANCES:** Except as elsewhere required or permitted in the NEC, the dimension of the working space in the direction of access to live parts operating at 600 volts, nominal, or less and likely to require examination, adjustment, servicing, or maintenance while energized shall not be less than indicated in NEC. Distances shall be measured from the live parts if such are enclosed. Concrete, brick, or tile walls shall be considered as grounded.
  2. In addition to the dimensions shown in the table, the work space shall not be less than 30 inches wide in front of the electric equipment.
  3. **CLEAR SPACES:** Working space required by this section shall not be used for storage. When normally enclosed live parts are exposed for inspection or servicing, the working space, if in a passageway or general open space, shall be suitably guarded.
  4. Where clear space has been penetrated by ground level piping. Platforms providing the required footprint (30X36 minimum) shall be provided at no additional cost to the OWNER.
- C. Repair all surfaces and furnish all required products and labor to maintain fire-proof, airtight and water- proof characteristics of the construction.
- D. Installation of all equipment shall be in accordance with manufacturer's instructions.

### **3.04 MOUNTING SYSTEMS**

- A. Provide all bracing as required to securely mount enclosures, fixtures and devices.
- B. Unless otherwise noted, all materials used shall be hot dipped galvanized hardware and galvanized formed steel components such as Unistrut or equal. Where support elements are field cut, exposed metal shall be coated with spray-on galvanizing.
- C. Support from structure only.
- D. When bolting to structure, verify that the original structure and performance (i.e. water tight) characteristics are maintained.
- E. Conduits shown to be run at grade shall be supported every 10 feet by wood sleepers as shown on the drawings. Conduits may share fuel piping sleepers if installed such that neither system will require removal during maintenance or replacement.

### **3.05 MOUNTING HEIGHTS**

- A. Mounting heights shall be above finished floor (AFF) or above finished grade as noted below, unless otherwise shown or indicated.

Lighting Switches, 46 inches to center

Receptacles shall be mounted as high as practicable on dike walls, but not less than 36" above grade.

- B. Other mounting heights are indicated on the Drawings by detail. Specific dimensions AFF are shown adjacent to the symbol.

### **3.06 CUTTING AND PATCHING**

- A. Obtain written permission from the ENGINEER before cutting or piercing structural members.
- B. Sleeves through floors and walls to be galvanized iron pipe, flush with walls, ceilings or finished floors, sized to accommodate the raceway. Interstitial space around conduit passing through sleeves shall be filled with non-hardening duct sealant.

### **3.07 PROTECTIVE FINISHES**

- A. Take care not to scratch or deface factory finish on electrical apparatus and devices. Repaint all marred or scratched surfaces.
- B. Provide hot dip galvanized components for ferrous materials exposed to the weather.

### **3.09 CLEAN-UP AND COMMISSIONING**

- A. Throughout the Work, the Contractor shall keep the work area reasonably neat and orderly by periodic clean-ups.
- B. As independent parts of the installation are completed, they may be commissioned and utilized during construction.

### **3.10 WARRANTY**

- A. Unless otherwise specified, the Warranty starts on the date Written Notice is given that the project is complete and all required corrections have been made. Warranty shall certify that all defects in products or workmanship shall be promptly repaired or replaced

by the Contractor, to the satisfaction of the AUTHORITY, for a period of one year, except when, in the opinion of the ENGINEER such failure is due to neglect or carelessness by the AUTHORITY.

### **3.11 OPERATIONAL INSTRUCTIONS**

- A. The Contractor shall instruct the AUTHORITY in the operation of the products shown and/or specified. Allow one day on-site in base bid for Division 16.

**END OF SECTION**

**SECTION 16110**  
**CONDUITS AND FITTINGS**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This section describes specific requirements, products, and methods of execution relating to conduit and conduit fittings approved for use on this project. Type, size and installation methods shall be as shown on the Contract Drawings, required by Code and specified in these specifications.

**1.02 RELATED REQUIREMENTS**

- A. Section 16010 - General Electrical Provisions
- B. Section 16100 - Basic Materials and Methods
- C. Section 16450 - Grounding

**1.03 QUALITY ASSURANCE**

- A. Conduit and conduit fittings shall be standard types and sizes as manufactured by a nationally recognized manufacturer of this type of materials and be in conformity with applicable standards and UL listings.

**1.04 SUBMITTALS**

- A. Shop Drawings and Product Data: Submit shop drawings and product data for the products of this section in compliance with Section 16010, General Electrical Provisions.

**PART 2 – MATERIALS**

**2.01 GALVANIZED RIGID CONDUIT (GRC)**

- A. Galvanized rigid conduit shall be mild steel with continuous welded seam, hot-dip galvanized complying with ANSI C80.1 and shall be UL listed.
- B. Elbows, bends, and fittings shall be made of full weight materials complying with the above and shall be coated and threaded the same as conduit.
- C. Threads for conduit shall be tapered and clean cut. All threads shall be hot dip galvanized after cutting.
- D. Conduit shall be 1/2-inch trade size or larger and shall be manufactured by Allied Tube and Conduit Corp., Triangle PWC, Inc., or approved equal.

**2.02 INTERMEDIATE METAL CONDUIT (IMC)**

- A. Intermediate metal conduit shall be mild steel, hot-dip galvanized complying with Fed. Spec. WWC-581 and shall be UL listed.
- B. Elbows, bends, and fittings shall be made of full weight materials complying with the above and shall be coated and threaded the same as conduit.
- C. Threads for conduit shall be tapered and clean cut. All threads shall be galvanized after cutting.

- D. Conduit shall be 1/2-inch trade size or larger and shall be manufactured by Allied Tube and Conduit Corp., Triangle PWC, Inc., or approved equal.

### **2.03 LIQUIDTIGHT FLEXIBLE METAL CONDUIT**

- A. Liquidtight flexible conduit shall be manufactured from galvanized steel strip, sealed with a polyvinyl outer jacket and shall be UL listed.
- B. Fittings shall be designed for use with liquidtight flexible conduit and shall maintain electrical continuity throughout fittings and conduit.
- C. Liquidtight flexible metal conduit shall be 1/2-inch trade size or larger and shall be manufactured by O-Z/Gedney Co., Southwire Co., or approved equal.

### **2.04 FLEXIBLE EXPLOSIONPROOF CONDUIT (COUPLINGS)**

- A. Flexible explosionproof conduit shall be manufactured from braided steel or copper alloy with inner insulating liner.
- B. Fittings shall be threaded.
- C. Flexible explosionproof conduit shall be 1/2-inch trade size or larger and shall be manufactured by Crouse-Hinds "Series EC," Killark "Series EKJ," or equal.

### **2.05 FITTINGS**

- A. Expansion fittings shall be O.Z. type AX, EX, EXDS, TX, or EXE; Crouse Hinds type XJ; or approved equal.
- B. Fittings utilized with rigid steel shall be galvanized steel. Conduit bushings shall be of the insulated type. Where grounding bushings are required, insulated grounding bushings with pressure type lugs shall be provided. Lock rings shall be of the sealing gland type. Provide conduit bushings on all penetrations without hubs.
- C. Fittings for liquid-tight flexible conduit shall be steel or malleable iron, of a type incorporating a threaded grounding cone, nylon or plastic compression ring, and a tightening gland, providing a low resistance ground connection. All throats shall be insulated.
- D. Seal-Off fittings shall be listed for the Class and Division required (or greater). Provide fittings that do not require de-rating conduit fill capacities or adjust conduit size to accommodate fitting limitations. Complete sealing after final acceptance is complete and all wiring has been verified.
- E. Fittings used in Hazardous locations shall be approved for use if approval is required.

### **2.06 GROUNDING REQUIREMENTS**

- A. All fittings, connectors, boxes, etc. shall be approved for use as a grounding means.

## **PART 3 – EXECUTION**

### **3.01 CONDUIT USAGE**

- A. Galvanized rigid conduit shall be used for all wiring in classified areas and general wiring, except as otherwise specified herein or indicated on the Contract Drawings.



- B. Suitably protected (bituminous wrap or other coating) rigid conduit shall be used for underground, in slab or direct burial installations.
- C. Intermediate metal conduit may be used for general wiring and in place of rigid conduit, except as otherwise specified herein or indicated on the Contract Drawings.
- D. Electrical metallic tubing may be used for conduits 1- inch trade size and smaller in dry, non-hazardous and non-corrosive areas.
- E. Flexible low temperature, liquidtight flexible metallic conduit shall be used in lengths 18 to 24 inches for connections to motors or equipment subject to vibration and where conduits transition between structures or on risers from below grade and into non-hazardous and Class 1, Division 2 areas. Longer lengths (36 inches maximum) may be used for equipment connection if grounding conductor is installed through conduit. Flex conduit may be used in Class 1, Division 2 locations with approved fittings.
- F. Flexible explosion proof couplings shall be used in Class 1, Division 1, Group D, hazardous areas as shown where flexible conduit connection is required. Maximum length is 36 inches.

### **3.02 CONDUIT INSTALLATION, GENERAL**

- A. Install conduit exposed.
- B. Conduit field joints shall be cut square and reamed smooth. Threads shall be cleanly cut and joints drawn up tight. After make-up all exposed, non-galvanized surfaces of completed joint shall receive two coats of Zinc rich paint equal to "Zinc it", manufactured by CRC. No running threads will be permitted.
- C. Offsets and bends shall be made carefully, without reducing cross sectional area, and shall not be less than the radius of standard elbows.
- D. Convenience outlets, switches, and other devices located on walls shall be serviced from above, unless otherwise indicated.
- E. Install expansion fittings where conduits cross structural expansion joints.
- F. Raceways penetrating vapor barriers or traversing from warm to cold areas shall be sealed (at the penetration point) with a non-hardening duct sealing compound to prevent the accumulation of moisture.
- G. All metal conduits shall have insulating bushings and shall have locknuts inside and outside of enclosure box, etc. Conduits smaller than 1-1/4-inch trade size shall be equipped with bushings and shall have locknuts inside and outside of enclosure.
- H. All conduit runs shall be grounded in an effective and approved manner at point of origin and shall maintain a continuous ground throughout all runs, cabinets, pull boxes, and fittings from point of service to all outlets.
- I. Conduits terminating in non-metallic enclosures shall be provided with grounding bushings. All conduits be bonded together within non-metallic enclosures.
- J. All conduit stubbed up out of floor and termination inside of an enclosure shall have insulating grounding bushings installed.
- K. Conduit Supports:
  - 1. Support conduits by wall brackets, pipe straps and unistrut sections, or trapeze hangers spaced not more than 10 feet on center.

2. Conduits shall be supported from the structural system. Provide additional support as required for junction and pull boxes.
  3. Conduit risers along poles 1" and smaller may be secured using 2-hole galvanized straps. Conduits larger than 1" shall be supported using offset brackets and appropriate pipe straps.
  4. Where structural supports are not available provide wood block supports as shown on the Contract Drawings.
- L. All conduit runs shall be completed and cleaned free from foreign matter inside before conductors are drawn in. After installation conduit ends shall be plugged or capped to prevent the entrance of foreign materials.
  - M. All conduits not used by this Contract shall have a pull wire installed and securely tied off at each end for future conductor installation.
  - N. Paint all exposed raceways to match the surface to which it is attached or crosses. Otherwise paint industrial gray.
  - O. Completely and thoroughly swab raceway system before installing conductors.
  - P. All underground conduit shall be buried a minimum of 18-inches below finished grade.

### **3.03 CONDUIT INSTALLATION IN HAZARDOUS AREAS**

- A. Conduit installation shall comply in all respects with the requirements of NEC for respective Class, Division, and Group installation. Conduit shall be threaded rigid type.
- B. All boxes, fittings, and joints shall be threaded for connection to the conduit.
- C. Threaded joints shall be made up of at least five threads fully engaged as described by NEC.
- D. Seals shall be provided as required by NEC, whether shown or not, in each conduit entering an arcing device, within 18 inches of device, in conduits entering an enclosure, and in conduit runs leaving a hazardous area. Seals shall be filled with the proper compound approved for the purpose and as recommended by the manufacturer.
- E. Run conduit exposed and securely anchored to walls with strap type supports. Pinch type supports shall not be used.
- F. Run conduits vertically wherever possible to avoid use of horizontal seals. When conduit is to be run horizontally, provide junction boxes in horizontal run and sealed risers to devices, rather than connecting directly between the devices.
- G. Conduits run beneath hazardous areas shall be considered within the hazardous area.

**END OF SECTION**

**SECTION 16120  
WIRE AND CABLE**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section describes specific requirements, products, and methods of execution relating to wire and cable, 600 volts or less, approved for use on this project.

**1.02 RELATED REQUIREMENTS**

- A. Section 16010 – General Electrical Provisions
- B. Section 16100 - Basic Materials and Methods

**1.03 QUALITY ASSURANCE**

- A. All conductors shall be sized according to American Wire Gauge (AWG). Standing, insulation, rating, and geometrical dimensions shall conform to Underwriters Laboratory Specifications.

**PART 2 – MATERIALS**

**2.01 GENERAL**

- A. Conductors shall be copper, solid or stranded with Type XHHW-2 insulation.
- B. Wiring which is an internal part of a device and is not connected to external terminal blocks may be wired using manufacturer's standard wire designations.
- C. Wire which connects to external circuits, to terminal blocks, or the numbers shown on the elementary wiring diagrams shall identify other devices that are connected to external circuits.

**2.02 SERVICE RISER CABLE**

- A. Insulation shall be 600 Volt Type XHHW-2.

**2.03 FEEDER AND BRANCH CIRCUIT WIRING**

- A. Insulation shall be 600 volt Type XHHW-2. Wiring in fixture channels shall be rated 90 degrees C. or over, 600 volt. Do not install thermoplastic insulated conductors when the temperature is below 0 degrees F.

**2.04 FLEXIBLE CORD**

- A. All flexible cord shall be type SOW-A, or for larger size cable, type G.

**2.05 MISCELLANEOUS**

- A. Miscellaneous wire and cable for special purpose applications and not covered in the categories as indicated above, shall be as shown on the Contract Drawings and/or required by the intended use.

## **2.06 MINIMUM SIZE**

- A. Unless specified otherwise, minimum wire sizes shall be as follows:
  - 1. All 120 volt homeruns over 75 feet; No. 10 AWG
  - 2. Branch circuit wiring; No. 12 AWG
  - 3. Control circuit wiring; No. 14 AWG
  - 4. Low voltage switching circuits if a part of an approved cable assembly; No. 20 AWG (No. 16 AWG otherwise)
  - 5. Cable or conductors for other special systems shall be as described in other sections of the specifications, noted on the Contract Drawings, or recommended by the equipment manufacturer.

## **2.07 MISCELLANEOUS CONDUCTORS AND ACCESSORIES**

- A. Control wiring 120V shall be Class C stranded copper conductor with Type MTW insulation. Minimum conductor size shall be No. 14 AWG or 16 AWG for PLC applications.
- B. Multi-conductor control cables shall be XHHW insulated, Class B stranded conductors in overall PVC jacket. Color coding shall be per IPCEA Method No. 1.
- C. Cords shall be stranded copper conductor Type SOW-A with green insulated grounding conductor.
- D. Connectors for splicing copper conductors shall be; "Scotchlok" insulated spring connectors for No. 18 through No. 6 AWG solid conductors; insulated, solid-barrel, crimp type plated copper alloy connectors for No. 18 through No. 6 AWG stranded conductors; plated copper alloy compression splicing sleeves installed by high-pressure compression tools for No. 4 and larger size stranded conductors.
- E. Insulating materials for splices shall be "Scotchfill" or equal for filling bolted or irregular areas before taping with Scotch No. 88, 33 plus or equal 7 mil vinyl plastic tape.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Conduit shall be completely installed, free from obstructions, and clean before installing conductors.
- B. Provide conductors from outlet to outlet and splice only at outlet or junction boxes.
- C. Install all conductors in a single raceway at one time and leave sufficient cable at all fittings or boxes.
- D. Keep minimum bending radii.
- E. Use UL listed wire-pulling lubricant for pulling #4 AWG and larger wires. Lubricant shall conform to UL requirements for both the insulation and raceway material.

### **3.02 CONDUCTOR SUPPORT**

- A. Provide conductor supports as recommended by the NEC or cable manufacturer in vertical conduits.

### 3.03 SPLICING

- A. No splicing or joints will be permitted in either feeder or branch circuits except at outlet or accessible junction boxes. Utilize compression type solderless connectors when making splices or taps in conductors No. 8 AWG or larger. Utilize pre-insulated connectors, 3M Company "Scotchlok" or Ideal Industries, Inc. "Super Nut" for splices and taps in conductors No. 10 AWG and smaller. Tape all splices and joints with Scotch No. 88 plastic tape to secure insulation strength equal to that of the conductors joined. Keep splices in underground junction boxes, handholes, and manholes to an absolute minimum. Where splices are necessary, use resin splicing kits manufactured by the 3M Company, St. Paul, Minnesota to totally encapsulate the splice.

### 3.04 CONDUCTOR TERMINATION

- A. Stranded Conductors: Provide all power, control, communication and alarm conductors that terminate on screw type equipment or terminal strips with compression type solderless lugs, T and B "Sta-Kon" terminals, or approved equal. Where terminal blocks utilize compression lugs solderless lugs are not required.
- B. #8 AWG and smaller Conductors: Use properly sized insulated spring wire connectors with plastic caps.
- C. #6 AWG and larger Conductors: Use crimp or compression type connectors installed with tool recommended by connection manufacturer and insulate with properly sized 600-volt rated heat shrink tubing.
- D. Wire Markers: Every wire termination, including all jumpers, shall be identified with wire markers. Wire markers shall be installed over wire terminators or directly adjacent to them. Markers shall be arranged to permit reading of identification.

### 3.05 CONDUCTOR PHASE COLOR CODING

- A. All service, feeder and branch circuit conductors throughout the project's secondary electrical system shall be color coded as follows:

<u>Phase</u>	<u>120/240VAC</u>	<u>480VAC</u>
L1	Black	Brown
L2	Red	Yellow
Neutral	White	
Ground	Green/Bare	

- B. Where color code conductors are not commercially available, colored non-aging plastic tape may be utilized when permitted by code.

**END OF SECTION**

**SECTION 16130**  
**OUTLET BOXES**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section describes general requirements, products and methods of execution relating to outlet boxes for use with wiring devices and lighting fixture outlets approved for use on this project. All boxes shall be sized per NEC - Article 370.

**1.02 RELATED REQUIREMENTS**

- A. Section 16010 - General Electrical Provisions
- B. Section 16100 - Basic Materials and Methods

**1.03 QUALITY ASSURANCE**

- A. UL approval for intended usage shall constitute proof of acceptable quality.

**PART 2 – MATERIALS**

**2.01 CAST BOXES**

- A. Device boxes shall be Type FS or FSD as required.
- B. Boxes shall be equipped with mounting lugs, threaded hubs and gasketed covers and used in the following locations:
  - 1. All exterior locations;
  - 2. All wet or damp locations;
  - 3. Where exposed to mechanical damage;
  - 4. All exposed interior locations below 48 inches above floor;
  - 5. Where shown on Contract Drawings.

**2.02 GALVANIZED PRESSED STEEL BOXES**

- A. May be used wherever they are permitted by code, except in areas indicated in Paragraph 2.01 above.

**2.03 GROUNDING SCREW**

- A. All pressed steel boxes shall have a drilled and tapped hole in the back of the box for a grounding screw.

**2.04 ACCESSORIES**

- A. Box covers, extension rings, bases, hanger bars, etc., for use in connection with the installation, shall be approved for use in the various applications.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Outlet Boxes shall be securely fastened in position and supported independently of the conduit system.
- B. Boxes shall be installed true to the building lines and at equal heights in conformity with mounting heights specified elsewhere in other sections of the specifications.
- C. Provide the best suitable box for each outlet requirement.
- D. Boxes shall have only the holes necessary to accommodate the conduits at point of installation. All boxes shall have lugs or ears to secure covers.
- E. All boxes shall be accessible.

**END OF SECTION**

**SECTION 16131**  
**PULL AND JUNCTION BOXES**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section describes general provisions, products and methods of execution relating to pull and junction boxes approved for use on this project. Furnish all such boxes, whether shown or not, in order to conform to requirements for maximum pulling length and maximum number of bends allowed.

**1.02 RELATED REQUIREMENTS**

- A. Section 16010 - General Electrical Provisions
- B. Section 16100 - Basic Materials and Methods
- C. Section 16130 - Outlet Boxes

**1.03 QUALITY ASSURANCE**

- A. Pull and junction boxes 150 cubic inches and smaller shall conform to Section 16130.
- B. Pull and junction boxes larger than 150 cubic inches shall conform to Underwriters Laboratory (UL) standard 50-1970, Cabinets and Boxes. The UL label shall constitute proof of acceptable quality.

**PART 2 – MATERIALS**

**2.01 PULL AND JUNCTION BOXES**

- A. Pull and junction boxes shall conform to Article 370 of the NEC and the following requirements:
  - 1. Sheet metal boxes shall be approved for use in all dry, interior, non-hazardous locations.
  - 2. Boxes exposed to rain or installed in wet locations shall be NEMA 4 or as noted.
  - 3. Boxes installed underground shall be either precast concrete or cast iron.
  - 4. Special boxes, as noted on the Plans, shall be installed in areas of specific service and/or hazards.

**PART 3 – EXECUTION**

**3.01 INSTALLATION**

- A. All boxes shall be installed so that covers are readily accessible and adequate working clearance is maintained after completion of the installation.

**END OF SECTION**



**SECTION 16140**  
**WIRING DEVICES**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section describes general provisions, products, and methods of execution relating to line voltage wiring devices approved for use on this project.

**1.02 RELATED REQUIREMENTS**

- A. Section 16010 - General Electrical Provisions
- B. Section 16100 - Basic Materials and Methods

**1.03 QUALITY ASSURANCE**

- A. Manufacturers mentioned and catalog numbers specified are for establishment of type, configuration, and quality. Other manufacturers and types may be submitted for approval.

**PART 2 – MATERIALS**

**2.01 SWITCHES**

- A. Provide wiring devices indicated. Catalog numbers shown are Leviton unless noted otherwise. Equal devices manufactured by Pass and Seymour, Slater, Bryant, Hubbell and G.E. are acceptable. Provide all similar devices of same manufacturer. Provide gray device color.
- B. Provide 20 AMP, 120/277V rated switches with Underwriters Laboratory approved for tungsten lamp loads or inductive loads without de-rating. Switches shall be as follows:
  - 1. Single Pole:           Cat# CSB1-20G
  - 2. Three-Way:            Cat# CSB3-20G
  - 3. 4-way:                 Cat# CSB4-20G
  - 4. Double-pole:         Cat# CSB2-20G
- C. Switches requiring ratings and configurations different from those listed above shall be provided as shown on the Contract Drawings and/or required by the equipment served.

**2.02 RECEPTACLES**

- A. Provide ground fault interrupt type receptacles as follows, or as required to match equipment furnished in this or other Divisions.
  - 1. Weather proof, duplex receptacle.
  - 2. 20A-125V
  - 3. NEMA 5-20R
  - 4. Indicator Light

- 5. Leviton Cat# 8898-T or 7899-T
- B. Outlets requiring ratings and configurations different from those listed above shall be provided as shown on the Contract Drawings and/or required by the equipment served.

### **2.03 PLATES / COVERS**

- A. Provide weatherproof cover plates for all surface mounted wiring devices.
- B. Install blank covers on all boxes without devices or fixtures.
- C. Provide Stainless Steel plates for all flush mounted wiring devices.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Install all wiring devices indicated complete with cover plates. Cover plates shall fit snugly on box and line up true with adjacent building lines.
- B. All switches shall be installed so their handles move in a vertical plane.
- C. Door/gate swings shall be checked and, if necessary, switches shall be relocated to place them on the striker side of the door/gate on single door/gate installations.

**END OF SECTION**

**SECTION 16160**  
**MOTOR STARTERS**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section describes general requirements, products, and methods of execution relating to manual and magnetic motor starters provided in this and other Divisions. Overloads shall be furnished and installed in Division 16.

**1.02 RELATED REQUIREMENTS**

- A. Section 16010 - General Electrical Provisions
- B. Section 16100 - Basic Materials and Methods

**1.03 QUALITY ASSURANCE**

- A. Equipment shall be of the latest approved designs manufactured by a nationally recognized manufacturer and in conformity with the governing NEMA standards.

**PART 2 – MATERIALS**

**2.01 GENERAL**

- A. Motor Starters: Provide full voltage starting, non-reversing, magnetic type motor starters, IEC rated, AC general-purpose, Class A, with magnetic controller for induction motors rated in horsepower. Overload relay shall be non-ambient sensitive. Provide two field convertible contacts in addition to seal-in contact. Install motor control equipment in accordance with manufacturer's instructions. Select and install heater elements or set adjustable overloads in motor starters to match installed motor characteristics.
- B. Motor Data: Provide neatly typed label inside each motor starter or control panel enclosure door identifying motor(s) served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating.

**2.02 AC FRACTIONAL HORSEPOWER MANUAL STARTERS**

- A. The manual starter shall consist of a manually operated toggle switch equipped with melting alloy-type thermal overload relay.
- B. Thermal unit shall be one-piece construction and interchangeable. Starters shall be inoperative if thermal unit is removed.

**2.03 AC MANUAL STARTERS - LINE VOLTAGE TYPE**

- A. Manual starters shall be constructed and tested in accordance with the latest published NEMA or IEC standards.
- B. The manual starters shall consist of a manually operated switch equipped with melting alloy type thermal overload relays in every phase conductor. The overload relays shall be trip-free and the starter shall be inoperative if any thermal unit is removed. Thermal units must be one-piece construction.

- C. Starters shall be furnished in a NEMA 12 general purpose enclosure unless otherwise indicated on the Contract Drawings (such as open type for control panels) or required by the conditions of the area in which they are installed.
- D. Manual starters with contactor combination are specified by Manufacturer and model number for control panel applications. See control components schedule on the Contract Drawings for listing.

#### **2.04 AC MAGNETIC STARTERS - LINE VOLTAGE TYPE**

- A. Motor starters shall be across-the-line magnetic type rated in accordance with NEMA standards, sizes and horsepower ratings.
- B. Starters shall be mounted in Local Control Panels or individually in their own NEMA rated enclosures as shown on the Contract Drawings.
- C. Starters shall be furnished with ambient compensated, Class 10, adjustable, overload relays in every phase conductor.
- D. Starters through NEMA size three shall be equipped with double break silver alloy contacts. All contacts shall be replaceable without removing power wiring or removing starter from panel.
- E. Coils shall be of molded construction and shall be 120VAC.
- F. Starters shall be suitable for the addition of at least four external electrical interlocks of any arrangement normally open or normally closed.
- G. All individually enclosed starters shall have enclosure mounted green running pilot light.

#### **2.05 DISCONNECT SWITCHES**

- A. Provide 250V heavy duty non-fusible quick-make, quick break, load interrupter, enclosed knife switches with externally operable handle interlocked to prevent opening front cover with switch in "ON" position. Handle lockable in "OFF" position.

#### **2.06 ACCESSORIES**

- A. Provide push-buttons, selector switches, pilot lights, elapsed time meters, etc., as indicated on the Contract Drawings or as required herein and elsewhere in these specifications. Device shall be standard components normally supplied from the factory with the starters.

### **PART 3 – EXECUTION**

#### **3.01 INSTALLATION**

- A. Coordinate all details pertaining to the motor control equipment with the Division of these specifications where the equipment is specified.
- B. Align starters in control panels to permit logical location of mechanical reset pushbutton.

#### **3.02 CONTROL WIRING**

- A. Control wiring and control devices shall be provided under the specification section in which the controlled equipment is specified.

### **3.03 DISCONNECT**

- A. Provide a disconnect switch for each motor remotely located, adjacent to the motor, unless the motor is in sight of and within 25 feet of its overcurrent device.

### **3.04 CONNECTIONS**

- A. Provide liquid-tight flexible conduit connections to motors and other equipment subject to vibration. Minimum length 12 inches.

### **3.05 NAMEPLATES**

- A. Provide nameplates for all starters. Coordinate names with mechanical equipment lists.

### **3.06 OVERLOAD PROTECTION**

- A. Install overload protection. Verify that protection corresponds to motor full load current and that motors starts and operates properly.

**END OF SECTION**

**SECTION 16164**  
**METER PANELS AND PANELBOARDS**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section includes furnishing and installing panelboards and combination meter/panels and related appurtenances, complete.

**1.02 QUALITY ASSURANCE**

- A. Meter panels and panelboards shall be UL listed and shall comply with the NEC.

**1.03 SUBMITTALS**

- A. Shop Drawings and Product Data: Submit shop drawings and product data for the products of this section in compliance with Section 16010, General Electrical Provisions.
- B. Operation and Maintenance Manuals: Submit operation and maintenance manuals for the products of this section in compliance with Section 16010, General Electrical Provisions.

**PART 2 – MATERIALS**

**2.01 NAMEPLATES**

- A. Nameplates shall be provided for all relays, timers, transformers, fuses, terminal block, switches mounted internally, and other components that are mounted to the internal mounting panel.
- B. Nameplates shall be sized to the scale of the device to which they refer.
- C. The engraving shall be as shown for the device on the elementary wiring diagrams.

**2.02 PANELBOARDS**

- A. A nameplate shall be provided listing panel type and ratings.
- B. Bus bars for the mains shall be of copper, sized in accordance with UL standards. Unless otherwise noted, full size neutral bars shall be included. Bus bar taps for panels with single pole branches shall be arranged for sequence phasing of the branch circuit devices.
- C. The short circuit rating of the assembled panelboard shall be as indicated on the Contract Drawings and in accordance with UL standards and their test verification.
- D. All panelboards shall be fitted with an equipment ground bar.
- E. Boxes shall be rated for NEMA 3R environment. Boxes shall be of sufficient size to provide a minimum gutter space of 4 inches on all sides. Lighting panel boxes shall use three piece construction wrapper sheet for back and two sides with removable top and bottom ends.
- F. Hinged doors covering all switching device handles shall be included in all panel trims, except that panelboards having individual metal clad externally operable dead-front units may be supplied without such doors.

- G. Doors in panelboard trims shall conform to the following:
1. In making switching device handles accessible, doors shall not uncover any live parts.
  2. Doors shall have flush-type cylinder lock and catch. Door hinges shall be concealed. All locks shall be keyed alike. A directory frame and card having a transparent cover shall be furnished on each door. Directory shall be typed, not handwritten.
  3. The trims shall be fabricated from code gauge sheet steel.
- H. All exterior and interior steel surfaces of the panelboard trims shall be properly cleaned and finished with ANSI-61 paint over a rust-inhibiting phosphatized coating.
- I. Breakers shall be rated as specified in Section 16180, Overcurrent Protective Devices.
- J. Single pole 15 and 20 ampere circuit breakers shall be UL listed as "Switching Breakers" and carry SWD marking.

### **2.03 WIRE MARKERS**

- A. Shall consist of white or yellow, slip-on elastic sleeves sized to tightly grip the wire insulation and marked in block printing with the letters or numbers to identify the circuit.

### **2.04 TERMINAL BLOCKS**

- A. Shall be Allen Bradley 1492 series or equal. Power terminations for supply and motor loads a maximum rating of 600 volts AC and 35 amps. Control and sensor terminals shall be determined by the manufacturer and based on upstream over current protection, fault duty etc. When individual devices or component terminal blocks are encountered with screw terminals, termination shall be by slip on spade tongue insulated compression terminators.

### **2.01 MANUFACTURERS**

- A. Square D
- B. Cutler Hammer

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Install panelboards as indicated on the Contract Drawings. Support wall-mounted Panelboards from the structure with no weight bearing on conduits.
- B. Install panelboards so top breaker is not higher than 6 feet above the floor.
- C. Distribute and arrange conductors neatly in the wiring gutters. Contractor shall maintain the largest practical bending radius of conductors.
- D. Connect grounding electrode conductor to the equipment grounding terminal bar. Verify that the ground bar is securely bonded to the load center or panelboard cabinet and that it is not connected to the neutral bar except at "service equipment" as permitted in the latest revision of NEC Article 250.
- E. Inspect and remove any debris, scrap wire, etc. from the cabinet interior before installing fronts.

**END OF SECTION**



**SECTION 16170**  
**DISCONNECTS**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section describes general requirements, products, and methods of execution relating to fusible and nonfusible disconnecting devices approved for use on this project.

**1.02 RELATED WORK SPECIFIED ELSEWHERE**

- A. Section 16010 - General Electrical Provisions
- B. Section 16100 - Basic Materials and Methods
- C. Section 16180 - Overcurrent Protective Devices

**1.03 QUALITY ASSURANCE**

- A. Devices shall be of the latest approved design as manufactured by a nationally recognized manufacturer and in conformity with UL listings and the governing NEMA standards.

**PART 2 – MATERIALS**

**2.01 SAFETY SWITCHES**

- A. Provide 250V heavy duty non-fusible quick-make, quick break, load interrupter, enclosed knife switches with externally operable handle interlocked to prevent opening front cover with switch in on position, handle lockable in off position.
- B. Safety switches, fusible and nonfusible shall conform to NEMA Standards KSI-1969 for Type HD (Heavy Duty).
- C. Switch Interior: All switches shall have switch blades which are fully visible in the OFF position when the door is open. Switches shall be of dead-front construction with permanently attached arc suppressors. Lugs shall be UL listed for copper and/or aluminum cables and front removeable.
- D. Switch Mechanism: Switches shall have a quick-made and a quick-break operating handle and mechanism which shall be an integral part of the box, not the cover. Switches shall have a defeatable dual cover interlock to prevent unauthorized opening of the switch door in the ON position or closing of the switch mechanism with the door open. The switch shall be capable of being locked in the OFF position with three padlocks.
- E. Enclosures: Switch enclosure shall be suitable for the environment in which the switch is mounted and per these specifications. NEMA 1 enclosure shall be code gauge, UL 98, sheet steel, treated with a rust inhibiting phosphate and finished in gray, baked enamel. NEMA 3R enclosure - same requirements as NEMA 1 except galvanized prior to painting. Special purpose enclosures such as NEMA 4, 5, 7 and 12, shall be cast aluminum or stainless steel.
- F. Rating: Ampere, volt and horsepower ratings, as well as number of poles and presence of neutral bar shall be shown on the nameplate.

## **1.04 2.02 CIRCUIT BREAKERS**

- A. Circuit breakers used as disconnects shall meet requirements specified in Section 16180, Overcurrent Protective Devices. Enclosures for same shall meet the requirements as specified above.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Coordinate all details pertaining to size of equipment, and requirements to enclosures, ratings, etc., so as to provide the most suitable unit for the intended purpose.
- B. Provide nameplates for all disconnects. Coordinate names with mechanical equipment lists.

**END OF SECTION**

**SECTION 16180**  
**OVERCURRENT PROTECTIVE DEVICES**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section describes general requirements, products, and methods of execution relating to overcurrent protective devices approved for use on this project. Type, duty rating and characteristics, fault interrupting capability and coordination requirements shall be determined from the Contract Drawings and the following specifications.

**1.02 RELATED REQUIREMENTS**

- A. Section 16010 - General Electrical Provisions
- B. Section 16100 - Basic Materials and Methods
- C. Section 16164 – Meter Panels and Panelboards
- D. Section 16170 – Disconnects
- E. Section 16900 Control and Alarm Panels

**1.03 QUALITY ASSURANCE**

- A. Devices shall be the latest approved design as manufactured by a nationally recognized manufacturer and in conformity with applicable standards and UL listed.

**PART 2 – MATERIALS**

**2.01 MOLDED CASE CIRCUIT BREAKERS**

- A. Molded case circuit breakers shall be bolt-on thermal magnetic trip type with common trip handle for all poles.
- B. The breakers shall be suitable for individual as well as panelboard mounting. Bolt-on type, unless "plug-on" type specifically allowed.
- C. The breakers shall meet NEMA and/or UL specifications as applicable to frame and size, standard rating and interrupting capability.
- D. The breakers shall be one-, two-, or three-pole as scheduled, operate manually for normal ON-OFF switching and automatically under overload and short circuit conditions.
- E. Operating handle shall open and close all poles simultaneously on a multi-pole breaker. Operating mechanism shall be trip-free so that contacts cannot be held closed against abnormal overcurrent or short circuit condition.

**2.02 FUSIBLE SWITCHES**

- A. Fusible switches shall be designed for individual mounting as specified in Section 16170, Disconnects, or for panelboard mounting.
- B. Switches designed for panelboard mounting shall have the same properties as specified for the individually mounted switches.
- C. Switches shall conform to NEMA and UL 67 standard.

- D. Switches shall be used in conjunction with fuses as specified in the following in order to constitute a complete "Overcurrent Protective Device".

### **2.03 FUSES**

- A. Fuses of the sizes and types specified on the Contract Drawings shall be installed. Fuses shall be capable of interrupting the prospective symmetrical fault current. Furnish one complete set of spare fuses of each rating installed to the Owner. Provide fuse puller(s) for fuse sizes used.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Size devices as required by the load being served.

**END OF SECTION**

**SECTION 16190**  
**SUPPORTING DEVICES**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. Support and align raceways, cabinets, boxes, fixtures, etc., in an approved manner and as specified.

**1.02 RELATED REQUIREMENTS**

- A. Section 16110 - Conduits and Fittings
- B. Section 16130 - Outlet Boxes
- C. Section 16500 - Lighting Fixtures

**PART 2 – MATERIALS**

**2.01 GENERAL**

- A. Support raceways on approved types of wall brackets, ceiling trapeze hangers, or malleable iron straps.
  - 1. "Kindorf", "Unistrut", or equal.
  - 2. Plumbers perforated strap not permitted as means of support.
  - 3. Support used for exterior equipment shall be galvanized or Stainless steel.
- B. Earthquake anchorages:
  - 1. Anchor equipment weighing more than 100 pounds to the building structure to resist lateral earthquake forces.
  - 2. Total lateral (earthquake) force shall be 1.00 times the equipment weight acting laterally in any direction through the equipment center of gravity. Provide adequate backing at structural attachment points to accept the forces involved.
  - 3. Provide equipment supported by flexible isolation mounts with earthquake restraining supports positioned as close to equipment as possible without contact in normal operation (earthquake bumpers). The maximum lateral displacement due to the computed earthquake force from above shall not exceed 1.5 inches. Floor mounted equipment weighing less than 2000 pounds may have one 6-inch by 6-inch by 3/8-inch by 18-inch steel angle bolted to the floor with four 5/8-inch diameter bolts placed on each of four sides of the equipment.

**PART 3 – EXECUTION**

**3.01 INSTALLATION**

- A. Provide all bracing as required to securely mount enclosures, fixtures and devices.
- B. Unless otherwise noted, all materials used shall be hot dipped galvanized hardware and galvanized formed steel components such as Unistrut or equal. Where support elements are field cut, exposed metal shall be coated with spray-on galvanizing.

- C. Conduits and equipment shall be mounted using unistrut or similar supports unless otherwise noted.
- D. Support from structure only.
- E. When bolting to structure, verify that the original structure and performance (i.e. water tight) characteristics are maintained.
- F. Do not strap conduits to fuel piping. When run in parallel with exposed fuel piping maintain adequate separation to allow maintenance to take place on either piping of conduit system so that the other does not have to be removed when maintenance is required.
- G. Where conduits are buried (parallel) with fuel piping maintain a minimum 1-foot separation.
- H. Conduits shown to be run at grade shall be supported every 10 feet by wood sleepers as shown on the drawings. Conduits may share fuel piping sleepers if installed such that neither system will require removal during maintenance or replacement.

**END OF SECTION**

**SECTION 16450**  
**GROUNDING**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section describes general requirements, products, and methods of execution relating to the furnishing and installation of a grounding system complete as required for this project.

**1.02 RELATED REQUIREMENTS**

- A. Section 16010 - General Electrical Provisions
- B. Section 16100 - Basic Materials and Methods

**1.03 MINIMUM REQUIREMENTS**

- A. The minimum requirement for the system shall conform to Article 250 of the NEC.
- B. Unless specified elsewhere, the ohmic values for grounds and grounding systems shall be as follows.
  - 1. For grounding metal enclosures and frames for electrical and electrically operated equipment: 5 ohms maximum.
  - 2. For grounding systems to which electrical utilization equipment and appliances are connected: 5 ohms maximum.
  - 3. For grounding secondary distribution systems, neutrals, noncurrent carrying metal parts associated with distribution systems, and enclosures of electrical equipment not normally within reach of other than authorized and qualified electrical operating and maintenance personnel: 10 ohms maximum.
  - 4. For individual transformer and lightning arrester grounds on distribution systems: 10 ohms maximum.
  - 5. For equipment not covered in the above: 10 ohms maximum

**PART 2 – MATERIALS**

**2.01 GROUND RODS, CONDUCTORS AND APPURTENANCES**

- A. All ground rods and conductors for ground systems shall be as follows:
  - 1. Ground rods to be 3/4-inch by 10-foot copper clad steel.
  - 2. Grounding conductor for building service ground to be #6 AWG bare copper.
  - 3. Ground ring shall be #2 AWG bare copper.
  - 4. Tank and fence grounds shall be as noted on the drawings. If not shown, #6AWG copper is the minimum size. Bond in accordance with manufacturer's requirements.

**2.02 CONNECTIONS**

- A. Joints in grounding conductors and mats below grade shall be made with solderless compression connections or with AMPACT TAP equipment. Terminations above grade shall be made with solderless lugs, securely bolted in place.

## **PART 3 – EXECUTION**

### **3.01 SERVICE GROUND**

- A. Provide Service Ground.
- B. Create an equipotential plane for the grounding system for this project at the service entrance equipment by connecting the following to a service entrance ground bar:
  - 1. The commercial system's grounded neutral conductor.
  - 2. All "man-made" grounds specified to be installed.
  - 3. The service entrance board and/or main disconnect and all conduits entering and leaving the board/disconnect.
  - 4. Other items or equipment called for on the Contract Drawings.
- C. Current carrying capacity of the grounding and bonding conductors shall be in conformity with Table 250-94 of the NEC.
- D. All structure and tank bonding shall be in accordance with manufacturer's recommended practice.

### **3.02 EQUIPMENT GROUND**

- A. The raceway system shall be bonded in conformity with NEC requirements to provide a continuous ground path. Where required by code or where called for on the Contract Drawings, an additional grounding conductor shall be sized in conformity with Table 250-95 of the NEC.
- B. Provide separate grounding conductor securely bonded and effectively grounded to both ends of all non-metallic raceways and all flexible conduit.
- C. Provide ground rings for the BFU, individual Intermediate tanks and the Dispenser enclosure. The individual ground rings at the BFU site shall be bonded to each other and to the service ground.
- D. Each fuel tank shall be bonded to the ground at two separate locations.
- E. If non-metallic enclosures are provided, all metal conduits terminating or entering the enclosure shall be bonded together with approved bonding bushings and #6 AWG copper cable.
- F. Fences shall be bonded to the equipment ground.

### **3.03 SUBMITTAL DATA**

- A. Provide typewritten report on the ground test for each ground system installed under this contract.

**END OF SECTION**



**SECTION 16500**  
**LIGHTING FIXTURES**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section describes general requirements, products, and methods of execution relating to lighting fixtures approved for use on this project.

**1.02 RELATED REQUIREMENTS**

- A. Section 16010 - General Electrical Provisions
- B. Section 16100 - Basic Materials and Methods
- C. Section 16550 - Lamps, Ballasts, Accessories

**1.03 QUALITY ASSURANCE**

- A. The fixture shall be a standard cataloged item as described on the Contract Drawings and as made by a nationally recognized manufacturer and UL approved.

**1.04 SUBMITTALS**

- A. Submit per Section 16010.

**PART 2 – MATERIALS**

**2.01 GENERAL**

- A. Provide fixtures or approved equal as shown on the Contract Drawings and as described in the Fixture Schedule.
- B. Provide lighting fixtures complete, wired, assembled, with proper flanges, mounting supports, hardware, etc.

**PART 3 – EXECUTION**

**3.01 INSTALLATION**

- A. Fixture Installation: Install fixtures per the Contract Drawings.
- B. Cleaning: After construction of total project is completed, wash dirty luminaires inside and out with a non-abrasive mild soap or cleaner. Clean luminaire plastic lenses with antistatic cleaners only. Touch up all painted surfaces of luminaires with high-grade exterior enamel.

**3.02 EXTERIOR FIXTURES**

- A. Exterior fixtures, supports and pole assemblies shall be capable of withstanding 100 mph winds with 30% gust factor with no damage.

**END OF SECTION**

**SECTION 16550**  
**LAMPS, BALLASTS, AND ACCESSORIES**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section describes general requirements, products, and methods of execution relating to lamps, ballasts and related products approved for use on this project.

**1.02 RELATED REQUIREMENTS**

- A. Section 16010 - General Electrical Provisions
- B. Section 16100 - Basic Materials and Methods
- C. Section 16500 - Lighting Fixtures

**1.03 QUALITY ASSURANCE**

- A. Products specified in this section shall be as manufactured by a nationally recognized manufacturer.

**1.04 SUBMITTALS**

- A. Lamps, ballasts and related products are generally included in the fixture schedule on the Plans. The Contractor shall verify that the fixture types submitted for approval contain components complying with the product specifications of this section.

**PART 2 – MATERIALS**

**2.01 HID LAMPS**

- A. High Pressure sodium lamps shall be clear, size and orientation as required by the fixture specified. PHILLIPS, SYLVANIA or equal.

**2.02 INCANDESCENT LAMPS**

- A. Incandescent lamps shall be extended life (A/99) with a design voltage of 130 volts, suitable for operating between 120 and 130 volts.

**PART 3 – EXECUTION**

Not used.

**END OF SECTION**

**SECTION 16900**  
**CONTROL / ALARM PANELS**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section describes specific requirements, products, and methods of execution relating to the construction and furnishing of Control/Alarm panels used on this project.

**1.02 RELATED REQUIREMENTS**

- A. Section 16010 - General Electrical Provisions
- B. Section 16100 - Basic Materials And Methods
- C. Section 16120 - Wire and Cable

**1.03 QUALITY ASSURANCE**

- A. All Control/Alarm panels shall be listed or labeled per Section 16100, Basic Materials and Methods.

**1.04 SUBMITTALS**

- A. In addition to the requirements stated elsewhere in these Specifications, the following items shall be included in the submittal:
  - 1. Quality Assurance: State how supplier intends on satisfying the Listing/Labeling requirements in Paragraph 1.03 above.
  - 2. Components: Include a listing of all components provided in or on the panel. List shall include the components labeling (or listing) installation instructions, allowable ambient environment, and operation characteristics. "Cut" sheets are an acceptable format if all required data is presented in a readable manner. Where options are identified as available but not provided they shall be marked out. Alternately identify only those options intended to be supplied with the component if none, then state so on the submittal.
  - 3. Panels provided shall be listed or labeled as an electrical assembly by an agency acceptable to the State of Alaska Department of Labor – Mechanical Inspections Division.
- B. Environmental Calculations: Provide calculations verifying that allowable component environment will not be exceeded or will be maintained via heating/ cooling and the manner with which the environment will be maintained.
- C. Shop Drawings and Product Data: Submit shop drawings and product data for the products of this section in compliance with Section 16010, General Electrical Provisions and as described here.
  - 1. Manufacturer's technical data for each control device.
  - 2. Indicate dimensions, capacities, performance characteristics, electrical characteristics, and finishes for materials for each type of product indicated.
  - 3. Installation and startup instructions for each type of product indicated.

4. Each control device shall be labeled with setting or adjustable range of control.
  5. Data to be included in the control panel shop drawings shall include:
    - a. Dimensioned operator door and back panel layout showing all components.
    - b. Bill of Materials with manufacturer and relevant part numbers.
    - c. Schematic diagram of power, signal and control wiring.
    - d. Differentiate between manufacturer-installed and field-installed wiring.
    - e. Details of control panel faces, including controls, instruments and labeling.
    - f. Terminal assignments with all external component terminations shown.
    - g. Detail equipment assemblies and indicate dimensions, weights, loads, required clearance, method of field assembly, components, and location and size of each field connection.
    - h. Written description of sequence of operation
    - i. Maintenance data shall include:
      - i. Maintenance instructions and lists of spare parts for each type of control device.
      - ii. Interconnection wiring diagrams with identified and numbered system components and devices.
      - iii. Step-by-step procedures indexed for each operator function.
      - iv. Inspection period, cleaning methods, cleaning materials recommended.
      - v. Calibration tolerances, calibration records and list of set points.
- D. As-built and Record Drawings: Submit as-built and record drawings for the work in this section in compliance with Section 16010, General Electrical Provisions, and as described here.
1. Upon receipt of approved submittals and after construction of the panel(s), prepare As-built drawings using the approved submittal files.
  2. Submit three (3) sets of full size drawings enclosed within each panel and a CD with a copy of Autocad files (22x34 drawing size) of the submittal drawings edited to as-built status.
  3. Provide one (1) CD for each panel.
- E. Operation and Maintenance (O&M) Manuals: Submit operation and maintenance manuals for the products of this section in compliance with Section 16010, General Electrical Provisions, and as described here.
1. Provide as-built versions of the project record documents, current price and source for all replaceable components (i.e. plug-in relays, pilot light lamps, etc.).
  2. If a common component is used in several panels, a single cut sheet / descriptor is acceptable if all applicable panels are annotated on the submittal.
  3. All prepared O&M material shall be typed in MS Word (.doc) or scanned and converted to Adobe (.pdf) format. O&M data for each panel can be furnished on the same CD with the as-built drawings.
- F. Submit all electronic media including cut sheets, O&M information and instructions in either MS Word (.doc) or Adobe (.pdf) format on a CD formatted for reading on Intel-based PCs (not MAC).
- G. Construction shall proceed only after the Authority or their representative approves the required submittals.

## **PART 2 – MATERIALS**

### **2.01 ENCLOSURES**

- A. Enclosures
  - 1. In all non-hazardous areas enclosures shall be NEMA 4X, non-metallic. If approved by Project Manager, stainless steel, with brushed finish, enclosures are acceptable. Where possible, penetrations shall be made in such a manner to maintain the NEMA 4X rating. If this is not possible, the penetrations shall be made in such a manner to minimize entry of foreign materials into the enclosure.
  - 2. Enclosures shall be wall or rack mounted. Internal control components shall be mounted on a removable mounting pan. Mounting pan shall be finished white.
- B. Enclosure interior shall be provided with a steel back for mounting of control and power distribution components.
- C. Enclosure dimensions shall be based on door mounted component size and layout, components contained within, including terminal strips and wiring gutter.
- D. Enclosures shall be insulated and internal heating supplied to maintain temperatures 10F above the highest minimum operating temperature of any of the components installed in the panel.

### **2.02 CONTROL PANELS (CP)**

- A. The CONTRACTOR shall furnish the CP(s) to satisfy the functional requirements on the drawings. Each CP shall be fabricated with UL labeled components and the CP's shall be Listed as Assemblies. Panels not specifically specified as being provided in other Sections of the Specification shall be furnished and installed under this Section. All panels shall be wired under this Section.
- B. The CP controls shall be 120 volt maximum. Control conductors shall be Class C stranded copper, #14AWG minimum, with Type SIS or MTW insulation, 600V rating.
- C. Each CP shall be provided with identified terminal strips for the connection of all external conductors. The CONTRACTOR shall provide sufficient terminal blocks to connect 25 percent additional conductors for future use. Termination points shall be identified in accordance with the Contract Drawings. The terminal strip listed shows only external connections and internal numbering is to be provided by the manufacturer. All equipment associated with the CP(s) shall be ready for service after connection of conductors to equipment, controls, and CP(s).
- D. All internal wiring shall be factory-installed and, along with all field wiring, shall be contained in plastic raceways or troughs having removable covers. Wiring to door-mounted devices shall be extra flexible and anchored to doors using wire anchors cemented in place. Exposed terminals of door-mounted devices shall be guarded to prevent accidental personnel contact with energized terminals.
- E. The control power disconnect shall have a door-mounted handle unless otherwise specified or shown.
- F. Identification of panel-mounted devices, conductors, and electrical components shall meet the requirements specified elsewhere.

- G. All panel-mounted devices shall be mounted a minimum of 3 feet above finished floor elevation.
- H. Wiring within the panel shall be labeled with wire numbers and run in wiring duct, neatly tied and bundled with tie wraps or similar materials.

### **2.03 CP COMPONENTS**

- A. As listed on the Contract Drawings

### **2.04 CONDUCTOR INSULATION**

- A. Color coding of insulation shall be:
  1. Black: Undergrounded line, Load and Control conductors at line voltage.
  2. Red: Undergrounded AC Control conductors, at less than line voltage.
  3. Blue: Undergrounded DC Control conductors.
  4. Yellow: Undergrounded Control circuit conductors that may remain energized when the main disconnecting means is in the "OFF" position. These conductors shall be yellow throughout the entire circuit, including wiring in the control panel and the external field wiring.
  5. White or Natural Gray: Grounded Circuit conductor.
  6. White with Blue Stripe: Grounded (current-carrying) DC Circuit conductors.

### **2.05 WIRE MARKERS**

- A. Shall consist of white or yellow, slip-on elastic sleeves sized to tightly grip the wire insulation and marked in block printing with the letters or numbers to identify the circuit.

### **2.06 TERMINAL BLOCKS**

- A. Shall be Allen Bradley 1492 series or equal. Power terminations for supply and motor loads a maximum rating of 600 volts AC and 35 amps. Control and sensor terminals shall be determined by the manufacturer and based on upstream over current protection, fault duty etc. When individual devices or component terminal blocks are encountered with screw terminals, termination shall be by slip on spade tongue insulated compression terminators.

### **2.07 NAMEPLATES**

- A. Shall be installed plumb and parallel to the lines of doors or structure to which they are attached.
- B. Provide nameplate for each panel.
- C. Panel nameplate shall be 2"x6" minimum size with 1/2-inch minimum engraved letters. Engraving shall be as shown on the Contract Drawings for the identification of each panel.

### **2.08 FACTORY TESTING**

- A. Each CP shall be factory assembled, and tested for sequence of operation prior to job site delivery.

- B. Factory test shall be scheduled and AUTHORITY and ENGINEER notified 2 weeks prior to testing.
- C. Factory testing shall be with witnessed by ENGINEER.
- D. All panels to be provided for this project shall be tested during the same session.
- E. Factory test will be witnessed by the ENGINEER or other AUTHORITY -designated representative. Panels may not be shipped until tests are completed to the ENGINEER's approval. Approval must be in writing.
- F. If panel manufacturer is outside of the state, all expenses required to transport the ENGINEER or AUTHORITY'S representative to the manufacturer's facility and any perdiem expenses for lodging and meals shall be borne by the Contractor.

## **2.09 SPARE PARTS**

- A. Provide a minimum of 10% spare lamps (minimum 2) and one spare lens for each color pilot lamp in each panel.
- B. For each panel, provide 1 each relay, motor starter, contactor, switch and pushbutton of types contained within that panel. Components shall be delivered to AUTHORITY in original shipping boxes suitable for long term storage.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Control panels shall be factory or shop fabricated units completely assembled, wired and tested in the presence of an owner representative before shipment to the job site. Panel construction shall, in general, meet applicable NEMA and IEEE standards. The panels shall be constricted in accordance with the standards of the bear and label of an accredited nationally recognized testing laboratory.
- B. Control Panel shall have placards located within indicating listing agency and current and voltage ratings.
- C. The assembled panel shall be meggered and tested to be free from grounds and shorts. All controllers, circuits and interlocks shall be rung out and tested to assure that they function correctly before the panel is hipped. Revise all drawings upon completion of the work to show "as shipped" condition of the panel. After completion of the shop assembly and testing, panels shall be enclosed in heavy-duty polyethylene envelopes or secured sheeting to provide complete protection from dust and moisture. Dehumidifiers shall be placed inside the polyethylene covering. The equipment shall then be skid-mounted for final transport. Shipping weight shall be shown on shipping tags, together with instructions for unloading, transporting, storing, and handling on job site.
- D. Terminal blocks shall be provided for the termination of power and control wiring. Where multiple terminal blocks are shown for a given wire number, additional blocks shall be provided and jumpered as necessary to provide terminal spaces for each individual outgoing wire. Terminal strips shall be mounted on a flat steel channel or strut which raises them to the level of the adjacent wire gutters (2 inch to 3 inch above backplate). Provide space for a minimum of 10 percent additional control wiring terminal blocks on each side.
- E. CP(s) shall be installed in accordance with the requirements specified Division 16 and in accordance with the Manufacturer's recommendations.

- F. CP(s) shall be protected at the job site from loss, damage, and the effects of weather. CP(s) shall be stored in an indoor, dry location. Heating shall be provided in areas subject to corrosion, and humidity.
- G. CP(s) interiors, and exteriors shall be cleaned, and coatings shall be touched up to match original finish upon completion of the work.
- H. Conduit, conductors, and terminations shall be installed in accordance with the requirements specified elsewhere.

### **3.02 FIELD TESTING**

#### **A. Functional Test**

1. Panel operation will be demonstrated after all components and sensors associated with each panel have been installed and individually tested and calibrated or adjusted.
2. The demonstration shall be witnessed by ENGINEER or other designated AUTHORITY representative.
3. AUTO functions may be tested with simulated inputs. Input to be enabled as near to the actual device as possible, i.e., at the float terminals in the case of float controls.

#### **B. Panel functions to be tested include all manual and automatic functions, all alarms and status displays and the emergency shutdown where installed. The Functional Narratives and Operational Instructions on the drawings will form the basis of the operational test.**

#### **C. Acceptance.**

1. Contractor will repair, replace as necessary components/sensors that fail. Testing will be repeated until panels are accepted.
2. Travel, labor and subsistence costs for subsequent trips to the project site to test the panels shall be borne by the Contractor.

**END OF SECTION**



**SECTION 16901**  
**SECURITY AND COMMUNICATIONS**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This Section describes general requirements, products, and methods of execution relating to security and communications and related products approved for use on this project. This is a performance based specification with final design to be completed and submitted for review prior to procuring and installation.

**1.02 RELATED REQUIREMENTS**

- A. Section 16010 - General Electrical Provisions
- B. Section 16100 - Basic Materials and Methods
- C. Section 16110 - Conduits and Fittings
- D. Section 16120 Wire and Cables
- E. Section 16131 Pull and Junction Boxes
- F. Section 16190 Supporting Devices

**1.03 QUALITY ASSURANCE**

- A. Products specified in this section shall be as manufactured by a nationally recognized manufacturer.

**1.04 SUBMITTALS**

- A. Provide submittals including installation and operating instructions.

**PART 2 – MATERIALS**

**2.02 VIDEO / INTERCOM SYSTEM**

- A. The video/intercom system shall be a Mobotix M24 system manufactured by Mobotix as provided by TecPRO Solutions or equal. The system shall have the following characteristics:
  - 1. Day/Night lens
  - 2. Shall be set up for video security
  - 3. Integrated DVR with Hi-Res video recording
  - 4. Weatherproof from -30 to +60 degrees C (-22 to +140 degrees F), (IP66)
  - 5. Digital continuous zoom, pan and tilt
  - 6. Integrated microphone and speaker
  - 7. Remote radio connection between Video display/speakers and camera
  - 8. Video management software shall be included

- B. The system including all accessories, including power supply, radio link components, operator training and programming shall be furnished, installed and tested by the provider.

**PART 3 – EXECUTION**

- A. Installer to coordinate with Contractor on conduit routing and cabling.
- B. Camera view and aiming to be coordinated with and approved by the OWNER for intended use.
- C. Monitor locations are shown on plans in general vicinity of desired locations. Final positioning and elevation to be field coordinated with OWNER.
- D. Mounting and termination of all components in the Video/Communications system are to be provided under this section.

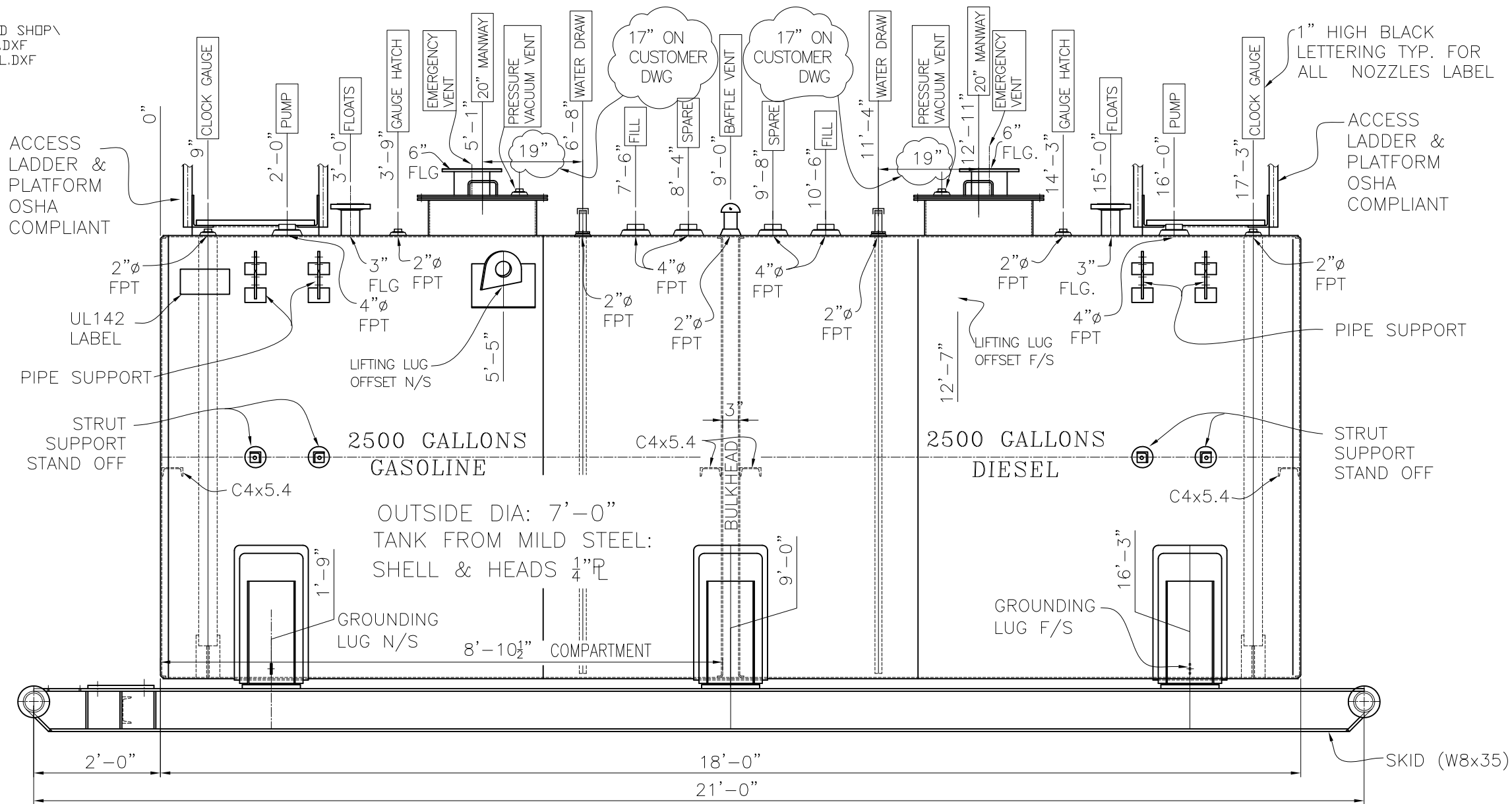
**END OF SECTION**

**APPENDIX B**

**TANK SHOP DRAWINGS**

**(5,000 GALLON & 29,000 GALLON)**

CNC: LIFTING LUGS AND SHOP\  
 C1\_8IN 1-2IN\ 3-8\_PL.DXF  
 \ 1-2\_PL.DXF



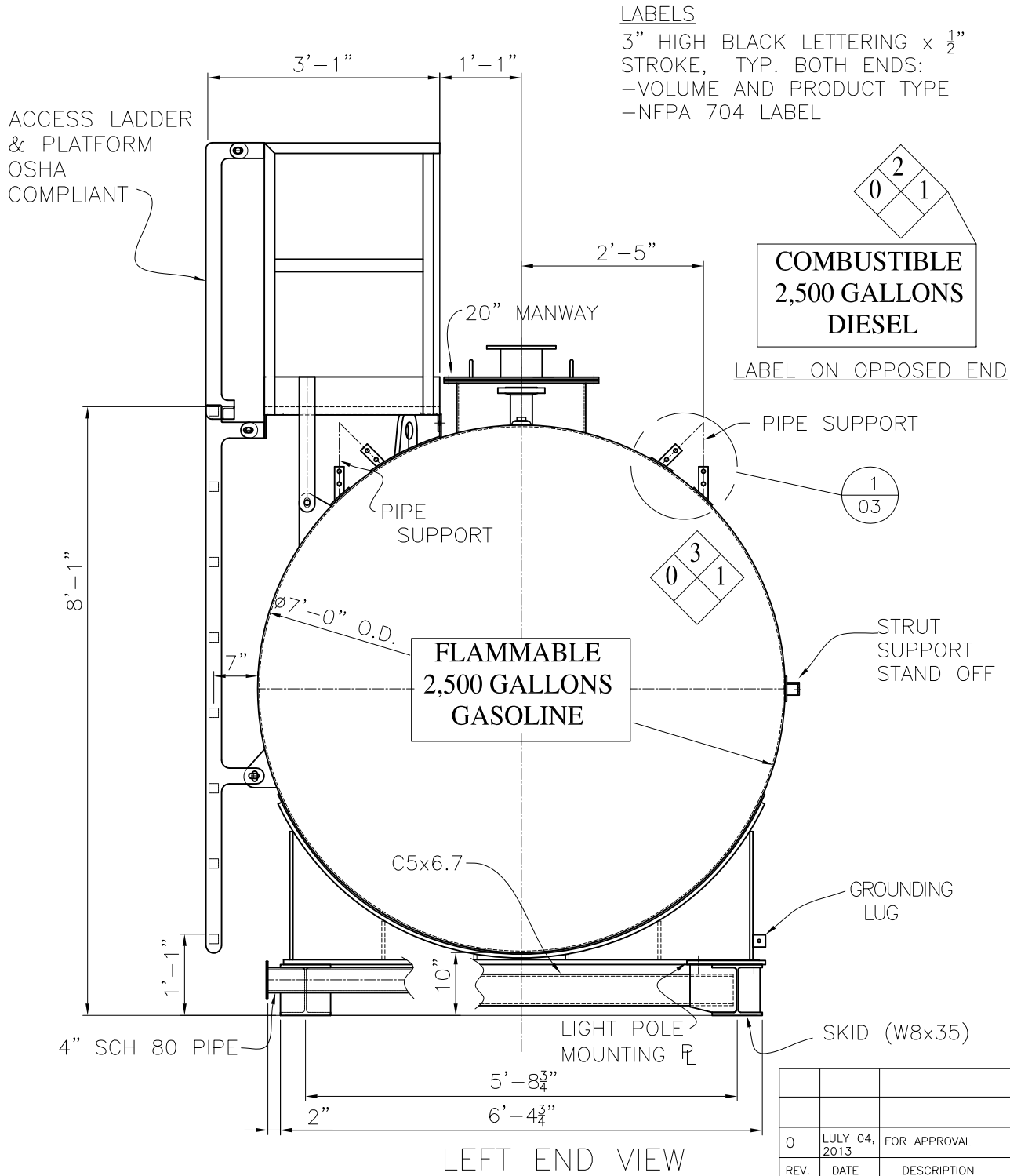
PAIN NOTES:

SANDBLAST EXTERIOR TO SP10 & APPLY ONE COAT DEVOE CATHA- COAT 302H (3MILS DFT) AND ONE COAT OF DEVOE DEVTHANE 389 WHITE (2-3 MILS DFT) c/w ANTI SKID ON TOP OF TANK- SLIP RESISTANT COATING: ALUMINUM OXIDE AGGREGATE (36 MESH SIZE) MIXED WITH TOP COAT (DEVTHANE 389) AT RATE OF 1 POUND OF AGGREGATE PER GAL. COATING.

WEIGHT OF EMPTY TANK: 10,400 lbs.

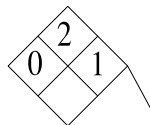
REV.	DATE	DESCRIPTION	DRAWN BY	APPROVED BY	MINIMUM SIZE OF FILLET WELD U.O.N.
B	JULY 15, 2013	MIDDLE SADDLE ADDED PER SPECIFICATION	TB	KM	PLATE THK WELD
A	JULY 10, 2013	REVISED PER EMAIL JULY 9, 2013	TB	KM	UP TO 1" 1/8
					1/4" TO 1/2" 3/16
O	JULY 04, 2013	FOR APPROVAL	TB	KM	1" TO 3/4" 1/4
					OVER 3/4" 5/16

CUSTOMER: ALASKA ENERGY	P.O. # 008025/ SHISHMAREF	TANK # US333
TITLE: SIDE VIEW		
FOR: 5000 US GALLON SPLIT- SINGLE WALL TANK (UL142)		
FILE: 02\02\US333	JULY 03, 2013	SCALE: 1/2"=1'-0"
5000G SW SPLIT UL142 ALASKA	DWG# 01	REV B
<b>REGAL TANKS LTD</b> MFG. BY TIDY STEEL-FAB LTD. PHONE (360) 707-9948 FAX (360) 707-9949		



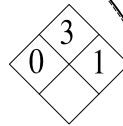
**LABELS**

3" HIGH BLACK LETTERING x 1/2" STROKE, TYP. BOTH ENDS:  
 -VOLUME AND PRODUCT TYPE  
 -NFPA 704 LABEL

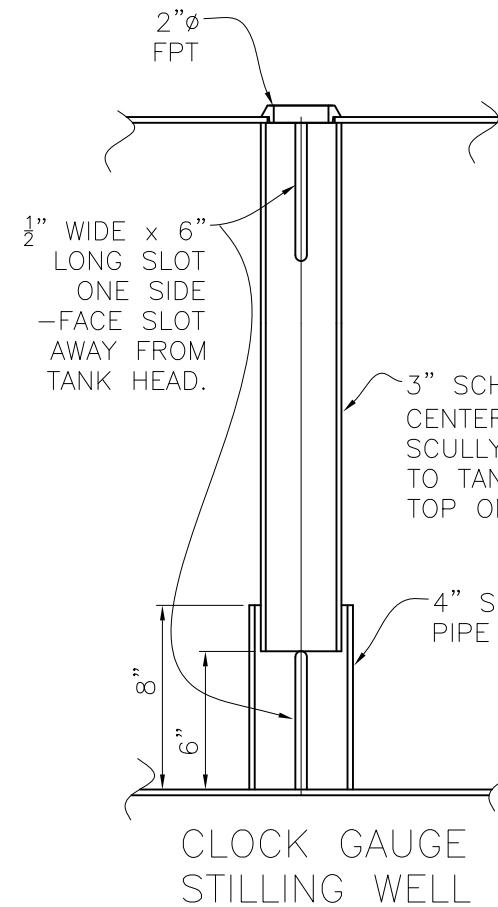


**COMBUSTIBLE  
 2,500 GALLONS  
 DIESEL**

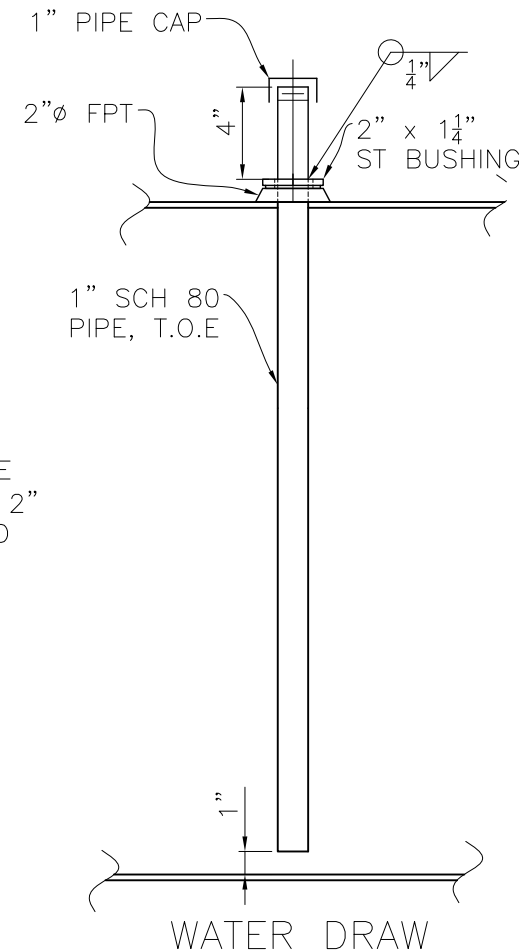
LABEL ON OPPOSED END



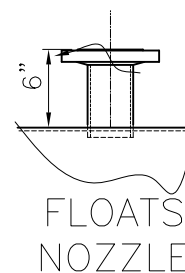
**FLAMMABLE  
 2,500 GALLONS  
 GASOLINE**



CLOCK GAUGE STILLING WELL



WATER DRAW



FLOATS NOZZLE

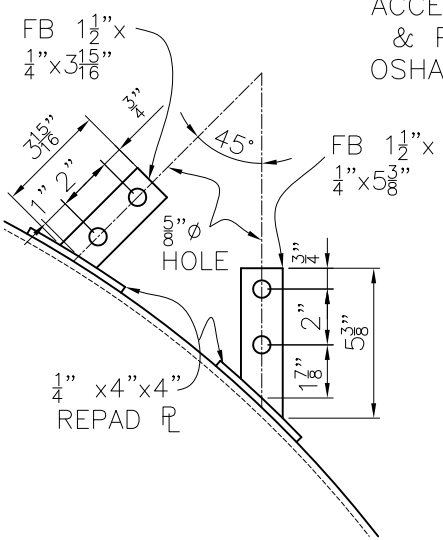
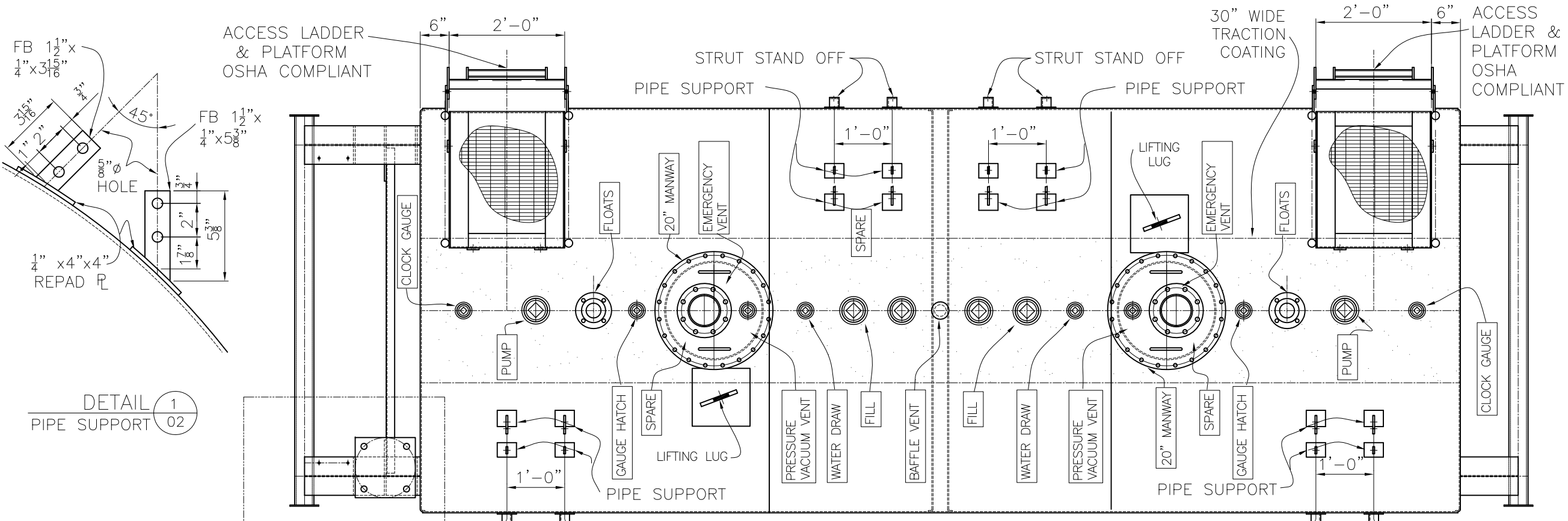
3"-150# RF.SO. FLG.  
 3"-SCH.80 PIPE x 6 1/2"

REV.	DATE	DESCRIPTION	DRAWN BY	APPROVED BY
0	LULY 04, 2013	FOR APPROVAL	TB	KM

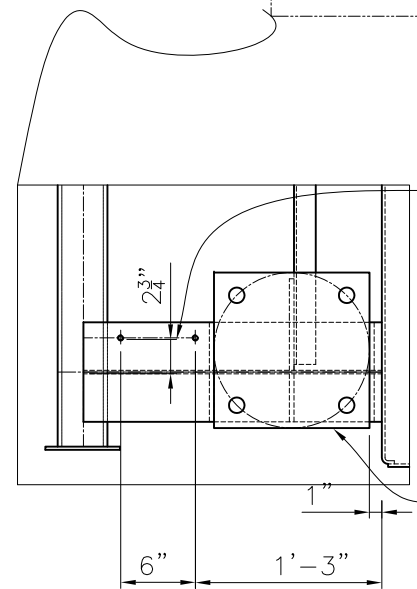
MINIMUM SIZE OF FILLET WELD U.O.N.	
PLATE THK	WELD
UP TO 1/4"	1/8"
1/4" TO 1/2"	3/16"
1/2" TO 3/4"	1/4"
OVER 3/4"	5/16"

CUSTOMER: ALASKA ENERGY	P.O. # 008025/ SHISHMAREF	TANK # US333
TITLE: END VIEW & DETAILS		
FOR: 5000 US GALLON SPLIT- SINGLE WALL TANK (UL142)		
FILE: 02\02\US333	JULY 03, 2013	SCALE: 1/2"=1'-0"
5000G SW SPLIT UL142 ALASKA	DWG# 02	REV A
<b>REGAL TANKS LTD.</b>		
MFG. BY TIDY STEEL-FAB LTD.		
PHONE (360) 707-9948 FAX (360) 707-9949		

LEFT END VIEW

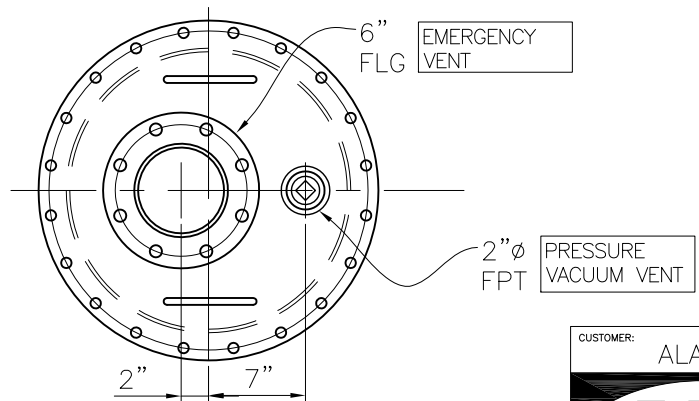


DETAIL 1  
PIPE SUPPORT 02



DRILL AND TAP (2) HOLES ON EA SKID, LADDER END ONLY: 3/8\" - 16UNC-2B

LIGHT POLE MOUNTING

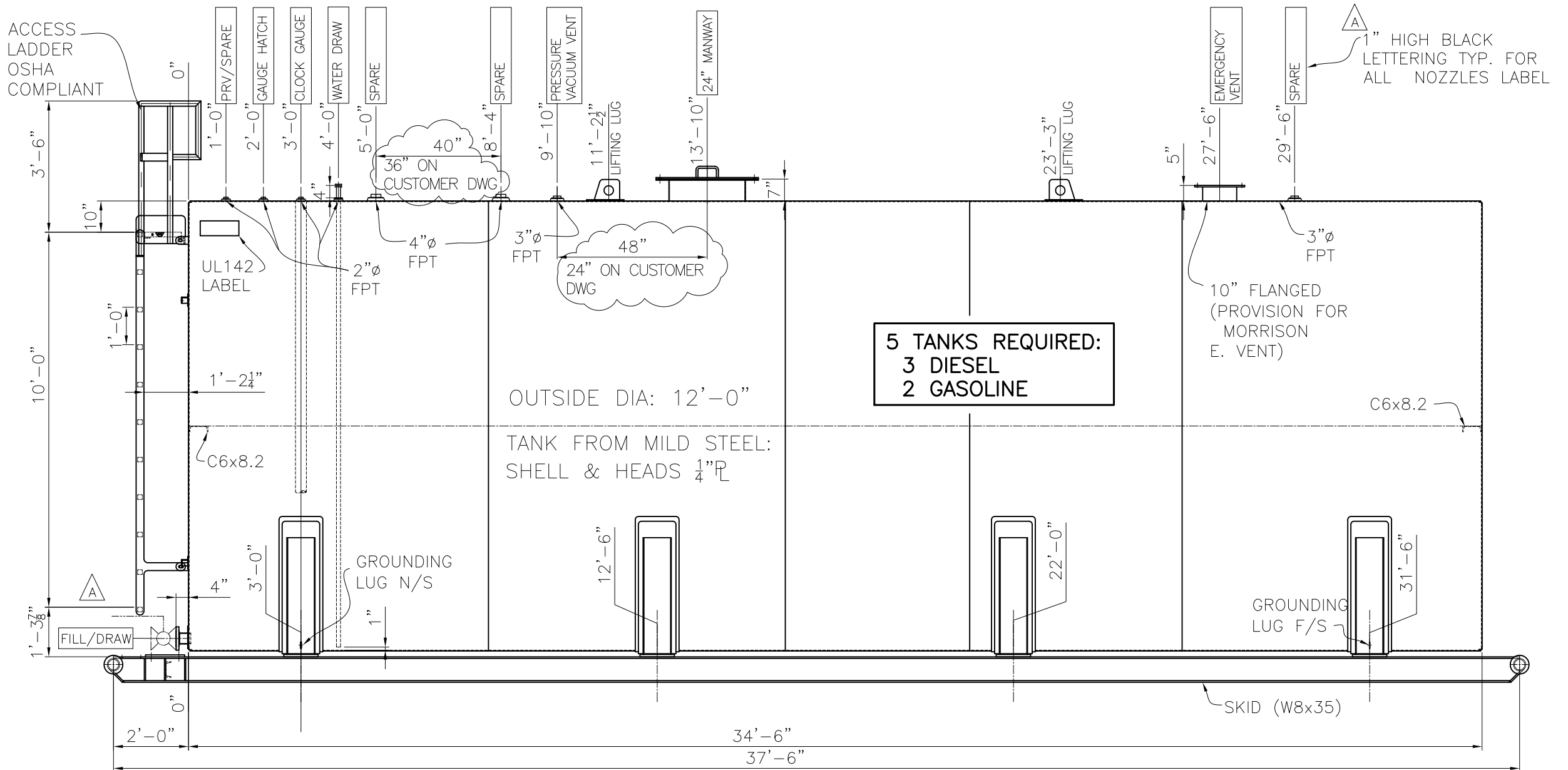


20" MANWAY

REV.	DATE	DESCRIPTION	DRAWN BY	APPROVED BY	MINIMUM SIZE OF FILLET WELD U.O.N.
A	JULY 10, 2013	REVISED PER EMAIL JULY 9, 2013	TB	KM	PLATE THK WELD
					UP TO 1/4" 1/8"
					1/4" TO 3/8" 3/16"
					1/2" TO 3/4" 1/4"
					OVER 3/4" 5/16"

CUSTOMER: ALASKA ENERGY	P.O. # 008025/ SHISHMAREF	TANK # US333
<b>REGAL TANKS LTD.</b> MFG. BY TIDY STEEL-FAB LTD. PHONE (360) 707-9948 FAX (360) 707-9949		

TITLE: TOP VIEW & DETAILS	
FOR: 5000 US GALLON SPLIT- SINGLE WALL TANK (UL142)	
FILE: 02\02\US333	JULY 03, 2013
5000G SW SPLIT UL142 ALASKA	SCALE: 1/2"=1'-0"
DWG# 03	REV A




**PAINT NOTES:**

SANDBLAST EXTERIOR TO SP10 & APPLY ONE COAT DEVOE CATHA- COAT 302H (3MILS DFT) AND ONE COAT OF DEVOE DEVTHANE 389 WHITE (2-3 MILS DFT) c/w ANTI SKID ON TOP OF TANK- SLIP RESISTANT COATING: ALUMINUM OXIDE AGGREGATE (36 MESH SIZE) MIXED WITH TOP COAT (DEVTHANE 389) AT RATE OF 1 POUND OF AGGREGATE PER GAL. COATING.

REV.	DATE	DESCRIPTION	DRAWN BY	APPROVED BY
A	JULY 04, 2013	REVISED PER CUSTOMER REVIEW COMMENTS 6-27-13	TB	KM
0	JUNE 26, 2013	FOR APPROVAL	TB	KM

MINIMUM SIZE OF FILLET WELD U.O.N.	
PLATE THK	WELD
UP TO 1/4"	3/8"
1/4" TO 1/2"	3/16"
1/2" TO 3/4"	1/4"
OVER 3/4"	5/16"

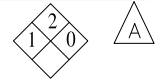
CUSTOMER: ALASKA ENERGY	P.O. # 008025/ SHISHMAREF	TANK # US328, US329, US330, US331, US332.
		
TITLE: SIDE VIEW		
FOR: 29000 US GALLON SINGLE WALL TANK (UL142)		
FILE: 02\02\US328 29000G SW UL142 ALASKA	JUNE 25, 2013	SCALE: 5/16" = 1'-0" DWG# 01 REV A
<b>REGAL TANKS LTD.</b> MFG. BY TIDY STEEL-FAB LTD. PHONE (360) 707-9948 FAX (360) 707-9949		

**LABELS**

3" HIGH BLACK LETTERING x 1/2" STROKE, TYP. BOTH ENDS:  
 -VOLUME AND PRODUCT TYPE  
 -NFPA 704 LABEL

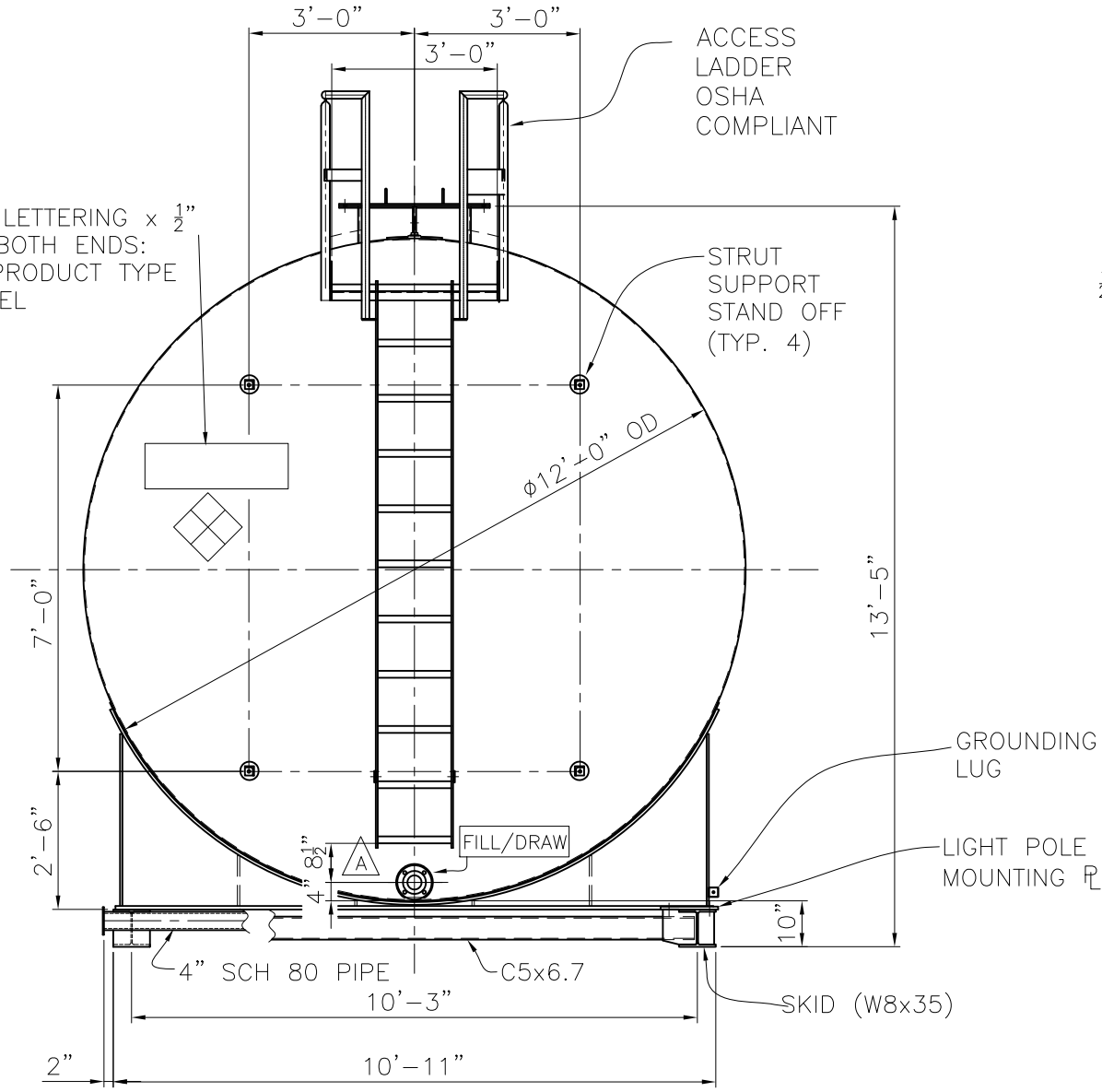
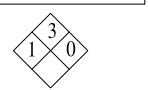
TYP. 3 TANKS:

COMBUSTIBLE  
 29,000 GALLONS  
 DIESEL



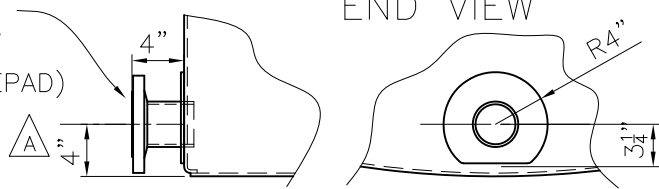
TYP. 2 TANKS:

FLAMMABLE  
 29,000 GALLONS  
 GASOLINE

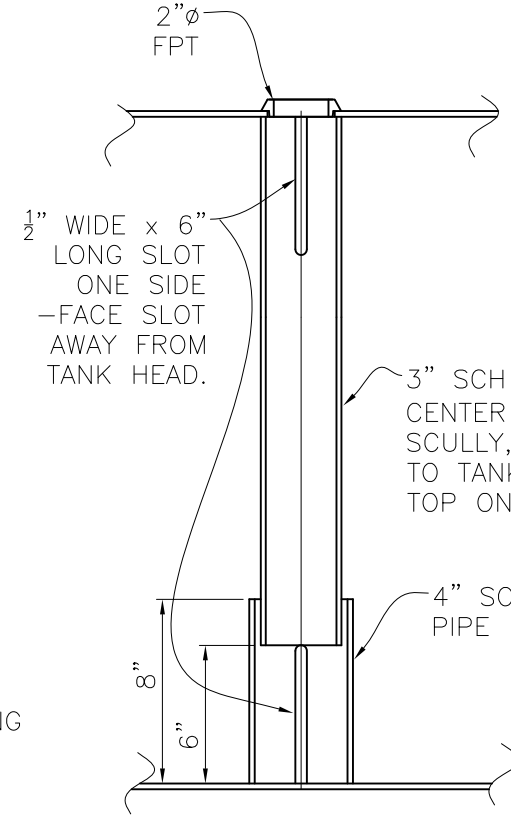


END VIEW

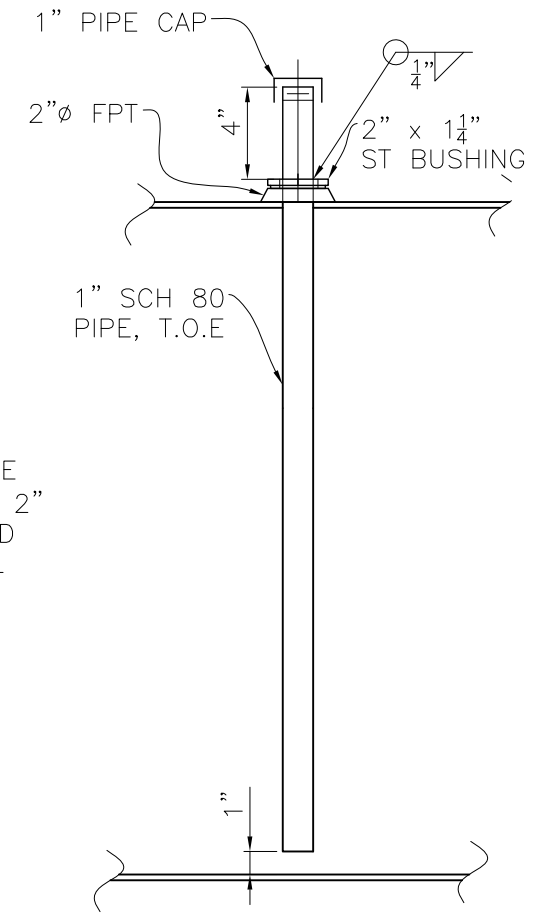
3"-150# RF.SO. FLG.  
 3"-SCH.80 PIPE x 5"  
 1/4" x 7" x 8"- (REPAD)



FILL/ DRAW NOZZLE



CLOCK GAUGE STILLING WELL



WATER DRAW

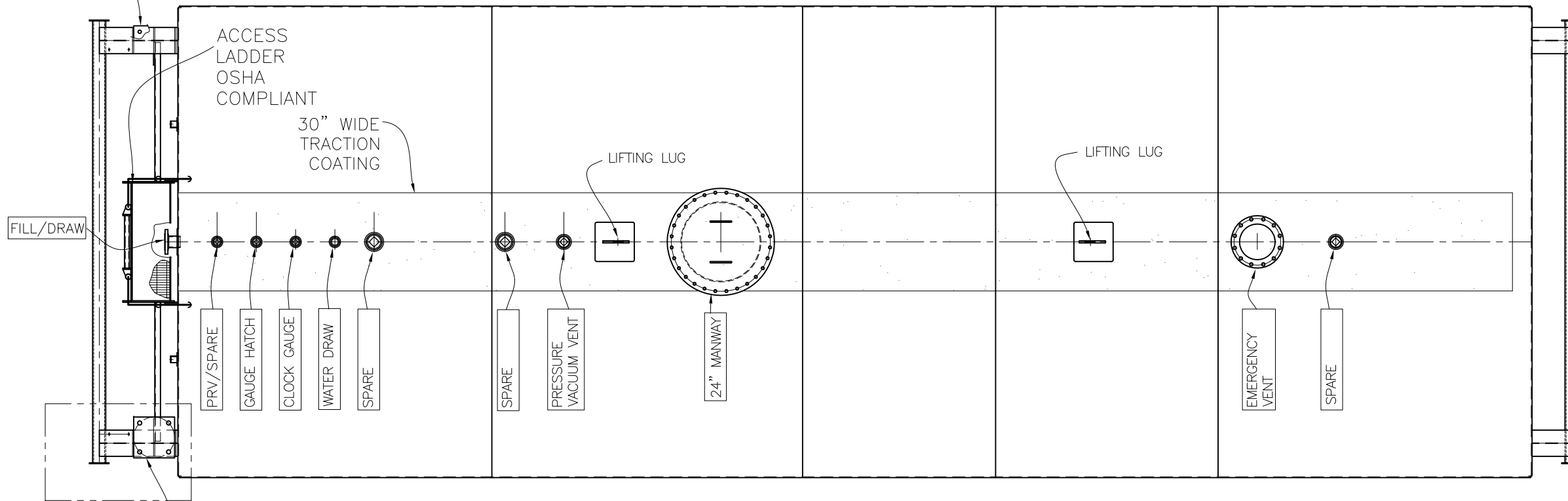
REV.	DATE	DESCRIPTION	DRAWN BY	APPROVED BY
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0	JUNE 26, 2013	FOR APPROVAL	TB	KM

MINIMUM SIZE OF FILLET WELD U.O.N.	
PLATE THK	WELD
UP TO 1/4"	1/8"
1/4" TO 1/2"	3/16"
1/2" TO 3/4"	1/4"
OVER 3/4"	5/16"

CUSTOMER: ALASKA ENERGY	P.O. # 008025/ SHISHMAREF	TANK # US328, US329, US330, US331, US332.
TITLE: END VIEW & DETAILS		
FOR: 29000 US GALLON SINGLE WALL TANK (UL142)		
FILE: 02\02\US328 29000G SW UL142 ALASKA	JUNE 26, 2013	SCALE: 5/16" = 1'-0" DWG# 02 REV 0
<b>REGAL TANKS LTD</b> MFG. BY TIDY STEEL-FAB LTD. PHONE (360) 707-9948 FAX (360) 707-9949		

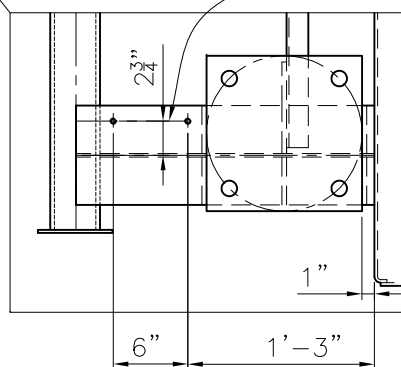


TANK MOUNT LIGHT POLE BASE. THIS SKID  
(TYP 1 DIESEL TANK)



TANK MOUNT LIGHT POLE BASE. THIS SKID  
(TYP 2 DIESEL & 2 GASOLINE TANK)

DRILL AND TAP (2) HOLES  
ON EA SKID, LADDER END  
ONLY:  $\frac{3}{8}$ " - 16UNC-2B

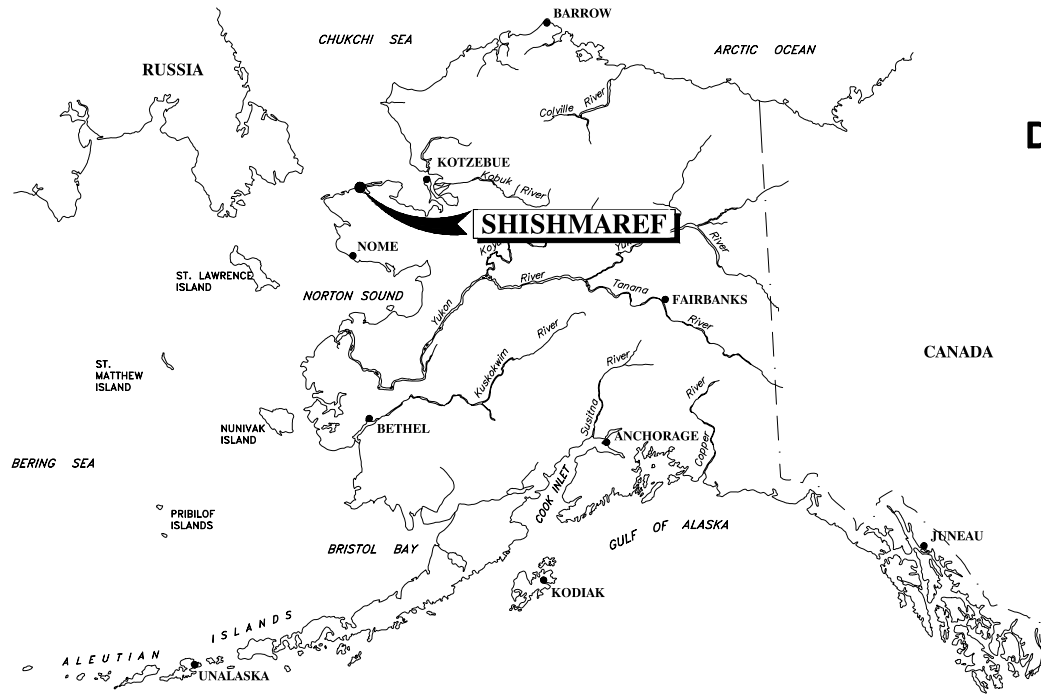


REV.	DATE	DESCRIPTION	DRAWN BY	APPROVED BY
0	JUNE 26, 2013	FOR APPROVAL	TB	KM

MINIMUM SIZE OF FILLET WELD U.O.N.	
PLATE THK	WELD
UP TO 1/4"	1/8"
1/4" TO 3/8"	3/16"
1/2" TO 3/4"	1/4"
OVER 3/4"	5/16"

CUSTOMER: ALASKA ENERGY	P.O. # 008025/ SHISHMAREF	TANK # US328, US329, US330, US331, US332.
		
TITLE: TOP VIEW		
FOR: 29000 US GALLON SINGLE WALL TANK (UL142)		
FILE: 02\02\US328	JUNE 26, 2013	SCALE: $\frac{5}{16}$ " = 1'-0"
29000G SW UL142 ALASKA		DWG# 03 REV 0
<b>REGAL TANKS LTD.</b> MFG. BY TIDY STEEL-FAB LTD. PHONE (360) 707-9948 FAX (360) 707-9949		

State of Alaska  
Department of Community and Economic Development



# SHISHMAREF, ALASKA

## BULK FUEL UPGRADE

## ISSUED FOR BIDDING

APRIL 2016

Project Number	(Consultant)	30404.12	(AEA)	--
AEA Project Manager	TIM SANDSTROM			
Construction Manager	X			
Final Design	(Date)	4/26/2016		
Fire Marshal Approval	(Date)			
Construction Period	(From)		(To)	
As-Builts	(Date)			



3940 Arctic Blvd, Suite 300  
Anchorage, Alaska 99503  
PHONE: (907) 562-3252  
FAX: (907) 561-2273



SHEET INDEX	
<b>CIVIL DESIGN DRAWINGS</b>	
<b>GENERAL SHEETS</b>	
G1	NOTES, LEGEND & ABBREVIATIONS
G2	SET BACK & SINGAGE PLAN
G3	COMPONENT SCHEDULES
G4	VALVE SCHEDULE
G5	MATERIAL SOURCE & HAUL ROUTE PLAN
<b>CIVIL SHEETS</b>	
C1	TANK FARM OPERATING SCHEMATIC
C1A	WTP OPERATING SCHEMATIC (ADD ALT A)
C2	VICINITY MAP
C3	TANK FARM SITE PLAN
C4	TANK FARM GRADING PLAN
C5	TANK FARM SECTIONS
C6	TANK FARM PIPING PLAN
C7	TANK FARM FILL PIPELINE
C7A	TANK FARM FILL PIPELINE DETAILS
C8	WTP SITE PLAN (ADD ALT A)
C9	OLD WTP SITE PLAN (ADD ALT A)
C10	500 GALLON DAY TANK (ADD ALT A)
C11	29,000 GALLON SINGLE WALL TANK DETAILS
C12	5,000 GALLON DISPENSING TANK DETAILS
C13	12,000 GALLON DOUBLE WALL TANK DETAILS (ADD ALT A)
C14	MISCELLANEAOUS TANK DETAILS
C15	TANK MOUNT LIGHTPOLE DETAILS
C16	DISPENSER ENCLOSURE DETAILS
C17	DISPENSER DETAILS
C18	MISCELLANEOUS DETAILS
C19	FENCE DETAILS
C20	STAIR DETAILS
C21	PUMP CABINET DETAILS
C22	TANK DECOMMISSIONING SCHEDULE
C23	PIPING DECOMMISSIONING PLAN
<b>ELECTRICAL DESIGN DRAWINGS</b>	
E1	NOTES, LEGEND & ABBREVIATIONS
E2	ELECTRICAL SPECIFICATIONS
E3	CONTROL SPECIFICATIONS
E4	POWER ONE-LINE & PANEL SCHEDULE
E5	ELECTRICAL SITE PLAN
E6	ELECTRICAL GROUNDING PLAN
E7	TANK FARM SITE PLAN
E8	TANK FARM PIPING SITE PLAN
E9	WTP FUEL TANK SITE PLAN (ADD ALT A)
E10	AREA CLASSIFICATION
E11	TANK FARM PANEL CP-1 LAYOUT
E12	CP-1 ONE-LINE & WIRE LIST
E13	CP-1 LADDER (1 OF 6)
E14	CP-1 LADDER (2 OF 6)
E15	CP-1 LADDER (3 OF 6)
E16	CP-1 LADDER (4 OF 6)
E17	CP-1 LADDER (5 OF 6)
E18	CP-1 LADDER (6 OF 6)
E19	WTP PANEL CP-2 LAYOUT (ADD ALT A)
E20	CP-2 ONE-LINE & WIRE LIST (ADD ALT A)
E21	CP-2 LADDER (1 OF 2) (ADD ALT A)
E22	CP-2 LADDER (2 OF 2) (ADD ALT A)

**PROJECT SCOPE**

THIS PROJECT PROVIDES FOR THE CONSTRUCTION OF NEW BULK FUEL STORAGE AND HANDLING FACILITIES IN SHISHMAREF, ALASKA. SPECIFIC ACTIVITIES WILL INCLUDE THE CONSTRUCTION OF:

- A NEW BULK FUEL TANK FARM WITH FIVE HORIZONTAL SINGLE WALL, SKID MOUNTED ASTS WITHIN A NEW EARTHEN DIKE CONTAINMENT AREA CONSTRUCTED OF LOCALLY AVAILABLE SAND AND IMPORTED FILL.
- TANKS INCLUDE: (3) 29,000-GALLON #1 DIESEL, (2) 29,000-GALLON GASOLINE, & (1) 5,000-GALLON DUAL PRODUCT DISPENSING TANK. TANKS ARE OWNER PROVIDED, SEE SPECIFICATIONS.
- A NEW BARGE HEADER WITH THREE 3-INCH DIAMETER SCHEDULE 80 STEEL PIPELINES. (TWO FOR FILLING THE PROPOSED TANK FARM & ONE FOR FILLING THE EXISTING AVEC & SCHOOL TANK FARMS).
- DUAL PRODUCT RETAIL DISPENSER LOCATED AT THE TANK FARM FOR NATIVE STORE FUEL SALES.
- A FLEET DISPENSING STATION LOCATED AT THE TANK FARM FOR FILLING OF CITY OWNED EQUIPMENT AND FUEL HAUL VEHICLES.
- NEW ELECTRICAL CONTROLS AS REQUIRED.
- EPA-REQUIRED SPILL CONTINGENCY EQUIPMENT AND RELATED REGULATORY DOCUMENTS.
- DECOMMISSIONING AND REMOVAL OF EXISTING PIPELINES AND TANKS AS REQUIRED.

**ADDITIVE ALTERNATE A SCOPE WATER TREATMENT PLANT FUEL SYSTEM UPGRADES:**

- A 12,000-GALLON DOUBLE WALL DIESEL TANK ADJACENT TO THE WTP. THE TANK WILL BE SUPPORTED ON A NEW GRAVEL PAD CONSTRUCTED WITH LOCALLY AVAILABLE SANDS AND IMPORTED FILL AND CONNECTED TO THE EXISTING NAYUKPUK TANK FARM BARGE HEADER PIPELINE.
- A NEW 500 GALLON ELEVATED DAY TANK LOCATED AT THE WTP.
- A NEW 500 GALLON ELEVATED DAY TANK LOCATED AT THE OLD WTP.

**ADDITIVE ALTERNATE B DISPOSAL OF DECOMMISSIONED TANKS:**

- DISPOSE OF EXISTING PIPELINES AND TANKS DECOMMISSIONED UNDER THIS PROJECT.

**GENERAL NOTES**

- THE CONTRACTOR SHALL PROTECT ALL ITEMS NOT SCHEDULED FOR DEMOLITION DURING CONSTRUCTION. DISTURBED AREAS SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITION.
- ALL EXISTING UTILITIES MAY NOT BE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL CONSULT WITH THE APPROPRIATE UTILITY ORGANIZATIONS TO VERIFY AND LOCATE UTILITIES PRIOR TO CONSTRUCTION. SEE "CALL BEFORE YOU DIG" CONTACT INFORMATION ON THIS SHEET.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE APPROPRIATE TEMPORARY CUT SLOPES AND SHORING FOR EXCAVATIONS AND TRENCHES FOR SITE SOILS, GROUNDWATER AND RUNOFF CONDITIONS AND SURFACE LOADING CONDITIONS. THE CONTRACTOR MUST COMPLY WITH APPLICABLE FEDERAL AND STATE OSHA REGULATIONS. THE CONTRACTOR SHALL MAINTAIN ALL SIGNS, BARRICADES, WARNING LIGHTS AND OTHER PROTECTIVE DEVICES NECESSARY FOR SAFETY AND TRAFFIC CONTROL.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH EXISTING FACILITY OPERATORS, OTHER CONTRACTORS, SUBCONTRACTORS, THE CITY AND STATE AND FEDERAL AUTHORITIES.
- THE DRAWINGS ARE DIAGRAMMATIC AND DO NOT NECESSARILY SHOW ALL FEATURES OF THE REQUIRED WORK. PROVIDE ALL LABOR, EQUIPMENT AND MATERIALS REQUIRED FOR A COMPLETE, AND CODE COMPLIANT SYSTEM. VERIFY EXISTING FIELD CONDITIONS PRIOR TO STARTING CONSTRUCTION. IMMEDIATELY CONTACT THE ENGINEER FOR CLARIFICATION OF QUESTIONABLE ITEMS OR APPARENT CONFLICTS.
- ALL ITEMS TO BE INSTALLED ARE NEW UNLESS SPECIFICALLY INDICATED AS EXISTING. INSTALL ALL MATERIALS AND EQUIPMENT IAW MANUFACTURER'S RECOMMENDATIONS, INSTRUCTIONS, AND INSTALLATION DRAWINGS, UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- THE SPECIFICATION OF A NAME BRAND PRODUCT FOLLOWED BY THE "OR EQUAL" PHRASE IS DONE MERELY TO ESTABLISH THE MINIMUM LEVEL OF QUALITY OF MATERIALS AND EQUIPMENT REQUIRED AND IS NOT A PRODUCT ENDORSEMENT. SUBMIT ANY PROPOSED SUBSTITUTIONS FOR REVIEW AND APPROVAL, UNLESS "NO SUBSTITUTIONS" IS SPECIFIED.
- FACILITY DESIGN IS IAW THE 2009 INTERNATIONAL FIRE CODE, STATE OF ALASKA FIRE AND SAFETY REGULATIONS ADMINISTRATIVE CODES 13 AAC 50, 13 AAC 55, AND THE MOST RECENT MEMORANDUM OF AGREEMENT BETWEEN THE AEA AND THE STATE OF ALASKA FIRE MARSHALL.
- CONTRACTOR TO PROVIDE SIGNAGE IAW THE SIGN SCHEDULE, AND AS IDENTIFIED ELSEWHERE IN THE DRAWINGS AND SPECIFICATIONS.
- PERFORM WORK WITH SKILLED CRAFTSMEN SPECIALIZED IN SAID WORK. INSTALL ALL MATERIALS IN A NEAT, ORDERLY, AND SECURE FASHION, AS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS AND COMMONLY RECOGNIZED STANDARDS OF GOOD WORKMANSHIP.
- WHERE PIPE SUPPORTS ARE NOT SHOWN THEY SHALL BE SPACED A MAXIMUM OF 10 FEET ON CENTER IAW THE 2009 UPC.

**TESTING, STARTUP AND COMMISSIONING PROCEDURES**

- CONTRACTOR SHALL PERFORM SYSTEM TESTING, STARTUP AND COMMISSIONING IAW THE PROCEDURES LISTED HERE AND IAW MANUFACTURER INSTRUCTIONS. LEAVE ALL WORK SITES IN AN ORDERLY CONDITION CONSISTENT WITH THAT FOUND UPON ARRIVAL.
- PRESSURE TEST ALL PIPING AND FILL OUT AEA-APPROVED PIPELINE PRESSURE TEST REPORTS. NOTIFY ENGINEER SEVEN DAYS PRIOR TO PLANNED PRESSURE TESTING. THE ENGINEER OR HIS APPROVED REPRESENTATIVE SHALL BE PRESENT DURING ALL PRESSURE TESTING UNLESS DIRECTED OTHERWISE IN WRITING. DELIVER ORIGINAL REPORTS TO AEA AND A COPY TO THE ENGINEER.
- CONTRACTOR SHALL BE PRESENT DURING INITIAL BARGE FILLING OF TANKS. UPON FILLING OF TANKS VERIFY PRODUCT LEVEL WITH GAUGING STICK AND CALIBRATE ALL TANK GAUGES. REMOVE AND CLEAN ALL STRAINERS AFTER INITIAL FILLING.
- CHECK ALL PUMPS FOR PROPER ROTATION. PRIOR TO OPERATING CENTRIFUGAL PUMPS PRIME THE PUMP CAVITY WITH FUEL. PRIOR TO INITIAL START UP, WARM PUMP BODY IAW MANUFACTURER'S RECOMMENDATION.
- CHECK ALL CONTROL AND ALARM FUNCTIONS. MANIPULATE TANK FLOAT SWITCHES TO SIMULATE LOW AND HIGH LEVEL CONDITIONS. SET TIMING RELAYS FOR 30 SECONDS AND VERIFY TIME-OUT FUNCTION. RE-SET TIMERS TO SPECIFIED VALUES AFTER TESTING. VERIFY LATCHING AND RESET FUNCTIONS, EMERGENCY STOP FUNCTION, AND OPERATION OF ALL SIGNAL LAMPS AND HORNS. OBSERVE OPERATION OF MOTOR ACTUATED VALVES. VERIFY THAT AREA LIGHTING FUNCTIONS PROPERLY.

**ABBREVIATIONS**

ADD ALT	ADDITIVE ALTERNATE	LF	LINEAR FEET
ADEC	ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION	LB	POUND
ADOT	ALASKA DEPARTMENT OF TRANSPORTATION	LP	LIGHT POLE
AEA	ALASKA ENERGY AUTHORITY	M	METERS
ALCAP	ALUMINUM SURVEY CAP	MAX	MAXIMUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	MIL	0.001 INCH
API	AMERICAN PETROLEUM INSTITUTE	MIN	MINIMUM
APPROX	APPROXIMATE	MPT	MALE NATIONAL PIPE TAPERED THREAD
ASTM	AMERICAN SOCIETY FOR TESTING OF MATERIALS	N	NORTH
AST	ABOVEGROUND STORAGE TANK	NC	NORMALLY CLOSED
AWS	AMERICAN WELDING SOCIETY	NFS	NON FROST SUSCEPTIBLE (SOIL)
BLDG	BUILDING	NO	NORMALLY OPEN
CMP	CORRUGATED METAL PIPE	NPT	NATIONAL PIPE TAPERED THREAD
CITY	CITY OF SHISHMAREF	NTS	NOT TO SCALE
DEMO	DEMOLISH	OAE	OR APPROVED EQUAL
DFT	DRY FILM THICKNESS	OD	OUTSIDE DIAMETER
DIA	DIAMETER	OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
DWG	DRAWING	OZ	OUNCE
E	EAST	PCC	PORTLAND CEMENT CONCRETE
EA	EACH	PL	PLATE
EL	ELEVATION	PRV	PRESSURE RELIEF VALVE
ELEC	ELECTRIC	PSF	POUNDS PER SQUARE FOOT
EPA	U.S. ENVIRONMENTAL PROTECTION AGENCY	PSI	POUNDS PER SQUARE INCH
ENGINEER	CRW ENGINEERING GROUP, LLC	R	RADIUS
E-VENT	EMERGENCY VENT	RF	RAISED FACE
F	FAHRENHEIT	S	SEWER
FF	FINISH FLOOR ELEV.	SCH	SCHEDULE
FG	FINISH GRADE	SHPO	STATE HISTORIC PRESERVATION OFFICER
FOR	FUEL OIL RETURN	SIM	SIMILAR
FOS	FUEL OIL SUPPLY	SPEC	SPECIFICATION
FPT	FEMALE NATIONAL PIPE TAPERED THREAD	SQ	SQUARE
FT	FOOT OR FEET	SS	STAINLESS STEEL
GA	GAUGE	SSPC	STEEL STRUCTURES PAINTING COUNCIL
GAL	GALLON	STA	STATION
GALV	GALVANIZED	SY	SQUARE YARD
GPM	GALLONS PER MINUTE	TBM	TEMPORARY BENCH MARK
HDPE	HIGH DENSITY POLYETHYLENE	TS	TUBE STEEL
HP	HORSE POWER	TYP	TYPICAL
HR	HOUR	UG	UNDER GROUND
IAW	IN ACCORDANCE WITH	UL	UNDERWRITERS LABORATORY
IBC	INTERNATIONAL BUILDING CODE	ULSD	ULTRA-LOW SULFUR DIESEL
ID	INSIDE DIAMETER	UPC	UNIFORM PLUMBING CODE
IFC	INTERNATIONAL FIRE CODE	UST	UNDERGROUND STORAGE TANK
IPC	INTERNATIONAL PLUMBING CODE	W/	WITH
		W	WATER

- SCHEDULE AND COORDINATE DEMOLITION AND NEW CONSTRUCTION / RENOVATION ACTIVITIES SUCH THAT COMPLETE AND OPERABLE BULK FUEL STORAGE AND DISPENSING SYSTEMS ARE MAINTAINED AT ALL TIMES.
- CONTRACTOR SHALL MAINTAIN A RED LINED "AS-BUILT" SET OF DRAWINGS TO REFLECT FIELD CHANGES THROUGHOUT CONSTRUCTION. AS-BUILTS SHALL BE SUBMITTED TO ENGINEER AT COMPLETION OF THE PROJECT.
- ALL WORK SHALL BE PERFORMED IAW U.S. ENVIRONMENTAL PROTECTION AGENCY, ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION, AND STATE AND FEDERAL OCCUPATIONAL HEALTH AND SAFETY REGULATIONS.
- IF ANY ARCHAEOLOGICAL, CULTURAL OR PALEONTOLOGY RESOURCES ARE DISCOVERED AS A RESULT OF CONSTRUCTION ACTIVITIES, CONTRACTOR'S SHALL STOP ALL WORK THAT WOULD DISTURB SUCH RESOURCES AND CONTACT THE ENGINEER.

**CIVIL LEGEND (GENERAL)**

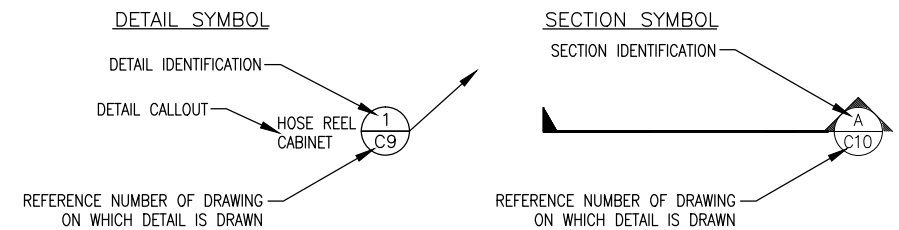
NOTE: SOME DETAILS UTILIZE SYMBOLS NOT IN THIS GENERAL LEGEND. WHERE THIS OCCURS, SYMBOLS ARE DEFINED ON THE SHEET ON WHICH THEY ARE USED.

	GENERAL PROPERTY BOUNDARY		ANTI-SIPHON VALVE
	CENTERLINE		BALL VALVE
	CULVERT		3-WAY BALL VALVE
	EDGE OF WATER		MOTOR ACTUATED BALL VALVE
	DITCH LINE/DRAINAGE SWALE		SOLENOID VALVE
	DRAINAGE DIRECTION & SLOPE		CHECK VALVE
	TRAVELED WAY		GATE VALVE
	FILL SLOPE		PRESSURE RELIEF VALVE W/ FLOW DIRECTION
	CUT SLOPE		PRESSURE TEST TAP
	FENCE LINE		METER
	FIRE EXTINGUISHER		FILTER
	GROUND ELEVATION CONTOURS		FLEXIBLE CONNECTOR
	BOLLARD		WYE STRAINER (MESH SIZE)
	POWER POLE		FILL LIMITER
	INFORMATION / WARNING SIGN		QUICK COUPLING
	SHEET NOTE		SUBMERSIBLE PUMP
	SURVEY MONUMENT		CENTRIFUGAL PUMP
	TEST PIT		VERTICAL PIPE TRANSITION
	FINISH GRADE ELEVATION		REDUCER
	DIAMETER		LEVEL FLOAT SWITCH
	MANHOLE		HOSE REEL

**UTILITY LINE/PIPELINE DESIGNATIONS**

E	ELECTRIC		UNDERGROUND UTILITY LINE/PIPELINE: EXISTING
D	DIESEL FUEL		UNDERGROUND UTILITY LINE/PIPELINE: PROPOSED
G	GASOLINE		ABOVEGROUND UTILITY LINE/PIPELINE: EXISTING
S	SANITARY SEWER		ABOVEGROUND UTILITY LINE/PIPELINE: PROPOSED
T	TELEPHONE		EXISTING FUEL LINE TO BE DECOMMISSIONED
W	WATER		

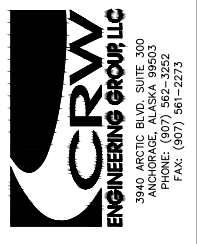
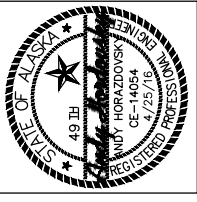
**DETAIL/SECTION REFERENCES**



**DECOMMISSIONING NOTES**

- SEE SHEET C22-TANK DECOMMISSIONING SCHEDULE AND SHEET-C23 PIPING DECOMMISSIONING PLAN.
- DECOMMISSIONING AND DISPOSAL ARE DEFINED IN THE SPECIFICATIONS.

CALL BEFORE YOU DIG	
WATER/SEWER	CITY OF SHISHMAREF 907-649-3781
ELECTRIC	AVEC 907-561-1818
COMMUNICATIONS	TEL ALASKA 800-478-3127



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
NOTES, LEGEND AND ABBREVIATIONS

NO.	REVISION	DATE
1	ISSUE FOR BIDDING DRAWINGS	4/26/16

Plot Date	4/26/16
Designed	NCP
Drawn	NCP
Approved	AH

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**NOTES:**

1. INSTALL 6 PORTABLE FIRE EXTINGUISHERS, INCLUDING ONE IN AT THE PUMP CABINET, ONE ON TANK T4, TWO AT THE RETAIL DISPENSER & TWO SPARES TO BE STORED WITH SPILL RESPONSE EQUIPMENT. EXTINGUISHERS MOUNTED OUTSIDE SHALL BE WITHIN APPROVED WEATHER PROOF ENCLOSURES.
2. INSTALL TWO PORTABLE FIRE EXTINGUISHERS AS SHOWN AT THE WTP (ADD ALT A).
3. SEE ELECTRICAL SHEETS FOR LOCATIONS OF EMERGENCY STOPS AND INSTALL 9 SIGNS AT THOSE LOCATIONS.

**SETBACK/SEPARATION REQUIREMENTS:**

THE PROPOSED TANK FARM WILL PERFORM TWO FUNCTIONS – BULK STORAGE, AND BULK TRANSFER/FLEET DISPENSING. ALL TANKS ARE INSTALLED ABOVE GROUND. TO COMPLY WITH THE REQUIREMENTS OF THE 2009 INTERNATIONAL FIRE CODE, THE 2013 ALASKA ENERGY AUTHORITY/DIVISION OF FIRE PREVENTION MEMORANDUM OF AGREEMENT, AND STATE OF ALASKA REGULATIONS THE FOLLOWING MINIMUM CLEARANCES ARE REQUIRED:

- 10' FROM THE DISPENSER TO ALL BUILDINGS AND PROPERTY LINES.
- 20' FROM THE DISPENSER TO FIXED SOURCES OF IGNITION.
- 50' FROM THE DISPENSER TO ALL UNPROTECTED TANKS.
- 5' FROM PROTECTED DISPENSING TANKS (6000 GAL MAX) TO THE NEAREST IMPORTANT BUILDING OR NEAREST SIDE OF A PUBLIC WAY.
- 15' FROM PROTECTED DISPENSING TANKS (6000 GAL MAX) TO THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON.
- 30' FROM 751-12,000 GAL BULK STORAGE TANKS TO THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON.
- 40' FROM 12,001-30,000 GAL BULK STORAGE TANKS TO THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON.
- 25' FROM THE BULK TRANSFER HOSE STAND TO THE NEAREST TANK, THE NEAREST IMPORTANT BUILDING, THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON, COMBUSTIBLE MATERIALS, AND FIXED SOURCES OF IGNITION. DISTANCE MAY BE REDUCED TO 15' IF NOT USED FOR TRANSFER OF CLASS I LIQUIDS.
- 25' FROM FUEL TANKS AND PIPELINES TO RESIDENTIAL WATER WELLS
- 100' FROM FUEL TANKS AND PIPELINES TO PUBLIC WATER WELLS

**WARNING SIGNS & INFORMATION PLACARD SCHEDULE:**

PROVIDE ALL SIGNS INDICATED IN THE SCHEDULE BELOW, QUANTITY & LOCATION AS INDICATED ON THE DRAWINGS. ALL SIGNS SHALL BE CONSTRUCTED FROM 0.08" ALUMINUM PLATE, AND SIZED IAW 2009 IFC. SIGN LETTERING IS SHOWN BELOW IN QUOTATIONS. PROVIDE 3/16" HOLES IN ALL FOUR CORNERS. PROVIDE NON-REFLECTIVE VINYL BACKGROUND, 3M 3650-10, WITH 3M SERIES 225 HIGH PERFORMANCE VINYL LETTERS, ONE SIDE ONLY, COLOR AS INDICATED. ATTACH TO FENCING WITH GALVANIZED HOG RINGS OR STAINLESS STEEL CABLE TIES. SIGNAGE PLACED DIRECTLY ON TANKS SHALL CONSIST OF HIGH QUALITY ADHESIVE BACK DECALS OR PAINTED STENCILS.

**WARNING SIGNS** – RED LETTERING ON WHITE BACKGROUND (3" HIGH X 1/2" STROKE LETTERS)

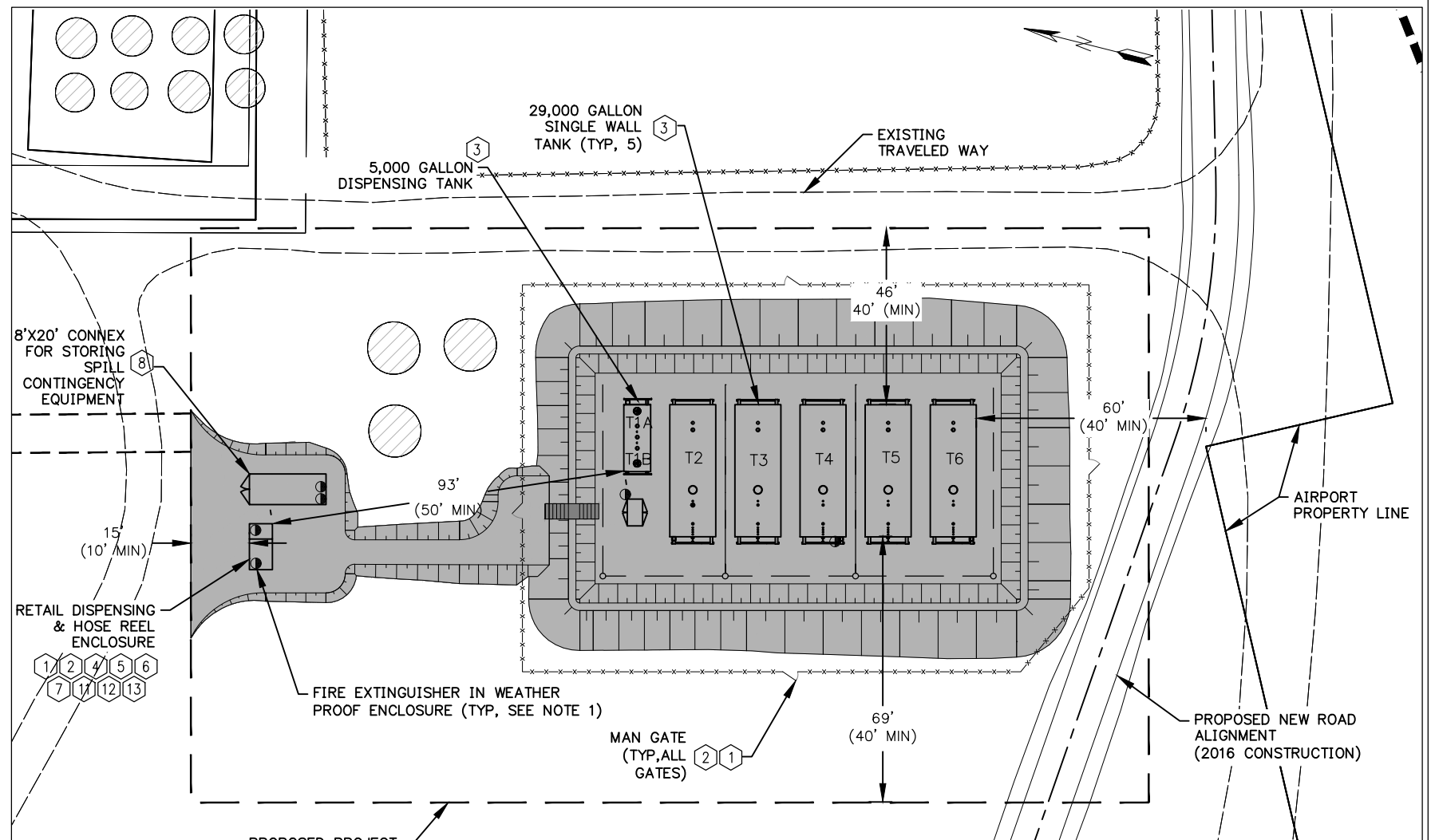
- 1 "DANGER FLAMMABLE LIQUIDS"
- 2 "NO SMOKING NO OPEN FLAMES"
- 3 "FLAMMABLE \_\_\_\_\_ GALLONS GASOLINE" OR "COMBUSTIBLE \_\_\_\_\_ GALLON DIESEL" (INSERT VOLUME IN GALLONS AS APPROPRIATE.)

**INFORMATIONAL PLACARDS** – BLACK LETTERING ON WHITE BACKGROUND (2" HIGH X 1/2" WIDE STROKE LETTERS)

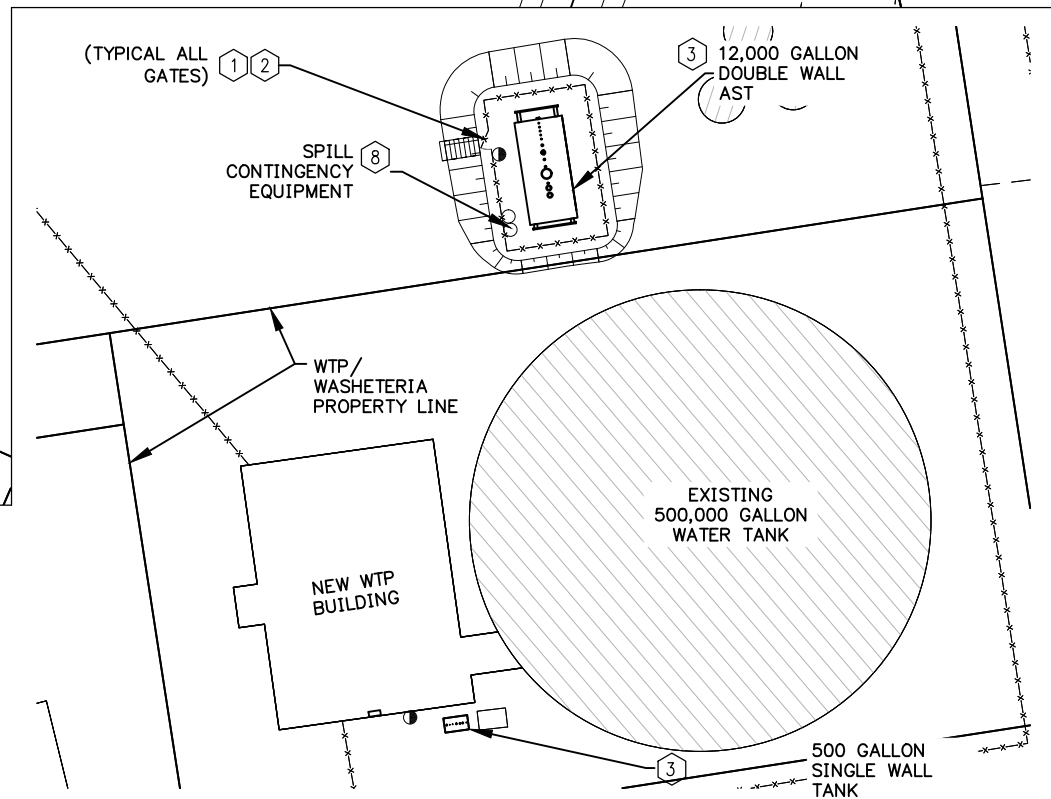
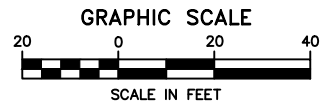
- 4 "IMPORTANT – PRIOR TO DISPENSING:
  1. SHUT OFF MOTOR
  2. DISCHARGE YOUR STATIC ELECTRICITY BEFORE FUELING BY TOUCHING A METAL SURFACE AWAY FROM NOZZLE
  3. TO PREVENT STATIC CHARGE, DO NOT RE-ENTER YOUR VEHICLE WHILE GASOLINE IS PUMPING
  4. IF A FIRE STARTS, DO NOT REMOVE NOZZLE – BACK AWAY IMMEDIATELY"
- 5 "IT IS UNLAWFUL AND DANGEROUS TO DISPENSE GASOLINE INTO UNAPPROVED CONTAINERS"
- 6 "NO FILLING OF PORTABLE CONTAINERS IN OR ON A MOTOR VEHICLE. PLACE CONTAINER ON GROUND BEFORE FILLING. ATTACH STATIC GROUNDING WIRE TO PORTABLE CONTAINER PRIOR TO FILLING."
- 7 "IN CASE OF FIRE, SPILL, OR RELEASE:"
  1. USE EMERGENCY SHUTOFF
  2. CONTACT THE CITY OF SHISHMAREF (907-649-3781)
  3. REPORT ACCIDENT TO DEC (1-800-478-9300)
- 8 "SPILL CONTINGENCY EQUIPMENT"
- 9 "EMERGENCY SHUTOFF" – SEE ELECTRICAL FOR SIGN LOCATIONS
- 10 "BARGE FILL HEADER MAX. FILL PRESSURE 70 PSI" (INSTALL AT BARGE HEADER)

**INSTRUCTION PLACARDS** – BLUE LETTERING ON WHITE BACKGROUND (1/2" HIGH X 3/8" STROKE LETTERS)

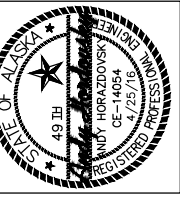
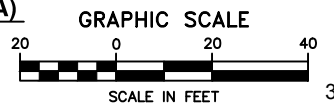
- 11 "RETAIL DISPENSING:
  1. SEE ATTENDANT AT THE NATIVE STORE TO PRE-PAY FOR FUEL
  2. PAGE ATTENDANT VIA THE DISPENSER INTERCOM FOR AUTHORIZATION
  3. REMOVE NOZZLE, LIFT LEVER AND BEGIN FUELING
  4. REPLACE NOZZLE AFTER FUELING
  5. SEE ATTENDANT FOR RECEIPT
- 12 "BULK TRANSFER/FLEET DISPENSING:
  1. SHUT OFF VEHICLE AND CONNECT GROUNDING REEL.
  2. RESET METER – SET TO DESIRED VOLUME
  3. DEPRESS "PUMP ON" BUTTON LOCATED NEAR HOSE REEL.
  4. PLACE NOZZLE IN FUEL RECEPTACLE
  5. DEPRESS NOZZLE LEVER TO BEGIN FLOW
  6. TO PREVENT STATIC CHARGE, DO NOT RE-ENTER YOUR VEHICLE WHILE FUEL IS PUMPING.
  7. IF FIRE STARTS, DO NOT REMOVE NOZZLE – BACK AWAY IMMEDIATELY.
  8. WHEN FUELING IS COMPLETE DEPRESS "PUMP OFF" BUTTON, REWIND HOSE AND HANG UP NOZZLE"
- 13 PROVIDE PLACARDS INDICATING PRODUCT TYPE AT EACH HOSE REEL.



**1 TANK FARM SETBACK/SIGNAGE PLAN**  
SCALE: GRAPHIC



**2 WTP SET BACK /SIGNAGE PLAN (ADD ALT A)**  
SCALE: GRAPHIC



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
SETBACK & SIGNAGE PLAN

NO.	REVISION	DATE	BY
1	ISSUE FOR BIDDING DRAWINGS	4/26/16	AH

Plot Date	4/26/16	Designed	NCP	Drawn	NCP	Approved	AH
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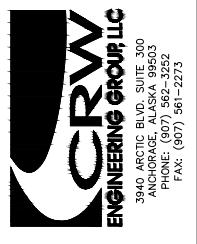
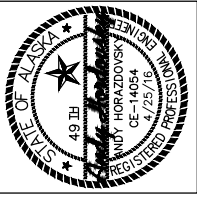
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COMPONENT SCHEDULE							
COMPONENT ID	SIZE (INCHES"	DESCRIPTION	LOCATION	END CONNECTION	FUNCTION/COMMENT	TAG	TAG LABEL
<b>STRAINER (S)</b>							
S-1	3"	STRAINER-10 MESH	BARGE HEADER	FLANGED X FLANGED	BARGE CONNECTION DIESEL	-	-
S-2	3"	STRAINER-10 MESH	BARGE HEADER	FLANGED X FLANGED	BARGE CONNECTION DIESEL	-	-
S-3	3"	STRAINER-10 MESH	BARGE HEADER	FLANGED X FLANGED	BARGE CONNECTION GASOLINE	-	-
S-4	3"	STRAINER-10 MESH	TANK 7	FLANGED X FLANGED	ADD ALT A	-	-
<b>FLEX CONNECT (FC)</b>							
FC-1	3"	24" LENGTH	FILL, TANK T2	FLANGED X FLANGED	-	-	-
FC-2 TO 5	3"	24" LENGTH	FILL /DRAW, TANKS T3 TO T6	FLANGED X FLANGED	-	-	-
FC-6 TO 7	2"	18" LENGTH	DRAW, TANK T2	FLANGED X FLANGED	-	-	-
FC-8 TO 9	1.5"	12" LENGTH	PUMP CABINET	FLANGED X MPT	-	-	-
FC-10 &11	1.5"	12" LENGTH	PUMP CABINET	MPT X FLANGED	-	-	-
FC-12 TO 15	2 "	18" LENGTH	TANK T1 DRAW	FLANGED X FLANGED	-	-	-
FC-16 & 17	2 "	12" LENGTH	TANK T1 FILL	FLANGED X FLANGED	-	-	-
FC-18 & 19	1.5 "	12" LENGTH	RETAIL DISPENSER	FLANGED X FLANGED	-	-	-
FC-20	1.5 "	12" LENGTH	HOSE REEL HR-1	FLANGED X FLANGED	-	-	-
FC-21	3"	18" LENGTH	AVEC TANK FARM	FLANGED X FLANGED	-	-	-
FC-22	3"	24" LENGTH	TANK T7 FILL	FLANGED X FLANGED	-	-	-
FC-23	2"	12" LENGTH	TANK T7 PUMP	FLANGED X FLANGED	-	-	-
FC-24	2"	18" LENGTH	TANK T7 DRAW	FLANGED X FLANGED	-	-	-
FC-25	2"	12" LENGTH	WTP BUILDING EXTERIOR	FLANGED X FLANGED	-	-	-
FC-26	1"	12" LENGTH	TANK T9 FOS	FLANGED X FLANGED	-	-	-
FC-27	1.5"	12" LENGTH	TANK T9 FOR	FLANGED X FLANGED	-	-	-
FC-28	2"	12" LENGTH	TANK T8 FILL	FLANGED X FLANGED	-	-	-
<b>METER (M)</b>							
M-1	2"	HOSE REEL H-1	CITY FLEET DISPENSER	FLANGED X FLANGED	COMPANION FLANGE	-	-
<b>HOSE REEL (HR)</b>							
HR-1	2"	FLEET DISPENSING	DISPENSER ENCLOSURE	FLANGED X FLANGED	HIGH FLOW AUTO REWIND- DIESEL	-	-
<b>FILTER (F)</b>							
F-1	1.5"	-	PUMP CABINET	COMPANION FLANGE	PARTICULATE & WATER REMOVAL	-	-
F-2	1.5"	-	PUMP CABINET	COMPANION FLANGE	PARTICULATE & WATER REMOVAL	-	-
F-3	1.5"	-	FLEET DISPENSER	COMPANION FLANGE	PARTICULATE & WATER REMOVAL	-	-
F-4	1.5"	-	TANK T8	COMPANION FLANGE	PARTICULATE & WATER REMOVAL (ADD ALT A)	-	-
F-5	1.5"	-	TANK T9 FOS	COMPANION FLANGE	PARTICULATE & WATER REMOVAL (ADD ALT A)	-	-
<b>QUICK COUPLER (QC)</b>							
QC 1-3	3"	COUPLER-FEMALE	BARGE HEADERS	FLANGED	BARGE CONNECTIONS DIESEL & GASOLINE	-	-
<b>LEVEL SENSORS (LS)</b>							
SEE ECLECTRICAL							
<b>PRESSEURE TEST POINT( PT)</b>							
PT-1	3/4	-	PUMP CABINET	THRED-O-LET	PIPING PRESSURE TEST POINT	-	-
PT-2	3/4	-	PUMP CABINET	THRED-O-LET	PIPING PRESSURE TEST POINT	-	-
PT-3	3/4	-	RETAIL DISPENSER	THRED-O-LET	PIPING PRESSURE TEST POINT	-	-
PT-4	3/4	-	RETAIL DISPENSER	THRED-O-LET	PIPING PRESSURE TEST POINT	-	-
PT-5	3/4	-	HOSE REEL DISPENSER	THRED-O-LET	PIPING PRESSURE TEST POINT	-	-
PT-6	3/4	-	TANK T7	THRED-O-LET	PIPING PRESSURE TEST POINT (ADD ALT A)	-	-

TANK SCHEDULE					
TANK NUMBER	CAPACITY (GALLONS)	TANK TYPE	PRODUCT	OPERATOR	NOTES
T1A	2,500	HORIZONTAL SINGLE WALL	GASOLINE	NATIVE STORE	NEW, OWNER PROVIDED
T1B	2,500	HORIZONTAL SINGLE WALL	DIESEL	NATIVE STORE	NEW, OWNER PROVIDED
T2	29,000	HORIZONTAL SINGLE WALL	DIESEL	CITY	NEW, OWNER PROVIDED
T3	29,000	HORIZONTAL SINGLE WALL	DIESEL	NATIVE STORE	NEW, OWNER PROVIDED
T4	29,000	HORIZONTAL SINGLE WALL	DIESEL	NATIVE STORE	NEW, OWNER PROVIDED
T5	29,000	HORIZONTAL SINGLE WALL	GASOLINE	NATIVE STORE	NEW, OWNER PROVIDED
T6	29,000	HORIZONTAL SINGLE WALL	GASOLINE	NATIVE STORE	NEW, OWNER PROVIDED
T7	12,000	HORIZONTAL DOUBLE WALL	DIESEL	WTP	NEW, CONTRACTOR PROVIDED (ADD ALT A)
T8	500	SINGLE WALL	DIESEL	WTP	NEW, CONTRACTOR PROVIDED (ADD ALT A)
T9	500	SINGLE WALL	DIESEL	OLD WTP	NEW, CONTRACTOR PROVIDED (ADD ALT A)

PUMP SCHEDULE					
PUMP NAMEPLATE ID	TYPE	PRODUCT	LOCATION	MOTOR (HP)	ELECTRICAL
1	SUBMERSIBLE	GASOLINE	TANK 1A	3/4	208/230 VAC, 1-PH
2	SUBMERSIBLE	DIESEL	TANK 1B	3/4	208/230 VAC, 1-PH
3	SUBMERSIBLE	DIESEL	TANK 2	3/4	208/230 VAC, 1-PH
4	CENTRIFUGAL	DIESEL	PUMP CABINET	1	230 VAC, 1-PH
5	CENTRIFUGAL	GASOLINE	PUMP CABINET	1	230 VAC, 1-PH
6	SUBMERSIBLE	DIESEL	TANK 7 (ADD ALT A)	1/3	208/230 VAC, 1-PH

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SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
COMPONENT SCHEDULES

NO.	REVISION	DATE	BY
1	ISSUE FOR BIDDING DRAWINGS	4/26/16	AH

Plot Date: 4/26/16  
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Drawn: NCP  
Approved: AH

VALVE SCHEDULE						
VALVE ID	SIZE	LOCATION	END CONNECTION	FUNCTION/COMMENT	TAG REQD	TAG LABEL
<b>BALL VALVE SCHEDULE (BV)</b>						
BV-1A & 1B	2"	TANK T1	FLANGED	TANK T1 DRAW	X	N.C.-OPEN FUEL TRANSFER/DELIVERY
BV-2 TO 6	3"	TANK T2 TO T6	FLANGED	TANK T2 TO 6 ISOLATION	X	N.C.-OPEN FUEL TRANSFER/DELIVERY
BV-7 & 8	2"	PUMP CABINET EXTERIOR	FLANGED	PUMP CABINET ISOLATION	X	N.C.-OPEN FUEL TRANSFER
BV-9 & 10	1.5"	RETAIL DISPENSER	FLANGED	RETAIL DISPENSER ISOLATION	X	N.C.-OPEN FUEL TRANSFER
BV-11	1.5"	HOSE REEL	FLANGED	FLEET DISPENSER ISOLATION	X	N.C.-OPEN FUEL TRANSFER
BV-12	2"	TANK T2	FLANGED	TANK T2 DRAW	X	N.O. -CLOSE ONLY FOR PUMP SERVICE
BV-13 & 14	3"	TANK FARM	FLANGED	TANK FARM ISOLATION	X	N.C.-OPEN FUEL TRANSFER/DELIVERY
BV-15 & 16	3"	WTP BARGE LINE TIE IN	FLANGED	TANK T7 & NUYUKPUK TANK FARM ISOLATION (ADD ALT A)	X	N.C.-OPEN FUEL TRANSFER/DELIVERY
BV-17	2"	TANK T8	FLANGED	TANK T8 FILL (ADD ALT A)	X	N.C.-OPEN FUEL TRANSFER/DELIVERY
BV-18	2"	TANK T8	FLANGED	TANK T8 DRAW (ADD ALT A)	X	N.C.-OPEN FUEL TRANSFER/DELIVERY
BV-19	1"	TANK T9	FLANGED	TANK T9 FOS ISOLATION (ADD ALT A)	X	N.C.-OPEN FUEL TRANSFER/DELIVERY
BV-20	3"	BARGE HEADER	FLANGED	BSSD & AVEC FILL	X	N.C.-OPEN FUEL TRANSFER/DELIVERY
BV-21 TO BV- 22	3"	BARGE HEADER	FLANGED	TANK T2-T6 FILL	X	N.C.-OPEN FOR FUEL TRANSFER/DELIVERY
<b>THREE WAY VALVE SCHEDULE (3V)</b>						
3V-1	3"	3WAY VALVE ENCLOSURE	FLANGED	BSSD & AVEC TANK FARM ISOLATION	X	N.C.-OPEN FOR FUEL DELIVERY
<b>CHECK VALVES (CV)</b>						
CV-1 TO 3	3"	BARGE HEADER	FLANGED	FLOW PREVENTION	-	-
CV-4 & 5	2"	TANK T1	FLANGED	FLOW PREVENTION	-	-
CV-6 & 7	3"	TANK FARM	FLANGED	FLOW PREVENTION	-	-
CV-8	3"	AVEC TANK FARM TIE IN	FLANGED	FLOW PREVENTION	-	-
CV-9	3"	BSSD TANK FARM TIE IN	FLANGED	FLOW PREVENTION	-	-
CV-10	3"	WTP BARGE LINE TIE IN	FLANGED	FLOW PREVENTION (ADD ALT A)	-	-
CV-11	3"	TANK T7	FLANGED	FLOW PREVENTION (ADD ALT A)	-	-
CV-12	2"	TANK T8	FLANGED	FLOW PREVENTION (ADD ALT A)	-	-
CV-13	1.5"	TANK T9	FLANGED	FLOW PREVENTION (ADD ALT A)	-	-
<b>PRESSURE RELIEF VALVES (PRV)</b>						
PRV-1	1"	TANK T5	FLANGED	PRESSURE RELIEF	X	PRESSURE SETTING 30 PSI
PRV-2	1"	TANK T3	FLANGED	PRESSURE RELIEF	X	PRESSURE SETTING 30 PSI
PRV-3 & 4	1"	PUMP CABINET EXTERIOR	FLANGED	PRESSURE RELIEF	X	PRESSURE SETTING 30 PSI
PRV-5 & 6	1"	PUMP CABINET INTERIOR	FLANGED	PRESSURE RELIEF	X	PRESSURE SETTING 30 PSI
PRV-7 & 8	1"	TANK T1, BV-1A & 1B	FLANGED	PRESSURE RELIEF	X	PRESSURE SETTING 30 PSI
PRV-9	1"	HOSE REEL HR-1	FLANGED	PRESSURE RELIEF	X	PRESSURE SETTING 30 PSI
PRV-10	1"	BSSD TANK FARM TIE IN	FLANGED	PRESSURE RELIEF	X	PRESSURE SETTING 30 PSI
PRV-11 & 12	1"	TANK FARM	FLANGED	PRESSURE RELIEF	X	PRESSURE SETTING 30 PSI
PRV-13	1"	WTP BARGE LINE TIE IN	FLANGED	PRESSURE RELIEF (ADD ALT A)	X	PRESSURE SETTING 30 PSI
PRV-14	1"	TANK T7	FLANGED	PRESSURE RELIEF (ADD ALT A)	X	PRESSURE SETTING 30 PSI
<b>MOTORIZED BALL VALVE SCHEDULE (MV)</b>						
MV-1 & 2	2"	PUMP CABINET	FLANGED	TANK T1 FILL CONTROL	X	-
MV-3	2"	TANK T7	FLANGED	TANK T7 FILL CONTROL (ADD ALT A)	X	-
MV-4	2"	TANK T7	FLANGED	TANK T7 TRANSFER (ADD ALT A)	X	-
<b>ANTI SIPHON VALVES (ASV)</b>						
ASV-1 & 2	2"	TANK T1A & 1B	FLANGED	SIPHON RESTRICTION	-	-
ASV-3	2"	TANK 2	FLANGED	SIPHON RESTRICTION	-	-
<b>FILL LIMITING VALVE (FLV)</b>						
FLV-1	2"	TANK T8	THREADED	OVERFLOW PROTECTION (ADD ALT A)	-	-
FLV-2	2"	TANK T9	THREADED	OVERFLOW PROTECTION (ADD ALT A)	-	-



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
VALVE SCHEDULE

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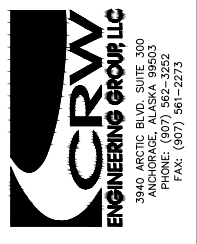
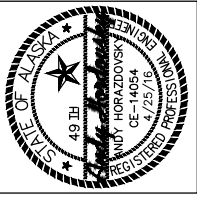
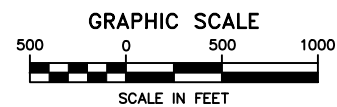
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Drawn: NCP  
Approved: AH



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**1** AREA MAP  
SCALE: GRAPHIC

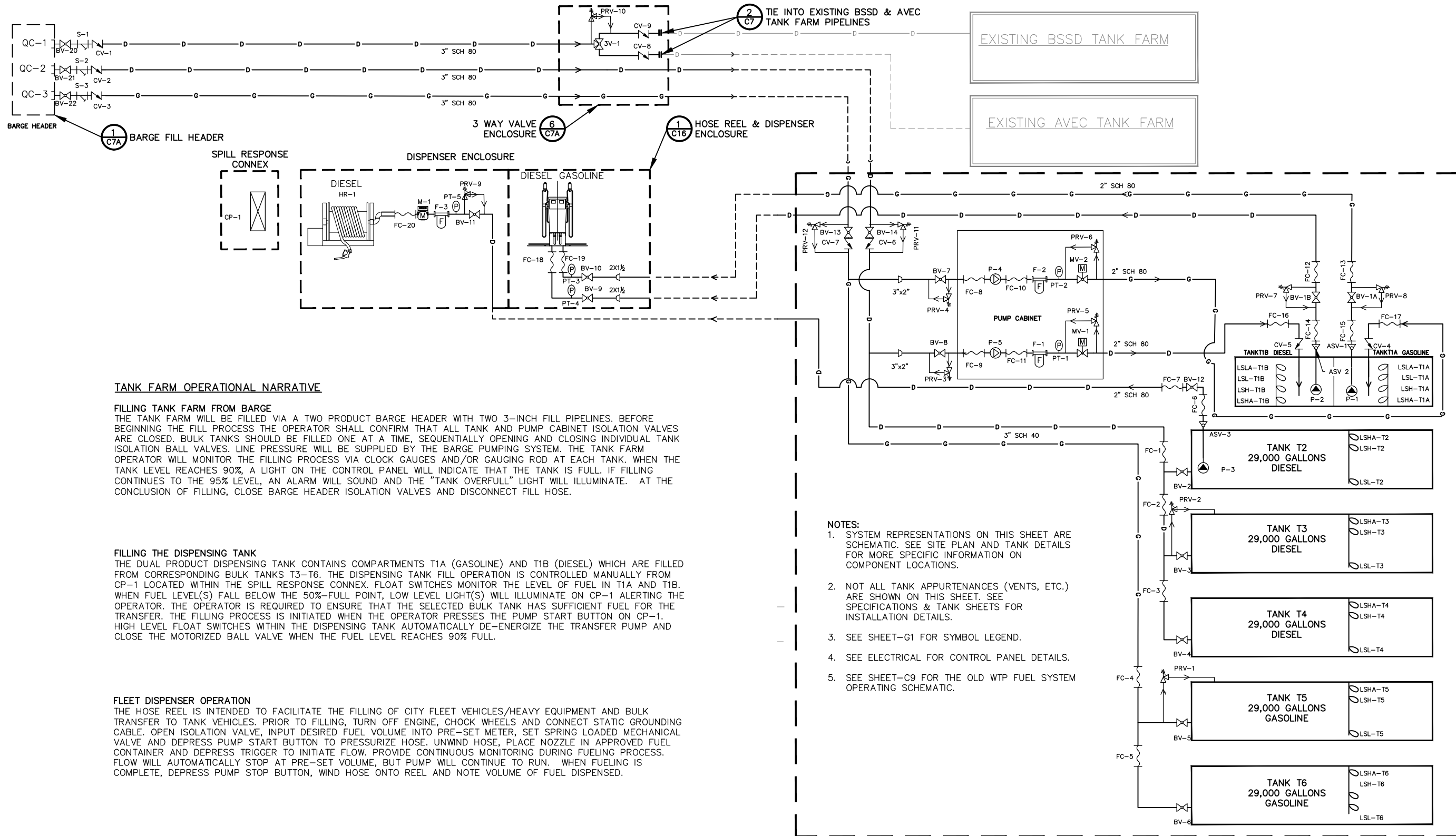


SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
MATERIAL SOURCE & HAUL ROUTE PLAN

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**TANK FARM OPERATIONAL NARRATIVE**

**FILLING TANK FARM FROM BARGE**

THE TANK FARM WILL BE FILLED VIA A TWO PRODUCT BARGE HEADER WITH TWO 3-INCH FILL PIPELINES. BEFORE BEGINNING THE FILL PROCESS THE OPERATOR SHALL CONFIRM THAT ALL TANK AND PUMP CABINET ISOLATION VALVES ARE CLOSED. BULK TANKS SHOULD BE FILLED ONE AT A TIME, SEQUENTIALLY OPENING AND CLOSING INDIVIDUAL TANK ISOLATION BALL VALVES. LINE PRESSURE WILL BE SUPPLIED BY THE BARGE PUMPING SYSTEM. THE TANK FARM OPERATOR WILL MONITOR THE FILLING PROCESS VIA CLOCK GAUGES AND/OR GAUGING ROD AT EACH TANK. WHEN THE TANK LEVEL REACHES 90%, A LIGHT ON THE CONTROL PANEL WILL INDICATE THAT THE TANK IS FULL. IF FILLING CONTINUES TO THE 95% LEVEL, AN ALARM WILL SOUND AND THE "TANK OVERFULL" LIGHT WILL ILLUMINATE. AT THE CONCLUSION OF FILLING, CLOSE BARGE HEADER ISOLATION VALVES AND DISCONNECT FILL HOSE.

**FILLING THE DISPENSING TANK**

THE DUAL PRODUCT DISPENSING TANK CONTAINS COMPARTMENTS T1A (GASOLINE) AND T1B (DIESEL) WHICH ARE FILLED FROM CORRESPONDING BULK TANKS T3-T6. THE DISPENSING TANK FILL OPERATION IS CONTROLLED MANUALLY FROM CP-1 LOCATED WITHIN THE SPILL RESPONSE CONNEX. FLOAT SWITCHES MONITOR THE LEVEL OF FUEL IN T1A AND T1B. WHEN FUEL LEVEL(S) FALL BELOW THE 50%-FULL POINT, LOW LEVEL LIGHT(S) WILL ILLUMINATE ON CP-1 ALERTING THE OPERATOR. THE OPERATOR IS REQUIRED TO ENSURE THAT THE SELECTED BULK TANK HAS SUFFICIENT FUEL FOR THE TRANSFER. THE FILLING PROCESS IS INITIATED WHEN THE OPERATOR PRESSES THE PUMP START BUTTON ON CP-1. HIGH LEVEL FLOAT SWITCHES WITHIN THE DISPENSING TANK AUTOMATICALLY DE-ENERGIZE THE TRANSFER PUMP AND CLOSE THE MOTORIZED BALL VALVE WHEN THE FUEL LEVEL REACHES 90% FULL.

**FLEET DISPENSER OPERATION**

THE HOSE REEL IS INTENDED TO FACILITATE THE FILLING OF CITY FLEET VEHICLES/HEAVY EQUIPMENT AND BULK TRANSFER TO TANK VEHICLES. PRIOR TO FILLING, TURN OFF ENGINE, CHOCK WHEELS AND CONNECT STATIC GROUNDING CABLE. OPEN ISOLATION VALVE, INPUT DESIRED FUEL VOLUME INTO PRE-SET METER, SET SPRING LOADED MECHANICAL VALVE AND DEPRESS PUMP START BUTTON TO PRESSURIZE HOSE. UNWIND HOSE, PLACE NOZZLE IN APPROVED FUEL CONTAINER AND DEPRESS TRIGGER TO INITIATE FLOW. PROVIDE CONTINUOUS MONITORING DURING FUELING PROCESS. FLOW WILL AUTOMATICALLY STOP AT PRE-SET VOLUME, BUT PUMP WILL CONTINUE TO RUN. WHEN FUELING IS COMPLETE, DEPRESS PUMP STOP BUTTON, WIND HOSE ONTO REEL AND NOTE VOLUME OF FUEL DISPENSED.

**RETAIL SALES DISPENSER OPERATION**

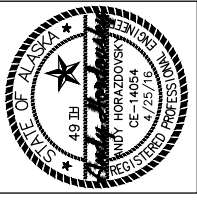
RETAIL GASOLINE & DIESEL DISPENSING WILL TAKE PLACE DURING NORMAL STORE HOURS ONLY. ONCE PAYMENT IS MADE AT THE STORE, THE CONSUMER WILL DRIVE TO THE RETAIL DISPENSER AND CONTACT THE ATTENDANT VIA THE INTERCOM. THE ATTENDANT WILL AUTHORIZE THE SALE VIA THE TMS CONSOLE AND THE CONSUMER WILL DISPENSE THE DESIRED AMOUNT OF FUEL. UPON RETURNING TO THE STORE, THE CONSUMER WILL BE ISSUED A RECEIPT AND THE ATTENDANT WILL LOG THE SALE.

**NOTES:**

1. SYSTEM REPRESENTATIONS ON THIS SHEET ARE SCHEMATIC. SEE SITE PLAN AND TANK DETAILS FOR MORE SPECIFIC INFORMATION ON COMPONENT LOCATIONS.
2. NOT ALL TANK APPURTENANCES (VENTS, ETC.) ARE SHOWN ON THIS SHEET. SEE SPECIFICATIONS & TANK SHEETS FOR INSTALLATION DETAILS.
3. SEE SHEET-G1 FOR SYMBOL LEGEND.
4. SEE ELECTRICAL FOR CONTROL PANEL DETAILS.
5. SEE SHEET-C9 FOR THE OLD WTP FUEL SYSTEM OPERATING SCHEMATIC.

**1 TANK FARM OPERATING SCHEMATIC**  
SCALE: NTS

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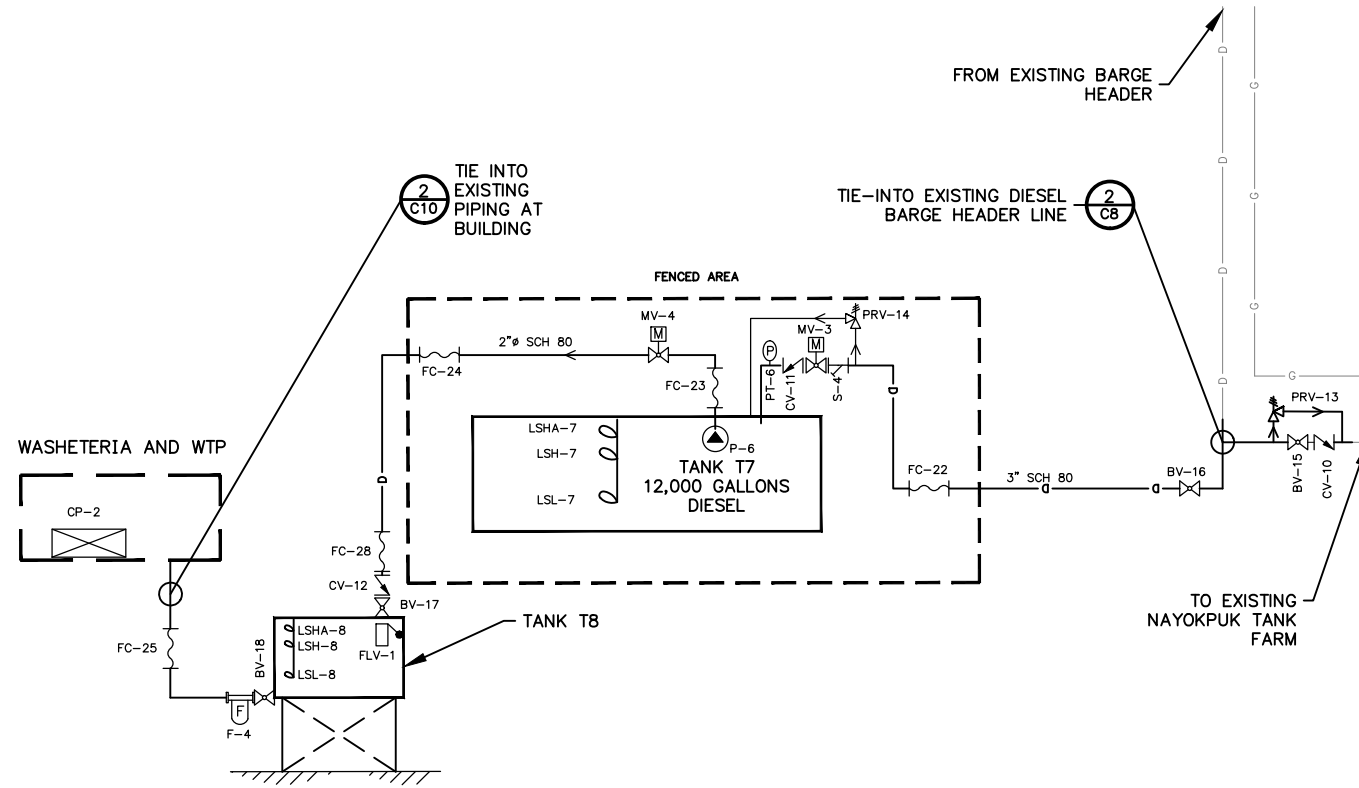


SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
TANK FARM OPERATING SCHEMATIC

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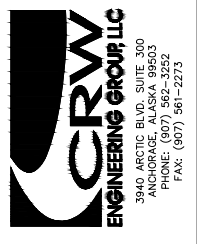
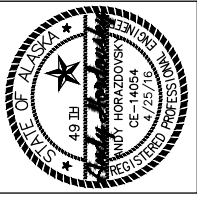


**WTP OPERATIONAL NARRATIVE**

**FILLING THE WTP 12,000 GALLON BULK TANK T7**  
 THE 12,000 GALLON DOUBLE WALLED TANK T7, IS FILLED VIA AN EXISTING DIESEL BARGE HEADER. BEFORE BEGINNING THE FILL PROCESS, THE OPERATOR SHALL CONFIRM THE FOLLOWING VALVES ARE CLOSED: MV-4, MV-3, BV-16 AND BV-17. THE OPERATOR WILL MANUALLY CHECK THE FUEL LEVEL IN TANK T7 AND OPEN BV-16 BEFORE THE BARGE PUMP SYSTEM IS ENGAGED. THE OPERATOR WILL ENGAGE THE BARGE PUMP SYSTEM. THE BARGE PUMP SYSTEM WILL SUPPLY LINE PRESSURE AND THE OPERATOR WILL OPEN THE TANK ISOLATION VALVE MV-3 FROM CONTROL PANEL CP-2 (SEE ELECTRICAL) LOCATED AT THE WASHETERIA/WTP BUILDING. THE TANK FARM OPERATOR WILL MONITOR THE FILLING PROCESS VIA CLOCK GAUGES AT TANK T7. FILLING ABOVE THE 90% FULL LEVEL WILL ENGAGE THE TANK'S HIGH LEVEL FLOAT SWITCH, ACTIVATING A "TANK FULL" CONDITION LIGHT AT PANEL CP-2 AND AUTOMATICALLY CLOSING THE TANK'S ISOLATION VALVE MV-3. FILLING ABOVE THE 95% FILL LEVEL WILL ENGAGE THE TANK'S CRITICAL HIGH LEVEL FLOAT SWITCH, ACTIVATING VISUAL AND AUDIBLE ALARMS, AND WILL AUTOMATICALLY CLOSE THE TANK'S MOTORIZED ISOLATION VALVE(S) MV-3 AND MV-4.

**FILLING THE WTP INTERMEDIATE TANK T8**  
 THE ELEVATED WTP INTERMEDIATE TANK T8 IS FILLED VIA A SUBMERSIBLE PUMP P-6 LOCATED AT TANK T7. FILL OPERATION IS CONTROLLED MANUALLY FROM CP-2. FLOAT SWITCHES MONITOR THE LEVEL OF FUEL IN T8. WHEN THE FUEL LEVEL FALLS BELOW THE 40% FULL POINT, A LOW LEVEL LIGHT WILL ILLUMINATE ON CP-2 ALERTING THE OPERATOR. THE OPERATOR IS REQUIRED TO ENSURE THAT TANK T7 HAS SUFFICIENT FUEL FOR THE TRANSFER. PRIOR TO TRANSFERRING FUEL, THE OPERATOR MUST OPEN THE MOTORIZED ISOLATION VALVE MV-4. THE FILLING PROCESS IS INITIATED WHEN THE OPERATOR PRESSES THE PUMP START BUTTON ON CP-2. HIGH LEVEL FLOAT SWITCHES WITHIN THE INTERMEDIATE TANK AUTOMATICALLY DE-ENERGIZE THE TRANSFER PUMP AND CLOSES THE ISOLATION VALVE MV-4 WHEN THE FUEL LEVEL REACHES 90% FULL.

**1 WASHETERIA OPERATING SCHEMATIC (ADD ALT A)**  
 SCALE: NTS



SHISHMAREF, ALASKA  
 SHISHMAREF BFU PROJECT  
 WTP OPERATING SCHEMATIC (ADD ALT A)

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SURVEY CONTROL POINTS				
HORIZONTAL CONTROL				
POINT #	LATITUDE	LONGITUDE	ELEV	DESCRIPTION
915	N. 66°15'26.3771"	W. 166°03'57.6225"	6.65	STEEL POST
921	N. 66°15'14.8486"	W. 166°04'17.5118"	5.03	ALUMINUM POST
922	N. 66°15'14.6006"	W. 166°04'39.0094"	5.96	ALUMINUM POST
VERTICAL CONTROL				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
915	4479920.5294'	1630684.1732'	6.65	STEEL POST
921	4478750.6102'	1629868.214	5.03	ALUMINUM POST

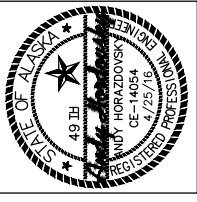
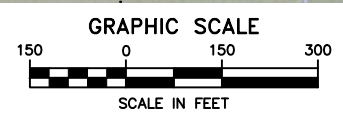
**SURVEY NOTES:**  
 CONTROL POINTS WERE PROVIDED BY DCED 2004, SHISHMAREF COMMUNITY MAP SURVEY.

- ALL COORDINATES AND DIMENSIONS SHOWN ARE IN U.S. SURVEY FEET.
- THIS SURVEY WAS ACCOMPLISHED USING GLOBAL POSITIONING SYSTEMS (GPS) WITH TRIMBLE SSE AND SSI 4000 CARRIER-PHASE RECEIVERS. GPS DATA WAS OBTAINED USING STATIC, FAST STATIC, AND REAL TIME KINEMATICS (RTK) POSITIONAL.
- DATA FOR THE CONTROL IS IN NAD 83, ALASKA STATE PLANE ZONE 8 (FOOT).
- THE HORIZONTAL AND VERTICAL BASIS OF COORDINATES AND ELEVATION IS THE NGS STATION "WALES 1944".
- NO SURVEYS WERE PERFORMED BY CRW ENGINEERING GROUP.

**SURVEY CONTROL LEGEND**

- CP MONUMENT
- CP NUMBER

**1 VICINITY MAP**  
 SCALE: GRAPHIC



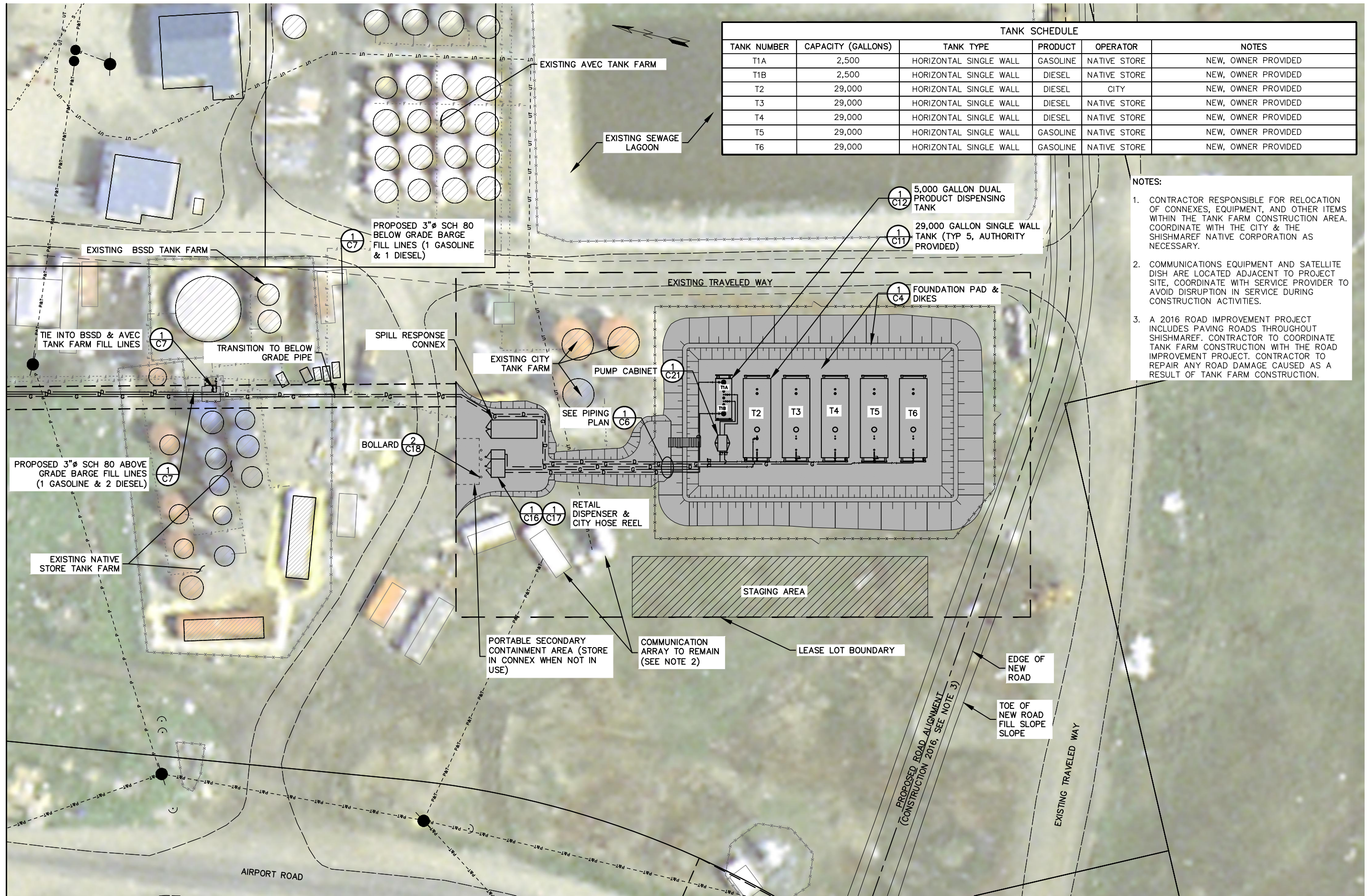
SHISHMAREF, ALASKA  
 SHISHMAREF BFU PROJECT  
 VICINITY MAP

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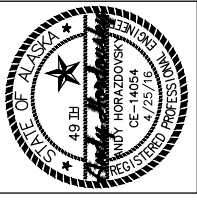
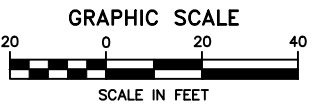
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TANK SCHEDULE					
TANK NUMBER	CAPACITY (GALLONS)	TANK TYPE	PRODUCT	OPERATOR	NOTES
T1A	2,500	HORIZONTAL SINGLE WALL	GASOLINE	NATIVE STORE	NEW, OWNER PROVIDED
T1B	2,500	HORIZONTAL SINGLE WALL	DIESEL	NATIVE STORE	NEW, OWNER PROVIDED
T2	29,000	HORIZONTAL SINGLE WALL	DIESEL	CITY	NEW, OWNER PROVIDED
T3	29,000	HORIZONTAL SINGLE WALL	DIESEL	NATIVE STORE	NEW, OWNER PROVIDED
T4	29,000	HORIZONTAL SINGLE WALL	DIESEL	NATIVE STORE	NEW, OWNER PROVIDED
T5	29,000	HORIZONTAL SINGLE WALL	GASOLINE	NATIVE STORE	NEW, OWNER PROVIDED
T6	29,000	HORIZONTAL SINGLE WALL	GASOLINE	NATIVE STORE	NEW, OWNER PROVIDED

- NOTES:**
- CONTRACTOR RESPONSIBLE FOR RELOCATION OF CONNEXES, EQUIPMENT, AND OTHER ITEMS WITHIN THE TANK FARM CONSTRUCTION AREA. COORDINATE WITH THE CITY & THE SHISHMAREF NATIVE CORPORATION AS NECESSARY.
  - COMMUNICATIONS EQUIPMENT AND SATELLITE DISH ARE LOCATED ADJACENT TO PROJECT SITE, COORDINATE WITH SERVICE PROVIDER TO AVOID DISRUPTION IN SERVICE DURING CONSTRUCTION ACTIVITIES.
  - A 2016 ROAD IMPROVEMENT PROJECT INCLUDES PAVING ROADS THROUGHOUT SHISHMAREF. CONTRACTOR TO COORDINATE TANK FARM CONSTRUCTION WITH THE ROAD IMPROVEMENT PROJECT. CONTRACTOR TO REPAIR ANY ROAD DAMAGE CAUSED AS A RESULT OF TANK FARM CONSTRUCTION.

**1 SITE PLAN**  
SCALE: GRAPHIC

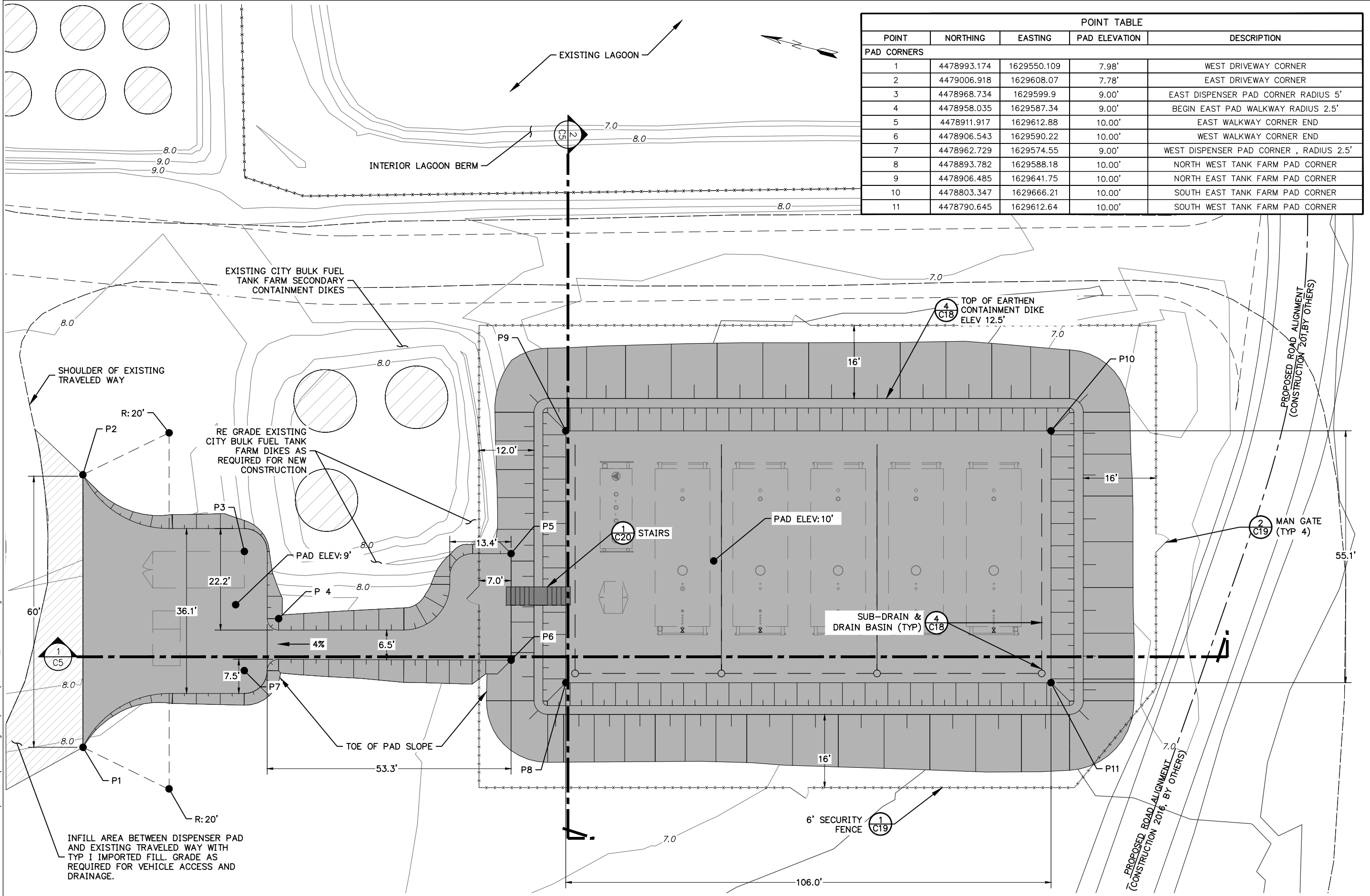


SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
TANK FARM SITE PLAN

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	AH	4/26/16

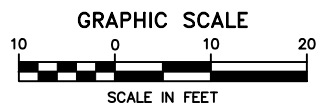
Plot Date: 4/26/16  
Designed: NCP  
Drawn: NCP  
Approved: AH



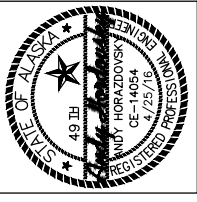


POINT TABLE				
POINT	NORTHING	EASTING	PAD ELEVATION	DESCRIPTION
<b>PAD CORNERS</b>				
1	4478993.174	1629550.109	7.98'	WEST DRIVEWAY CORNER
2	4479006.918	1629608.07	7.78'	EAST DRIVEWAY CORNER
3	4478968.734	1629599.9	9.00'	EAST DISPENSER PAD CORNER RADIUS 5'
4	4478958.035	1629587.34	9.00'	BEGIN EAST PAD WALKWAY RADIUS 2.5'
5	4478911.917	1629612.88	10.00'	EAST WALKWAY CORNER END
6	4478906.543	1629590.22	10.00'	WEST WALKWAY CORNER END
7	4478962.729	1629574.55	9.00'	WEST DISPENSER PAD CORNER, RADIUS 2.5'
8	4478893.782	1629588.18	10.00'	NORTH WEST TANK FARM PAD CORNER
9	4478906.485	1629641.75	10.00'	NORTH EAST TANK FARM PAD CORNER
10	4478803.347	1629666.21	10.00'	SOUTH EAST TANK FARM PAD CORNER
11	4478790.645	1629612.64	10.00'	SOUTH WEST TANK FARM PAD CORNER

**1 GRADING PLAN**  
SCALE: GRAPHIC



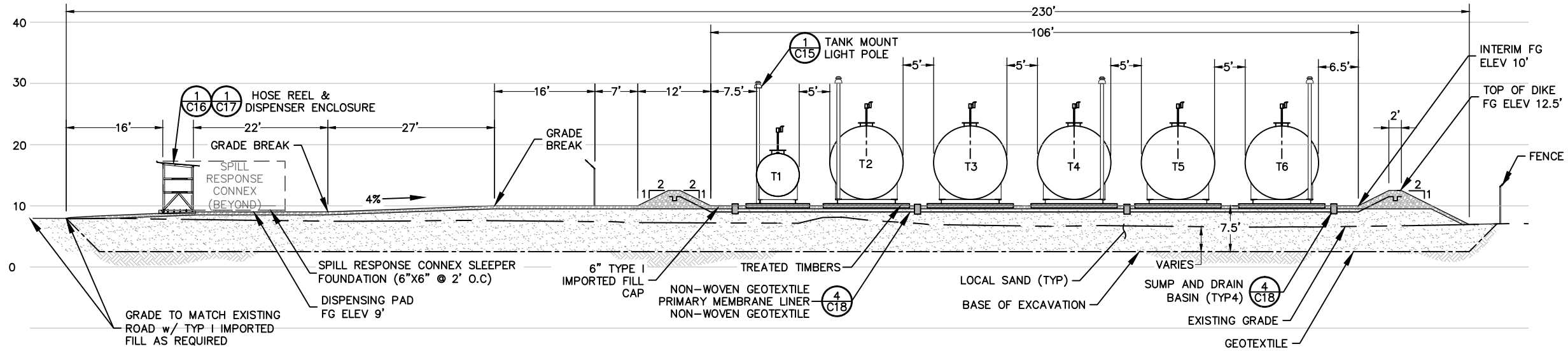
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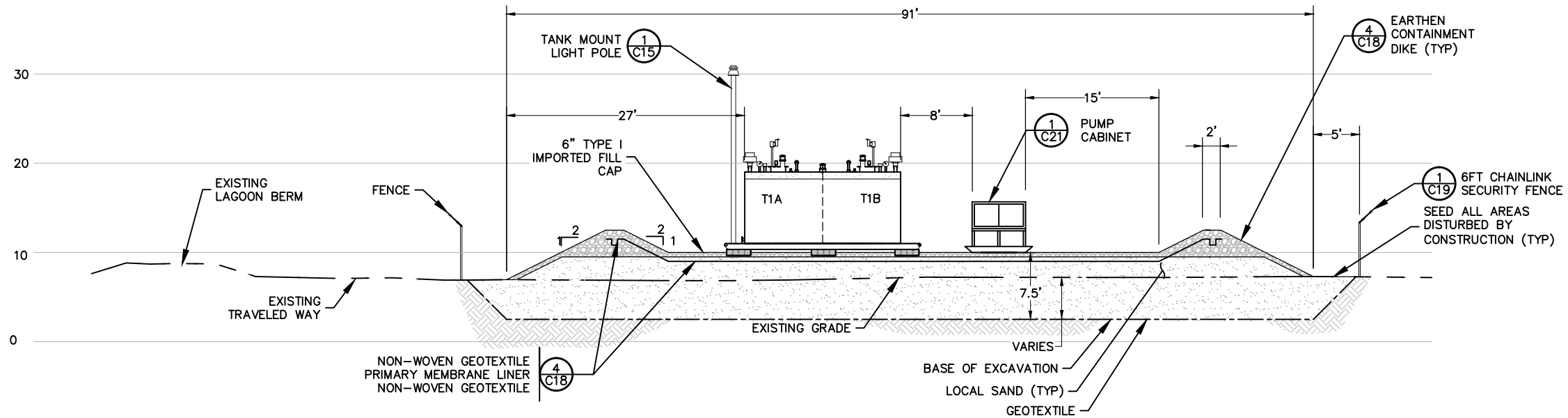
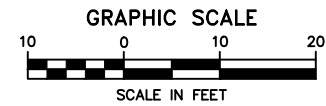
SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
TANK FARM GRADING PLAN

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	AH	4/26/16

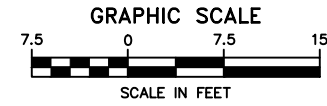
Plot Date: 4/26/16  
Designed: NCP  
Drawn: NCP  
Approved: AH



**1 TANK FARM SECTION**  
SCALE: GRAPHIC



**2 TANK FARM SECTION**  
SCALE: GRAPHIC



**PAD CONSTRUCTION SEQUENCE**

1. STRIP AND DISPOSE OF SURFACE ORGANIC SOILS (APPROXIMATELY 15-30 INCHES).
2. EXCAVATE AND DISPOSE OF FROZEN SAND MATERIAL BENEATH ORGANIC LAYER TO AN ELEVATION OF 2.5 FEET (APPROXIMATELY 4.5 FEET BELOW EXISTING GRADE).
3. INSTALL NON-WOVEN GEOTEXTILE AT BOTTOM OF EXCAVATION.
4. PLACE LOCALLY AVAILABLE THAWED SAND MATERIAL IN 8" LIFTS (MAX) TO THE ELEVATION AND LINES SHOWN, COMPACT IN ACCORDANCE WITH THE SPECIFICATIONS.
5. CONSTRUCT EARTHEN CONTAINMENT BERMS USING TYPE I IMPORTED FILL AND INSTALL NON-WOVEN GEOTEXTILE AND PRIMARY MEMBRANE LINER.
6. COVER MEMBRANE SYSTEM WITH 6" LOCALLY AVAILABLE SAND.
7. PLACE 6-INCHES OF TYPE I CAP MATERIAL OVER ENTIRE PAD.
8. SEED ALL AREAS DISTURBED BY PAD CONSTRUCTION. SEE SPECIFICATIONS FOR SEEDING PROCEDURE.



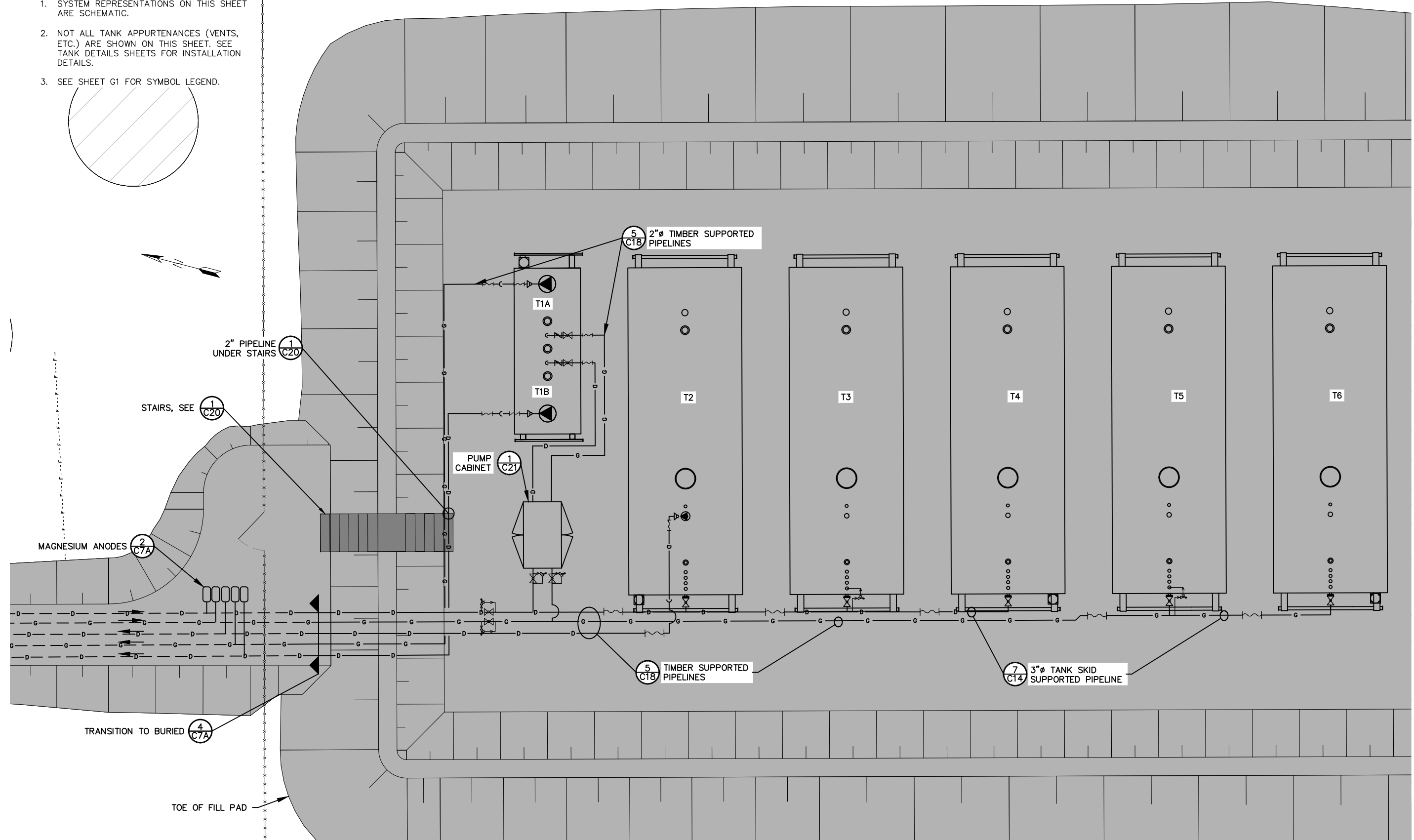
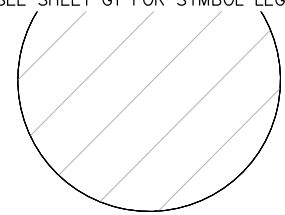
SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
TANK FARM SECTIONS

NO.	REVISION	DATE
1	ISSUE FOR BIDDING DRAWINGS	4/26/16

Plot Date	4/26/16
Designed	NCP
Drawn	NCP
Approved	AH

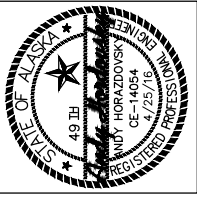
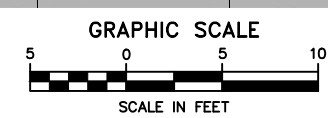
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- NOTES:**
1. SYSTEM REPRESENTATIONS ON THIS SHEET ARE SCHEMATIC.
  2. NOT ALL TANK APPURTENANCES (VENTS, ETC.) ARE SHOWN ON THIS SHEET. SEE TANK DETAILS SHEETS FOR INSTALLATION DETAILS.
  3. SEE SHEET G1 FOR SYMBOL LEGEND.



File: J:\Jobsdata\30404.12 Shishmaref Btu\00 CADD\01 Working Set\01 Civil\30403.22\_Csheets\NP.dwg

**1 TANK FARM PIPING PLAN**  
SCALE: GRAPHIC

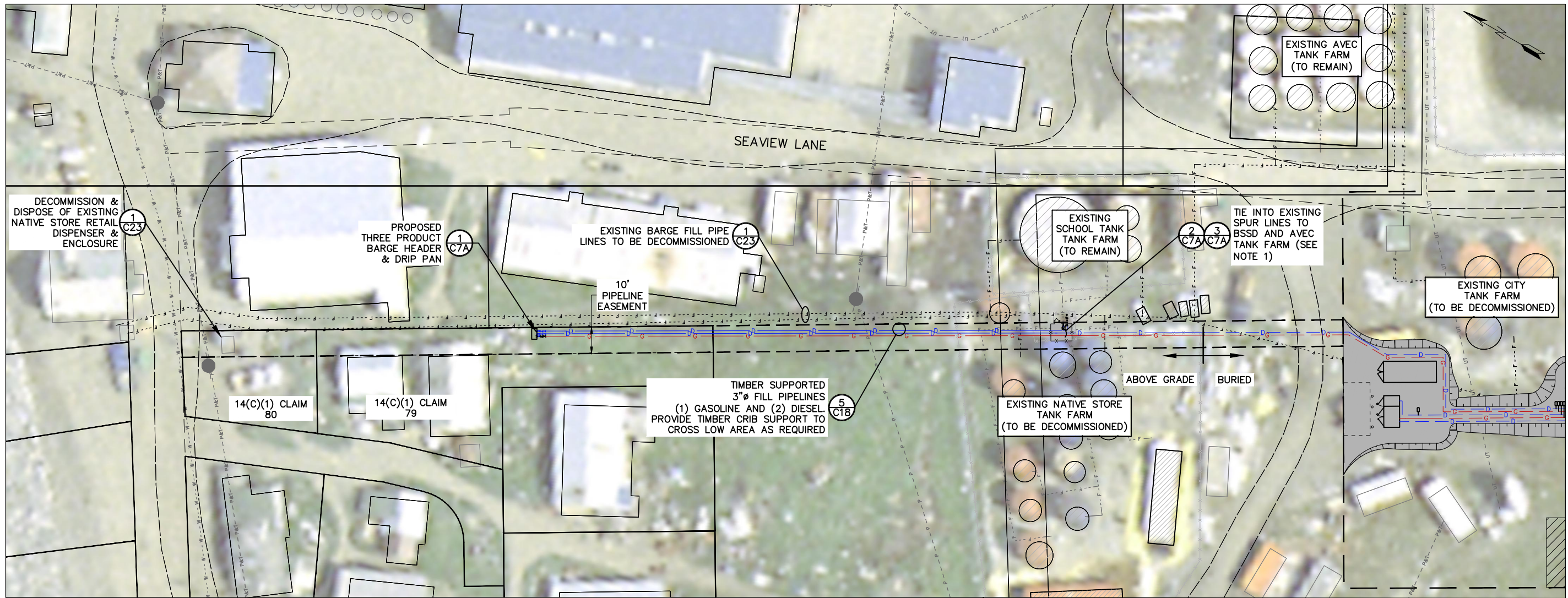


SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
TANK FARM PIPING PLAN

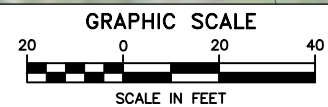
NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	AH	4/26/16

Plot Date: 4/26/16  
Designed: NCP  
Drawn: NCP  
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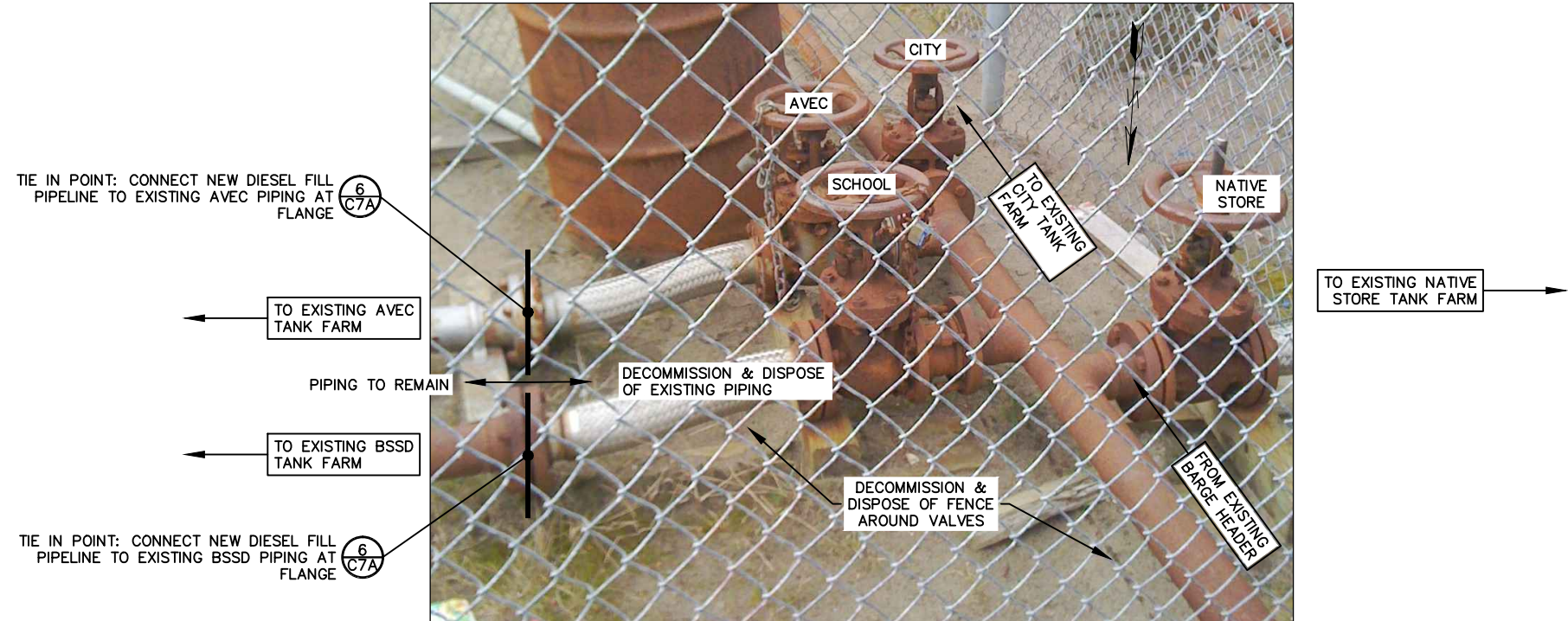




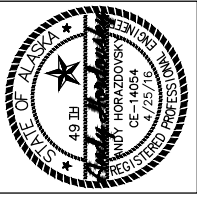
**1 FACILITY FILL PIPELINE PLAN**  
SCALE: GRAPHIC



- NOTES:**
- DECOMMISSION & DISPOSE OF EXISTING VALVES, PIPING & FENCE SHOWN IN 2/C7. REPLACE WITH 3WAY VALVE ASSEMBLY & ENCLOSURE SHOWN IN 6/C7A.
  - SYSTEM REPRESENTATIONS ON THIS SHEET ARE SCHEMATIC.
  - SEE SHEET-C23 FOR PIPING DECOMMISSIONING EXTENTS.



**2 EXISTING CONDITIONS AT BSSD & AVEC TANK FARM TIE IN POINT**  
SCALE: IMAGE



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
TANK FARM FILL PIPELINE

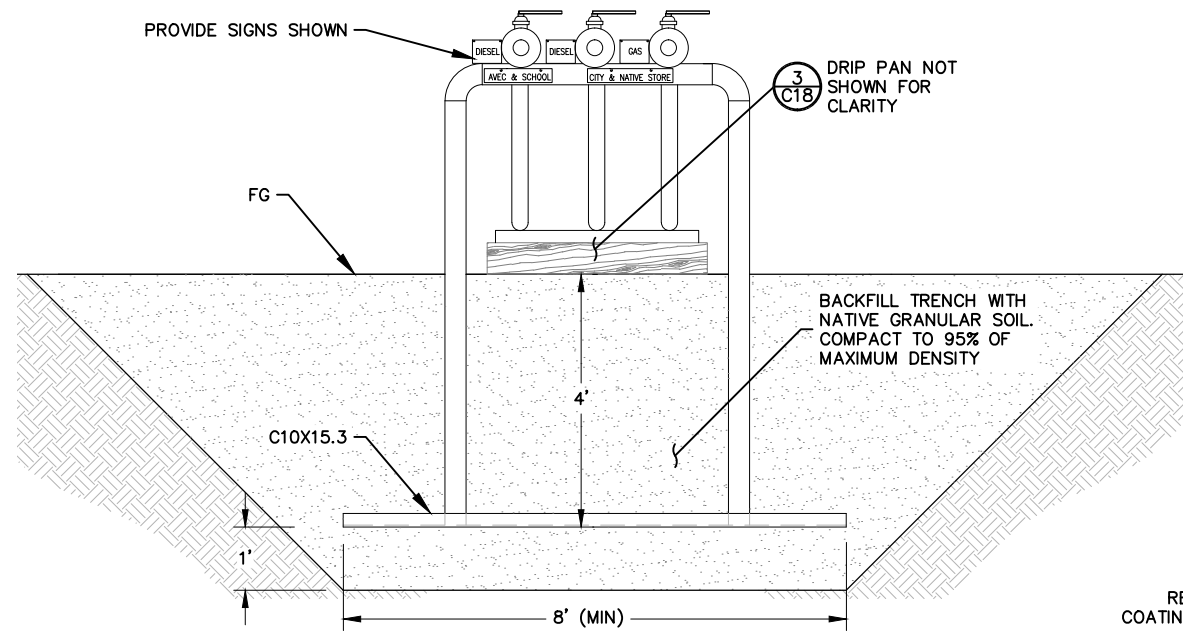
NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	AH	4/26/16

Plot Date: 4/26/16  
Designed: NCP  
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Approved: AH

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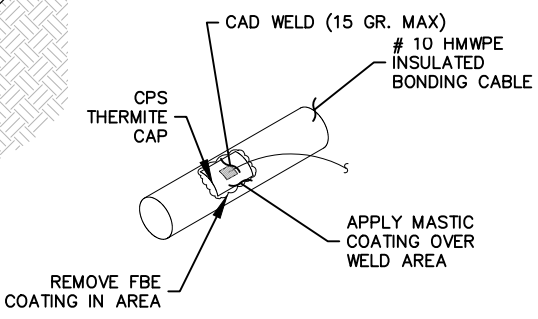


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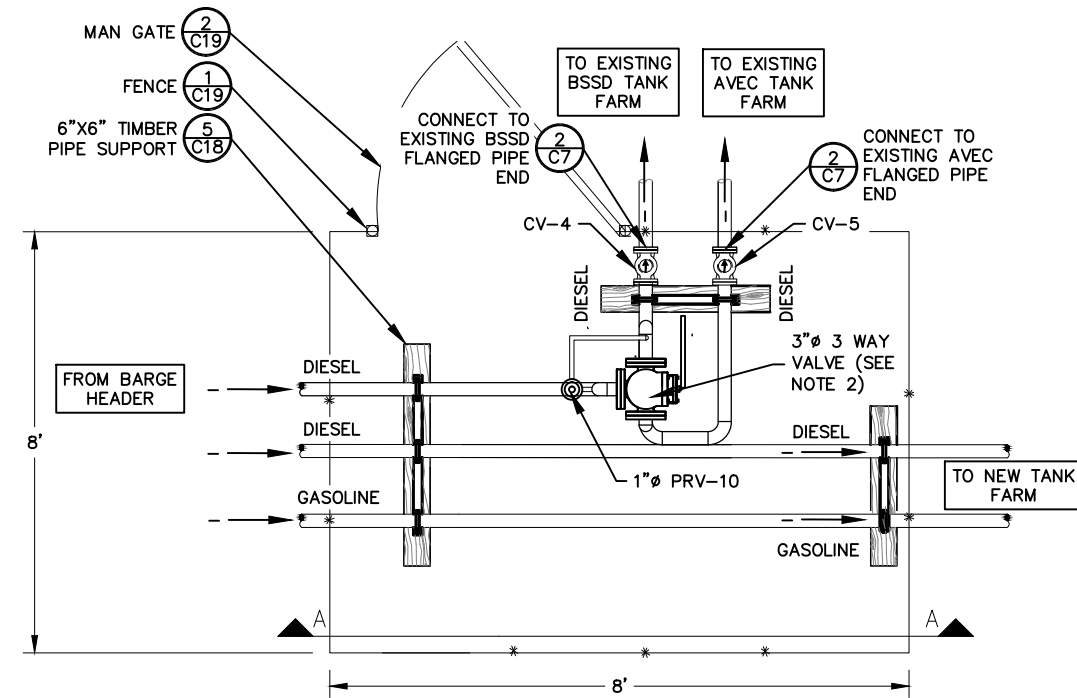


**SECTION A-A**

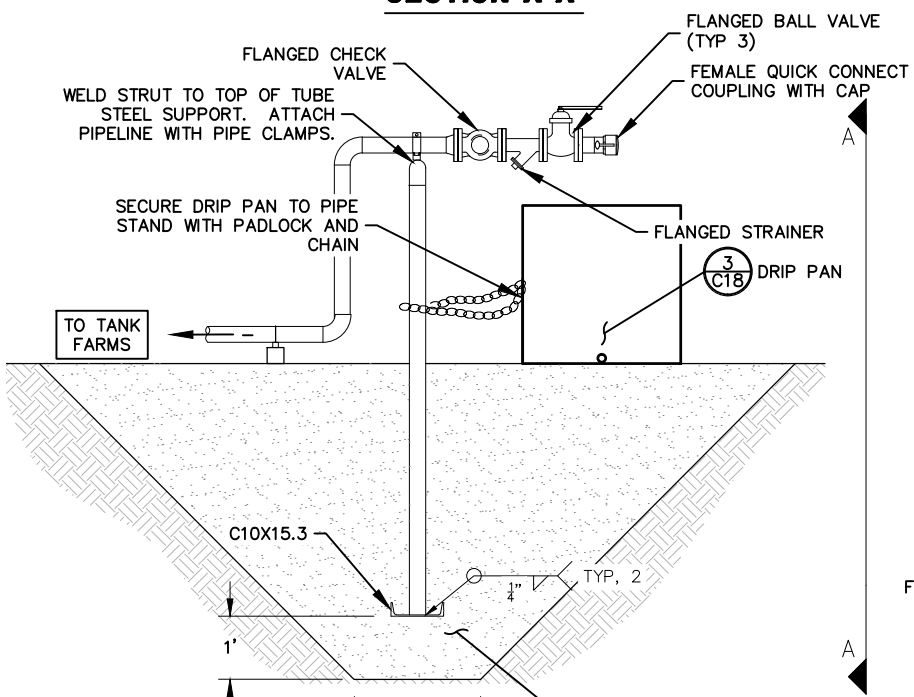
- NOTES**
- CONTRACTOR SHALL COORDINATE WITH SCHOOL & AVEC FACILITY OPERATORS AND FUEL DELIVERY TIMING/REQUIREMENTS PRIOR TO CONSTRUCTION.
  - PROVIDE 2" TAG IDENTIFYING FLOW, DIRECTION AND DESTINATION AT 3 WAY VALVE ENCLOSURE.



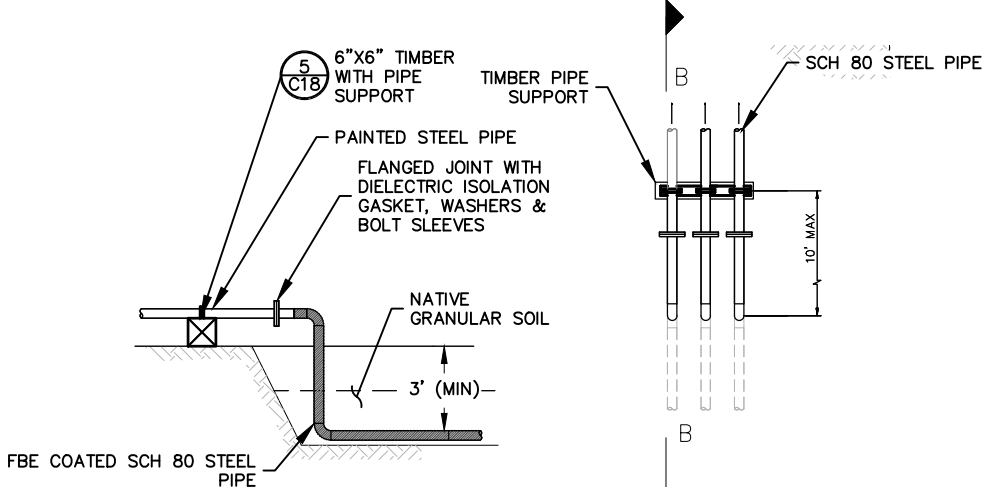
**3 CAD WELD TO PIPE**  
SCALE: NTS



**3 WAY VALVE PLAN VIEW**

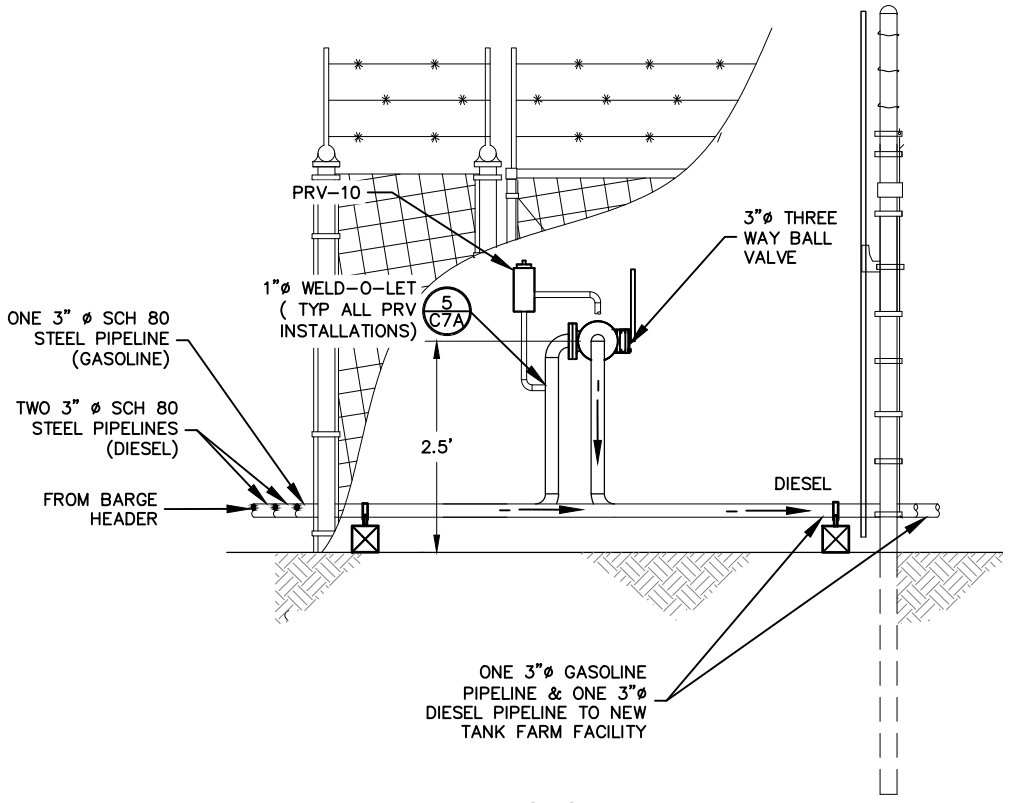


**1 BARGE HEADER**  
SCALE: NTS



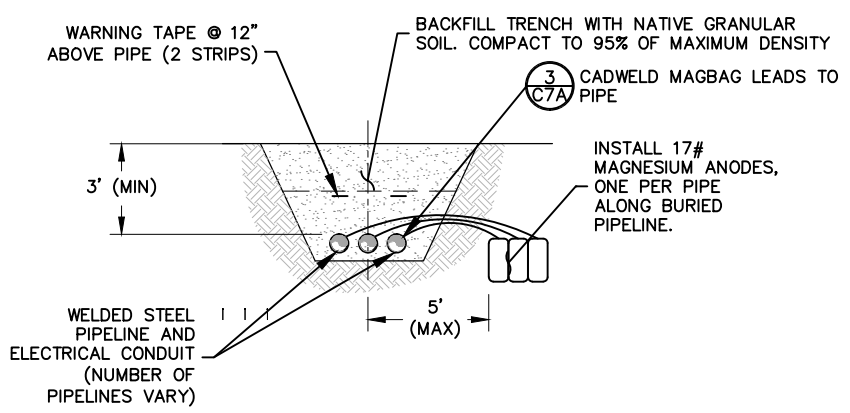
**SECTION B-B**

**4 BURIED PIPELINE TRANSITION**  
SCALE: NTS

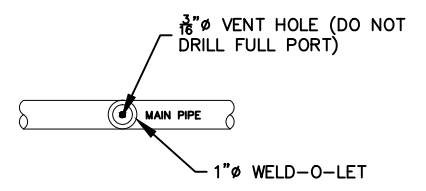


**SECTION A-A**

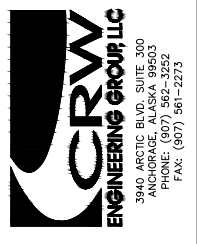
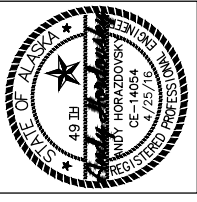
**6 3 WAY VALVE ASSEMBLY**  
SCALE: NTS



**2 TRENCH RESTORATION**  
SCALE: NTS



**5 PRV WELD-O-LET**  
SCALE: NTS



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
TANK FARM FILL PIPELINE DETAILS

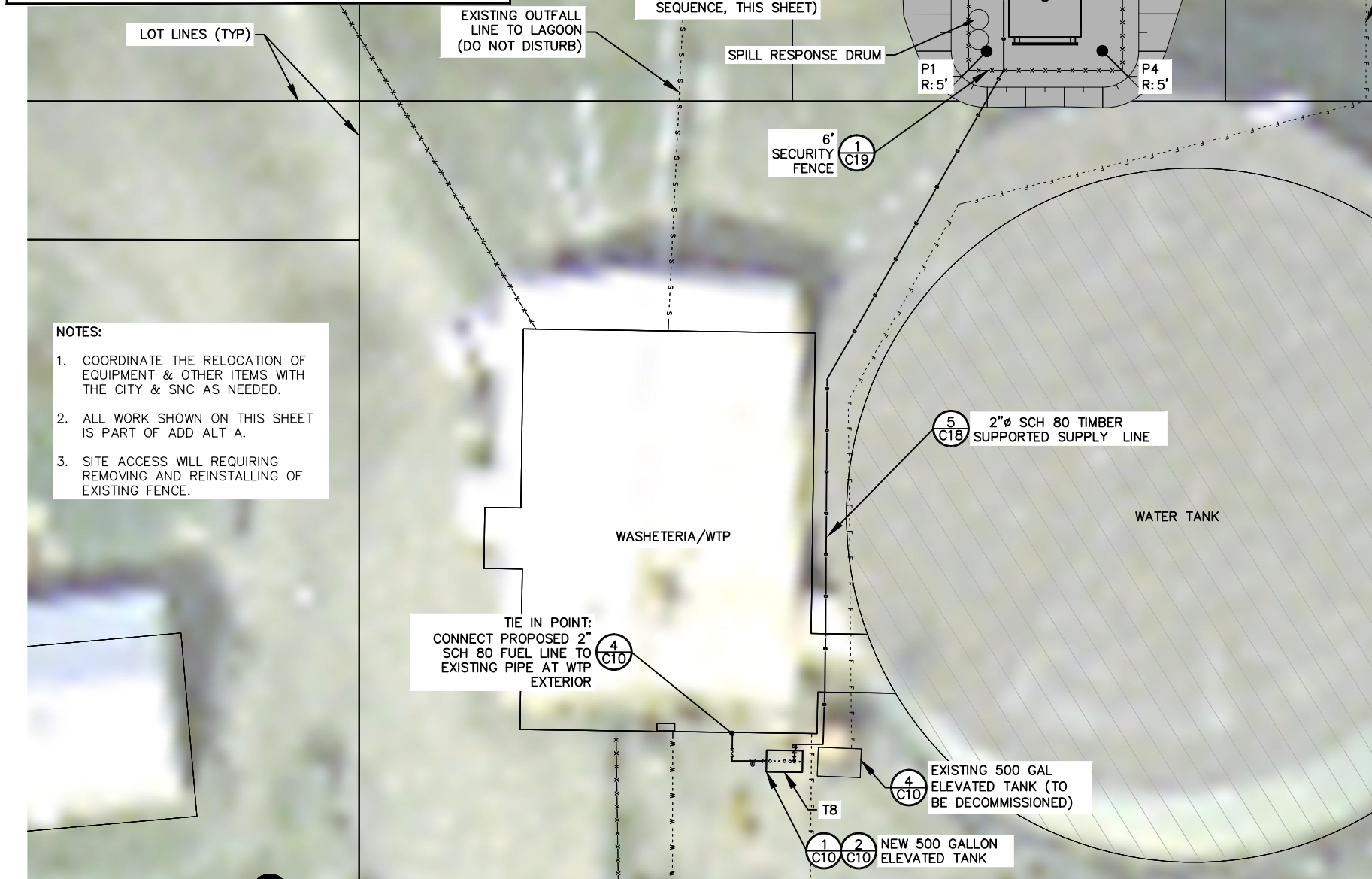
NO.	REVISION	DATE	BY
1	ISSUE FOR BIDDING DRAWINGS	4/26/16	AH

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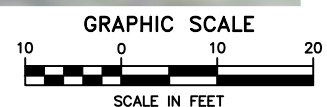


POINT TABLE				
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	4479984.9543'	1631390.0514'	11'	SOUTHWEST PAD, RADIUS 5'
2	4480011.1362'	1631386.0084'	11'	NORTHEAST PAD, RADIUS 5'
3	4480013.5779'	1631401.8209'	11'	NORTHWEST PAD, RADIUS 5'
4	4479987.3961'	1631405.8640'	11'	SOUTHEAST PAD, RADIUS 5'

- PAD CONSTRUCTION SEQUENCE**
1. STRIP AND DISPOSE OF SURFACE ORGANIC SOILS (APPROXIMATELY 15-30 INCHES).
  2. EXCAVATE AND DISPOSE OF ICE RICH SAND MATERIAL BENEATH ORGANIC LAYER (MIN TOTAL DEPTH OF EXCAVATION 48").
  3. INSTALL GEOTEXTILE AT BOTTOM OF EXCAVATION.
  4. PLACE LOCALLY AVAILABLE THAWED SAND MATERIAL IN LIFTS TO THE ELEVATION AND LINES SHOWN AND COMPACT IN ACCORDANCE WITH THE SPECIFICATIONS.
  5. PLACE 6" OF TYPE I CAP MATERIAL OVER ENTIRE PAD INCLUDING SIDE SLOPES.
  6. SEED ALL AREAS DISTURBED BY PAD CONSTRUCTION. SEE SPECIFICATIONS FOR SEEDING PROCEDURE.



**1 WTP FUEL SYSTEM SITE PLAN (ADDITIVE ALTERNATE A)**  
SCALE: NTS



- NOTES:**
1. COORDINATE THE RELOCATION OF EQUIPMENT & OTHER ITEMS WITH THE CITY & SNC AS NEEDED.
  2. ALL WORK SHOWN ON THIS SHEET IS PART OF ADD ALT A.
  3. SITE ACCESS WILL REQUIRE REMOVING AND REINSTALLING OF EXISTING FENCE.

LOT 14  
STAGING & OVERBURDEN STOCKPILE AREA

LOT 13

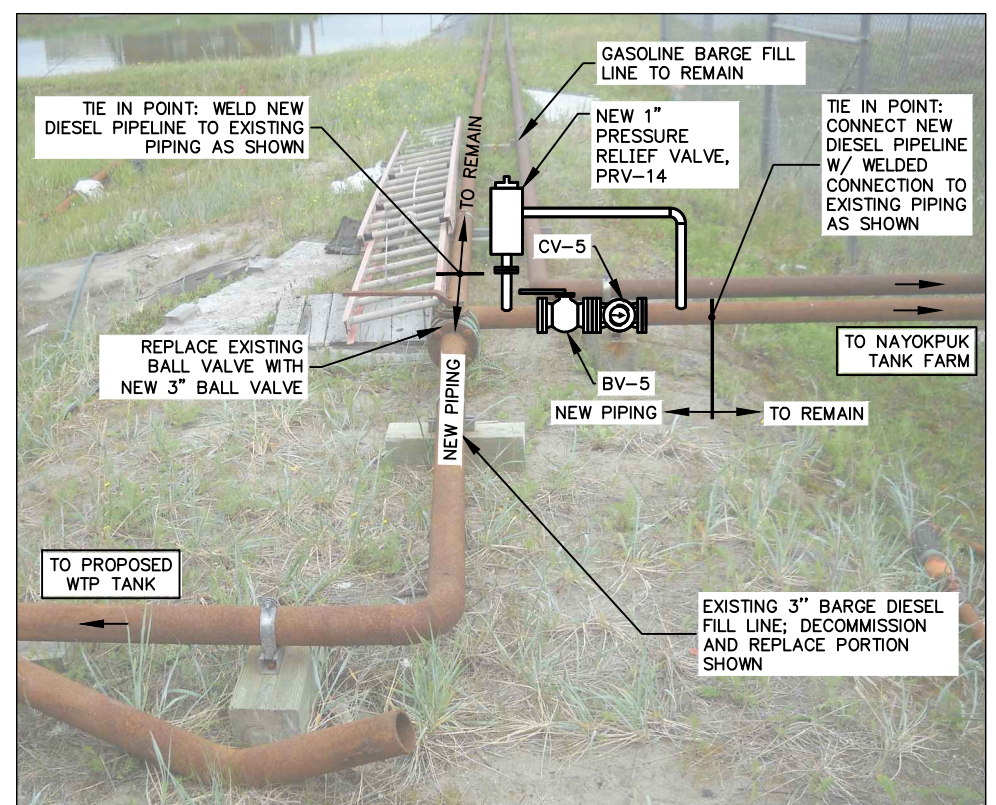
LOT 15

COORDINATE WITH OWNER TO REMOVE AND REPLACE FENCE FOR SITE ACCESS

EXISTING WTP TANK FARM TO BE DECOMMISSIONED  
EXISTING BARGE FILL LINES TO REMAIN (GASOLINE & DIESEL)

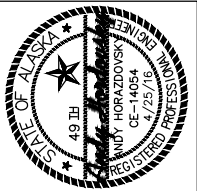
EXISTING 2" FUEL SUPPLY PIPE LINE TO BE DECOMMISSIONED  
TIE INTO EXISTING BARGE FILL LINE

NAYOKPUK TANK FARM (TO REMAIN)



**2 EXISTING WTP BARGE FILL PIPELINE (ADDITIVE ALTERNATE A)**  
SCALE: NTS

- NOTES:**
1. COORDINATE TIE IN WITH NAYOKPUK STORE TANK FARM OPERATOR.
  2. SEE SHEET-C1A-WTP OPERATING SCHEMATIC, FOR PROPOSED FUEL COMPONENTS AT TIE IN AREA.



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
WTP SITE PLAN (ADD ALT A)

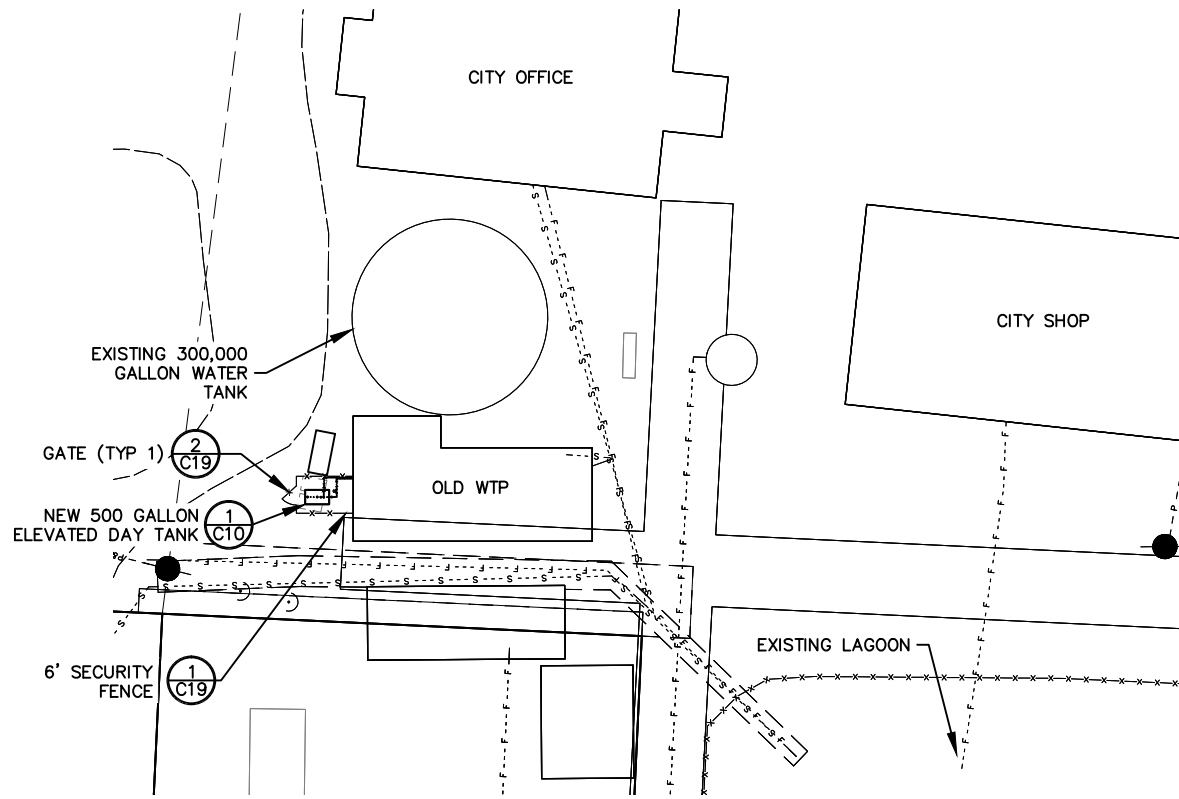
NO.	REVISION	DATE	BY
1	ISSUE FOR BIDDING DRAWINGS	4/26/16	AH

Plot Date	4/26/16
Designed	NCP
Drawn	NCP
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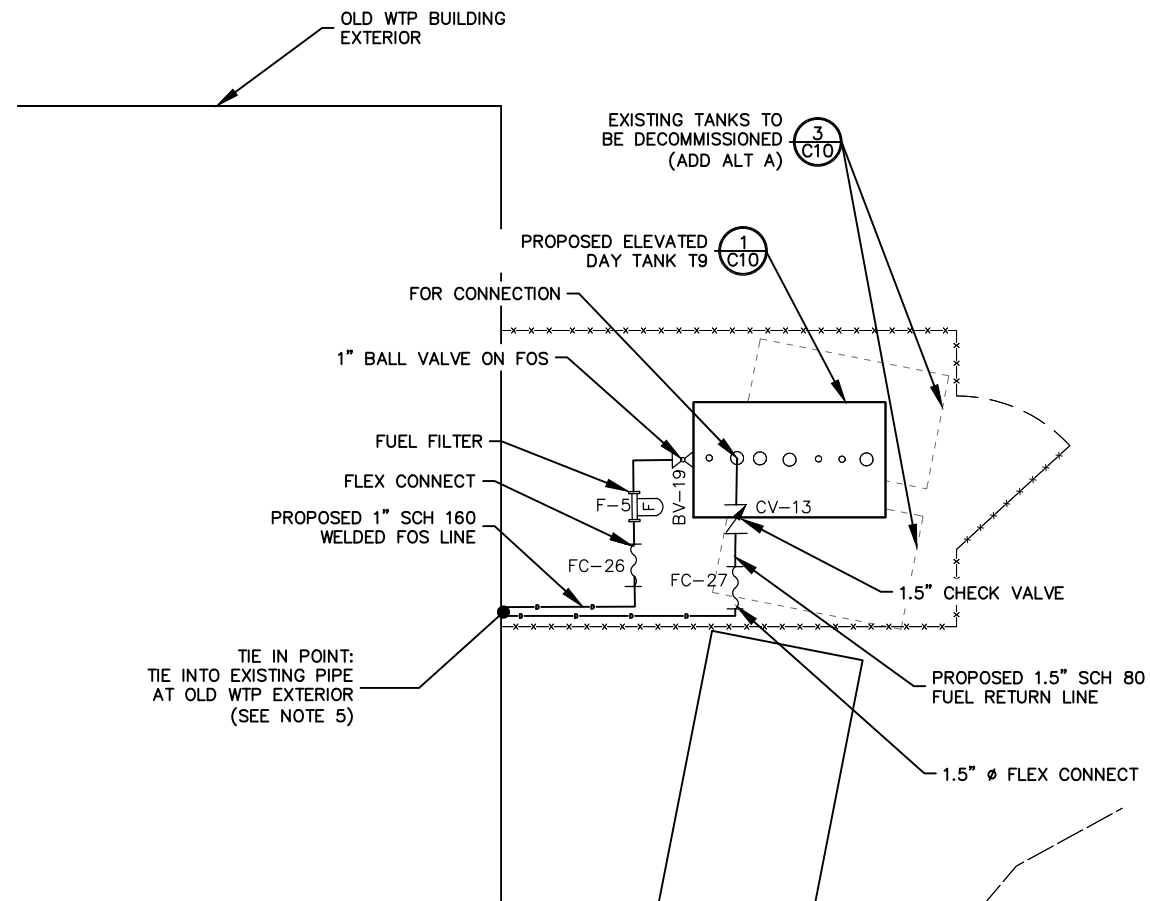
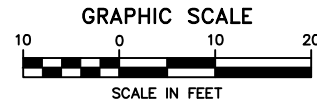
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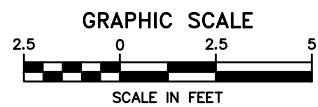
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**1 OLD WTP SITE PLAN (ADD ALT A)**  
SCALE: GRAPHIC



**2 DAY TANK FUEL PIPING OPERATING SCHEMATIC (ADD ALT A)**  
SCALE: NTS



**NOTES:**

- EXISTING TANKS LOCATED ADJACENT TO THE OLD WTP BUILDING SHALL BE DECOMMISSIONED & REPLACED BY A 500 GALLON DAY TANK SHOWN ON PAGE C10.
- NOT ALL TANK APPURTENANCES (VENTS, ETC.) ARE SHOWN ON THIS SHEET.
- SEE SHEETS C22 & C23 FOR TANK AND PIPELINE DECOMMISSIONING SCHEDULES.
- ALL WORK SHOWN ON THIS SHEET IS PART OF ADD ALT A
- SUBMIT PLANNED PIPING TIE-IN METHODOLOGY TO ENGINEER FOR REVIEW & APPROVAL PRIOR TO PERFORMING WORK



**3 EXISTING OLD WTP TANKS & PIPING (ADD ALT A)**  
SCALE: NTS



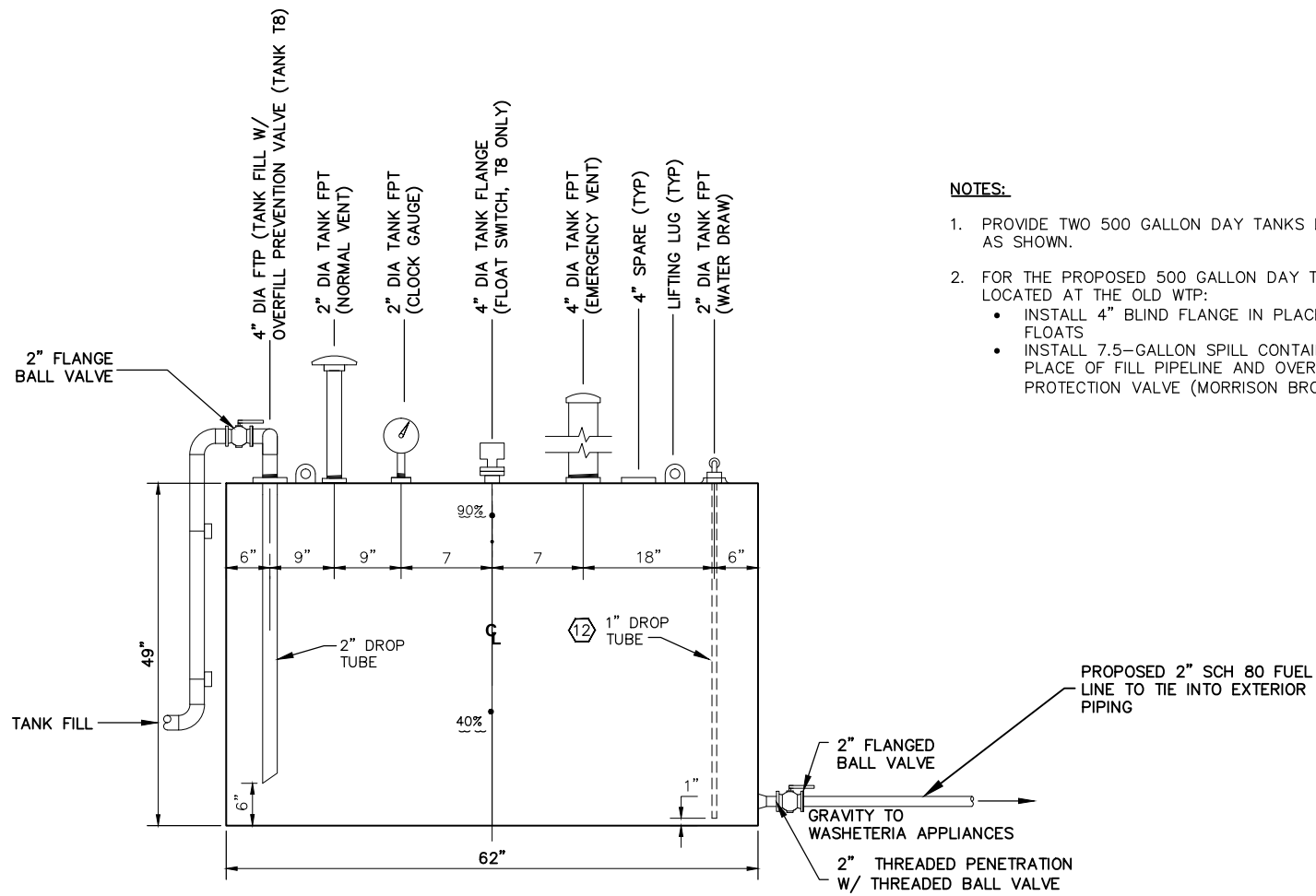
SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
OLD WTP SITE PLAN (ADD ALT A)

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	AH	4/26/16

Plot Date	4/26/16
Designed	NCP
Drawn	NCP
Approved	AH

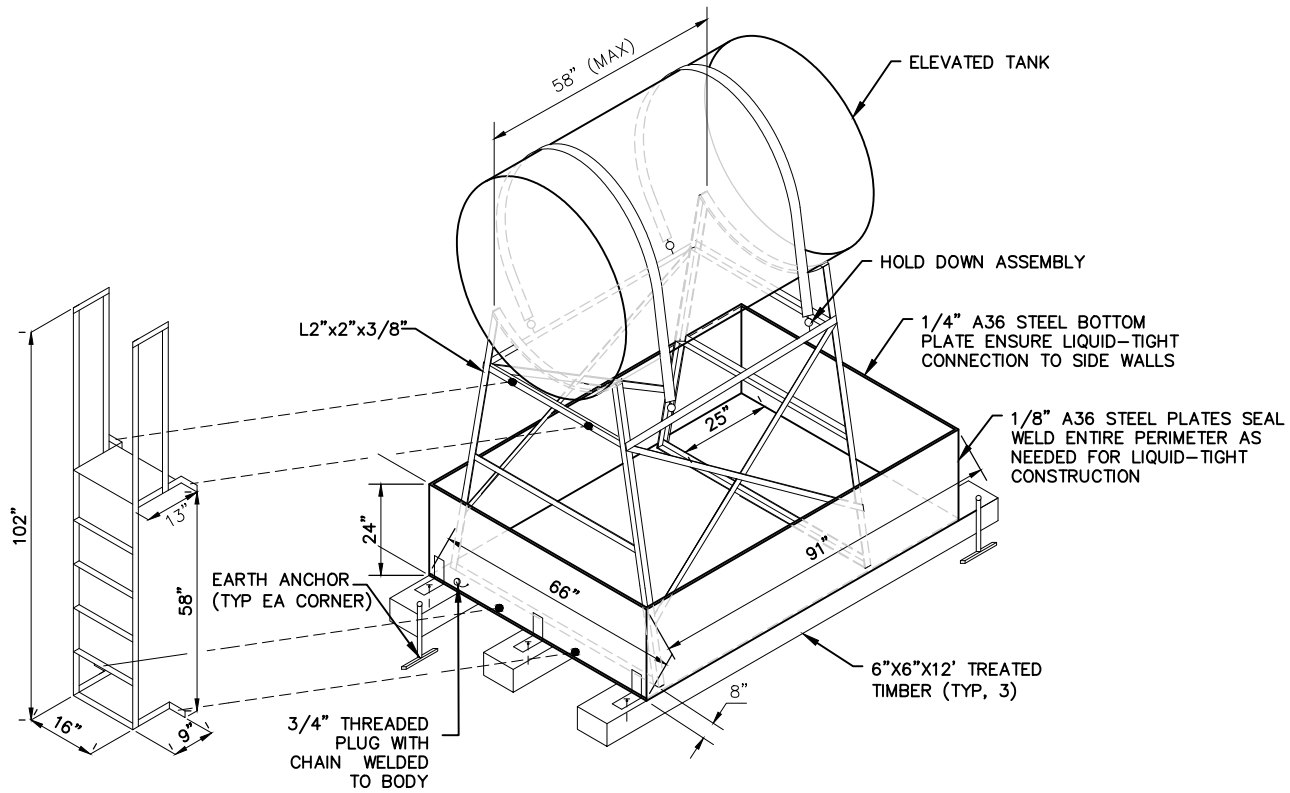




**NOTES:**

1. PROVIDE TWO 500 GALLON DAY TANKS DETAILED AS SHOWN.
2. FOR THE PROPOSED 500 GALLON DAY TANK T9 LOCATED AT THE OLD WTP:
  - INSTALL 4" BLIND FLANGE IN PLACE OF FLOATS
  - INSTALL 7.5-GALLON SPILL CONTAINER IN PLACE OF FILL PIPELINE AND OVERFILL PROTECTION VALVE (MORRISON BROS, OAE).

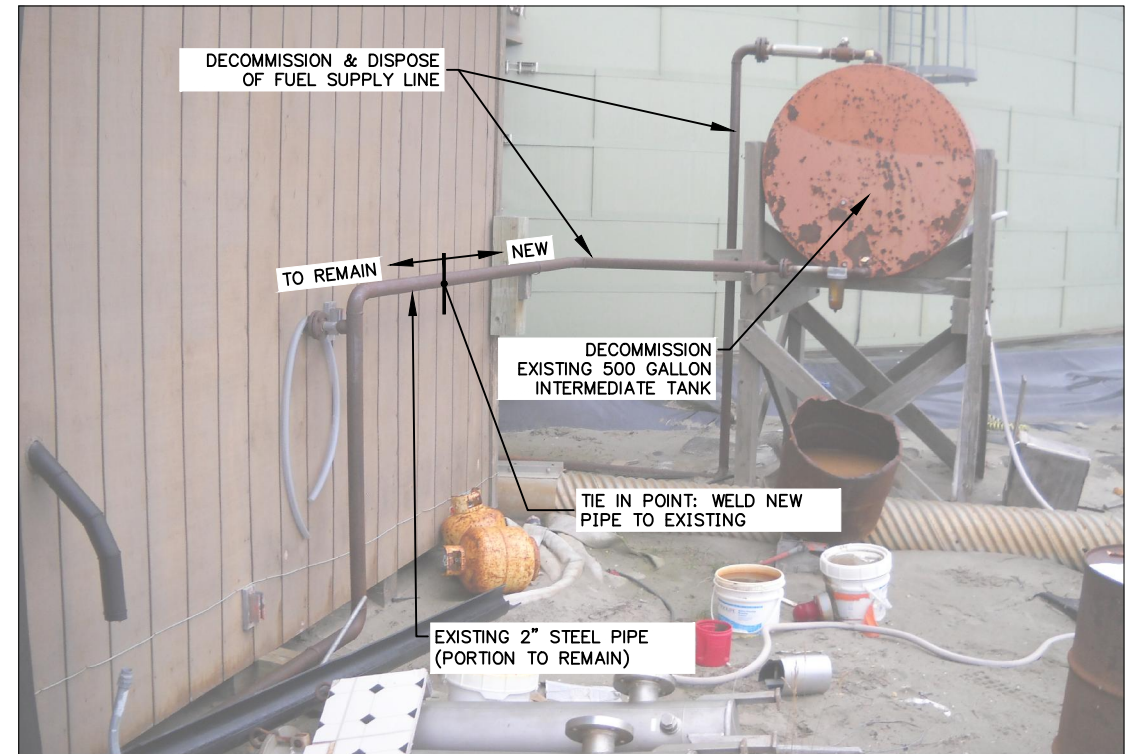
**1 500 GALLON DAY TANK (ADD ALT A)**  
SCALE: GRAPHIC



**2 500 GALLON DAY TANK STAND (ADD ALT A)**  
SCALE: GRAPHIC



**3 EXISTING OLD WTP TANKS (ADD ALT A)**  
SCALE: GRAPHIC



**4 EXISINTG 500 GAL WTP TANK (ADD ALT A)**  
SCALE: GRAPHIC

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	AH	4/26/16

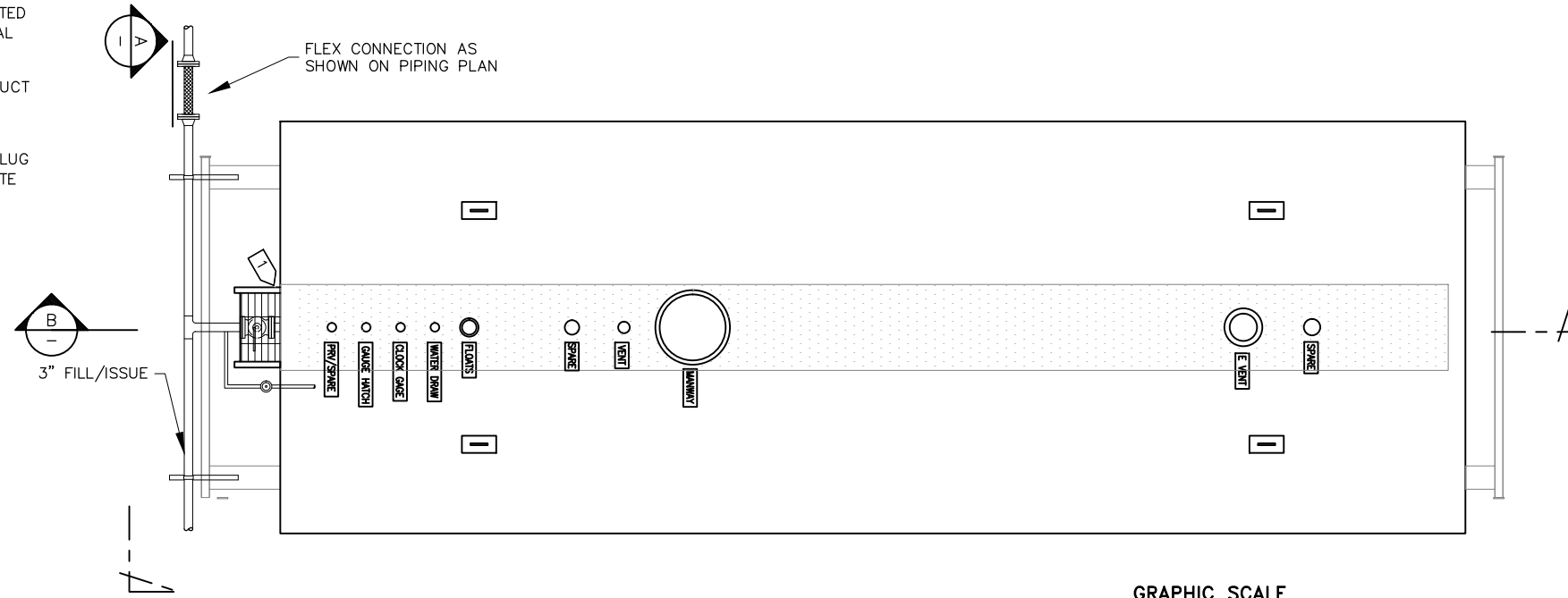
Plot Date	4/26/16	Designed	NCP	Drawn	NCP	Approved	AH
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**SPECIFIC NOTES:**

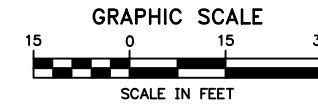
- 1 SHOP FABRICATED BOLT ON LADDER
- 2 2" THREADED PENETRATION (GAUGE HATCH INSTALLED ON 2"x4" NIPPLE)
- 3 2" THREADED PENETRATION (PRV CONNECTION/SPARE)
- 4 2" THREADED PENETRATION (CLOCK GAUGE WITH STILLING WELL)
- 5 2" THREADED PENETRATION (WATER DRAW)
- 6 4" FLANGED PENETRATION (FLOATS, SEE ELECTRICAL)
- 7 4" THREADED PENETRATION (SPARE W/PLUG, SEE GENERAL NOTE 5)
- 8 3" THREADED PENETRATION (PRESSURE VACUUM VENT WITH WHISTLE ALARM)
- 9 24" MANWAY
- 10 10" FLANGED PENETRATION (EMERGENCY VENT)
- 11 3" THREADED PENETRATION (SPARE W/PLUG)
- 12 3" FLANGED PENETRATION w/ 3" BALL VALVE
- 13 1" PRV SET @ 75 PSIG

**GENERAL NOTES:**

- 1. TANK SHALL BE A NEW, UL 142 LISTED AND LABELED, 12'Øx34.5' HORIZONTAL SINGLE WALL AST AS DETAILED.
- 2. INSTALL PRESSURE RELIEF VALVE ASSEMBLY ON ONE TANK PER PRODUCT TYPE.
- 3. SEE SPECIFICATIONS FOR DETAILED COMPONENT SPECIFICATIONS.
- 4. PROVIDE UL APPROVED GROUNDING LUG ON TANK SKIDS (TYP 2, ON OPPOSITE CORNERS)
- 5. INSTALL PUMP IN 4" SPARE PENETRATION, TANK 2 ONLY.

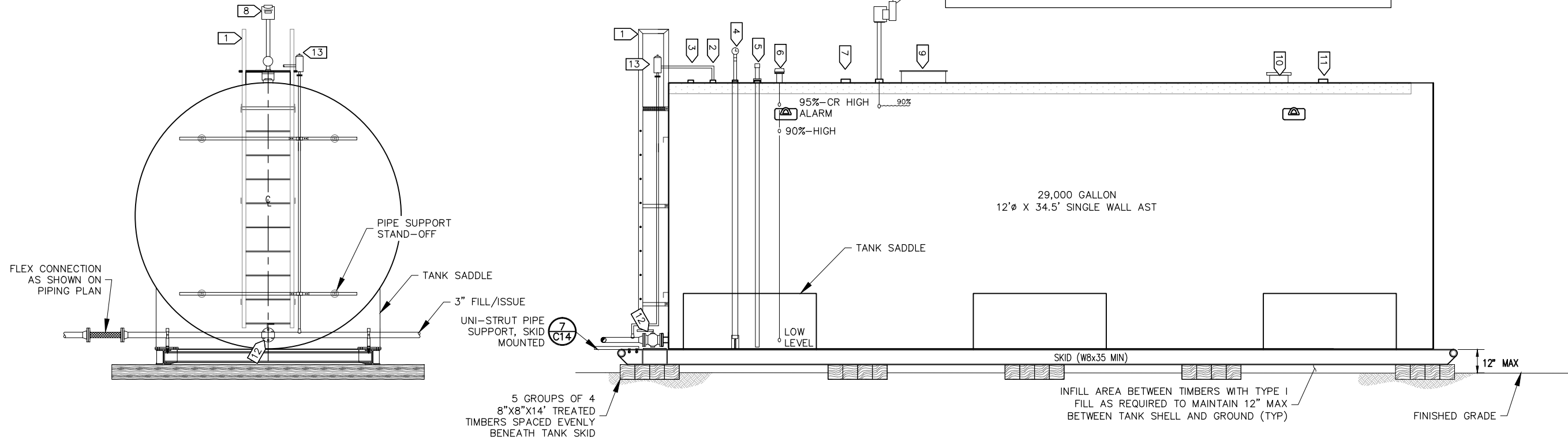


**1 29,000 GALLON SINGLE WALL TANK**  
SCALE: GRAPHIC



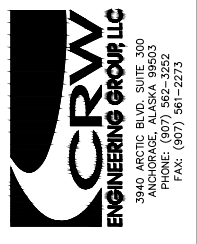
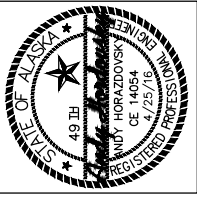
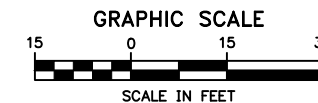
**NOTE:**

TANK DETAILS ON THIS SHEET MAY DIFFER FROM ACTUAL TANKS PROCURED FOR THE PROJECT BY AUTHORITY. CONTRACTOR SHALL REFERENCE TANK SHOP DRAWINGS PROVIDED UNDER SEPARATE COVER.



**A END VIEW**  
SCALE: GRAPHIC

**B SECTION VIEW**  
SCALE: GRAPHIC



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
29,000 GALLON SINGLE WALL TANK

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	AH	4/26/16

Plot Date	4/26/16
Designed	NCP
Drawn	NCP
Approved	AH

File: J:\Jobsdata\30404.12 Shishmaref Btu\00 CADD\01 Working Set\01 Civil\30403.22\_Tanks.dwg

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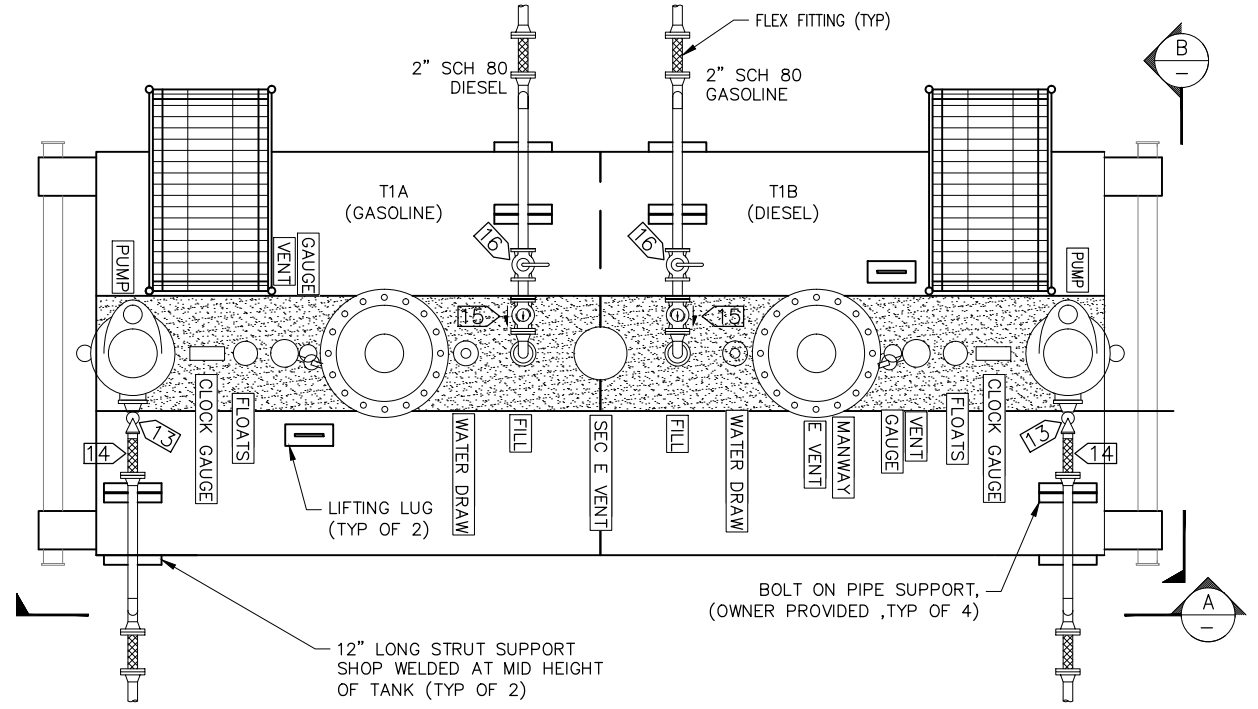
**SPECIFIC NOTES:**

- 1 SHOP FABRICATED BOLT ON LADDER AND PLATFORM (OWNER PROVIDED)
- 2 2" FPT SECONDARY TANK MONITORING BUNG WITH MPT PLUG
- 3 SUBMERSIBLE PUMP
- 4 2" CLOCK GAUGE INSTALLED ON 2"x18" NIPPLE. SET GREEN ARROW AT 50% LEVEL AND RED ARROW AT 90%
- 5 3" FLANGED 4-POSITION LEVEL SWITCH. SENSOR POSITIONS FACTORY SET AS SHOWN.
- 6 2" PRESSURE VACUUM VENT WITH WHISTLE ALARM. INSTALL ON 3" BUNG WITH 3X2 REDUCING BUSHING. NIPPLE LENGTH WILL VARY WITH TANK DIAMETER. VENT MUST BE 12' ABOVE FINISHED GRADE. FEED CABLE THROUGH PIPE PRIOR TO CONNECTING TO TANK. SET WHISTLE TO ALARM AT 90% FULL.
- 7 2" FPT GAUGE HATCH INSTALLED ON 2"x4" LONG NIPPLE
- 8 8" FLANGED PRIMARY EMERGENCY VENT
- 9 1" THREADED WATER DRAW
- 10 20" MANHOLE
- 11 2" FILL
- 12 8" FLANGED SECONDARY EMERGENCY VENT
- 13 ANTI SIPHON VALVE
- 14 2"Ø X 12"L FLEXIBLE CONNECTOR (NPT x FLOAT FLG)
- 15 2" FLANGED CHECK VALVE
- 16 2" FLANGED BALL VALVE

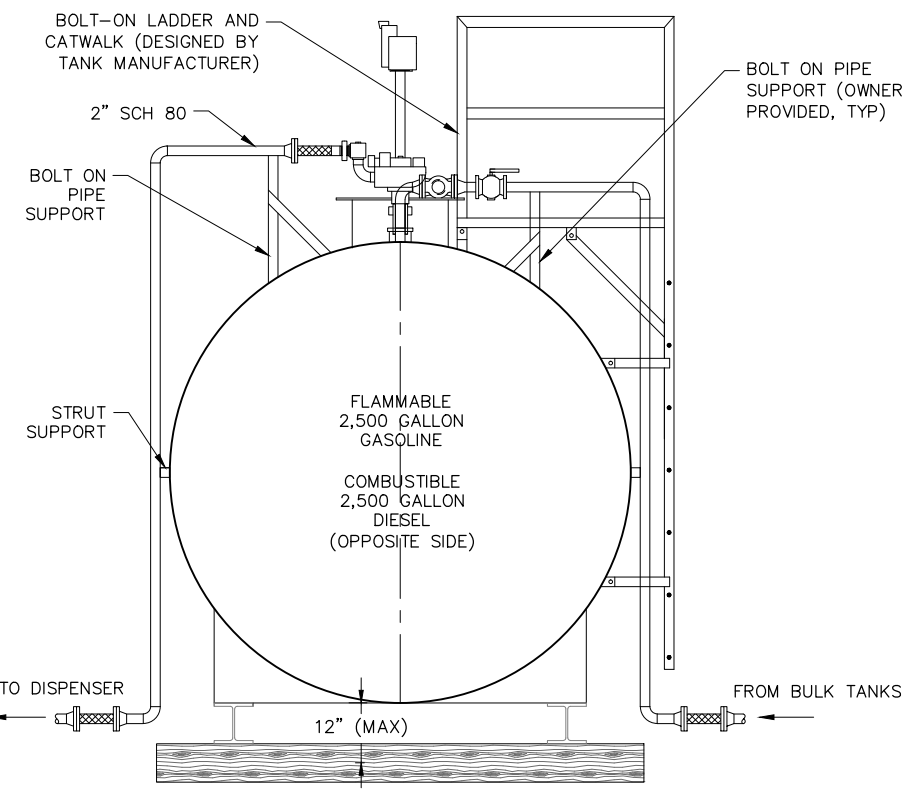
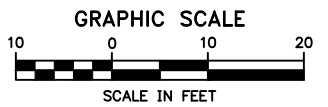
**GENERAL NOTES:**

- 1. TANK SHALL BE A NEW, UL 142 LISTED AND LABELED, 7'Øx17.5' HORIZONTAL SINGLE WALL AST AS DETAILED.
- 2. INSTALL PRESSURE RELIEF VALVE ASSEMBLY ON ONE TANK PER PRODUCT TYPE.
- 3. SEE SPECIFICATIONS FOR DETAILED COMPONENT SPECIFICATIONS.
- 4. PROVIDE UL APPROVED GROUNDING LUG ON TANK SKIDS (TYP 2, ON OPPOSITE CORNERS).

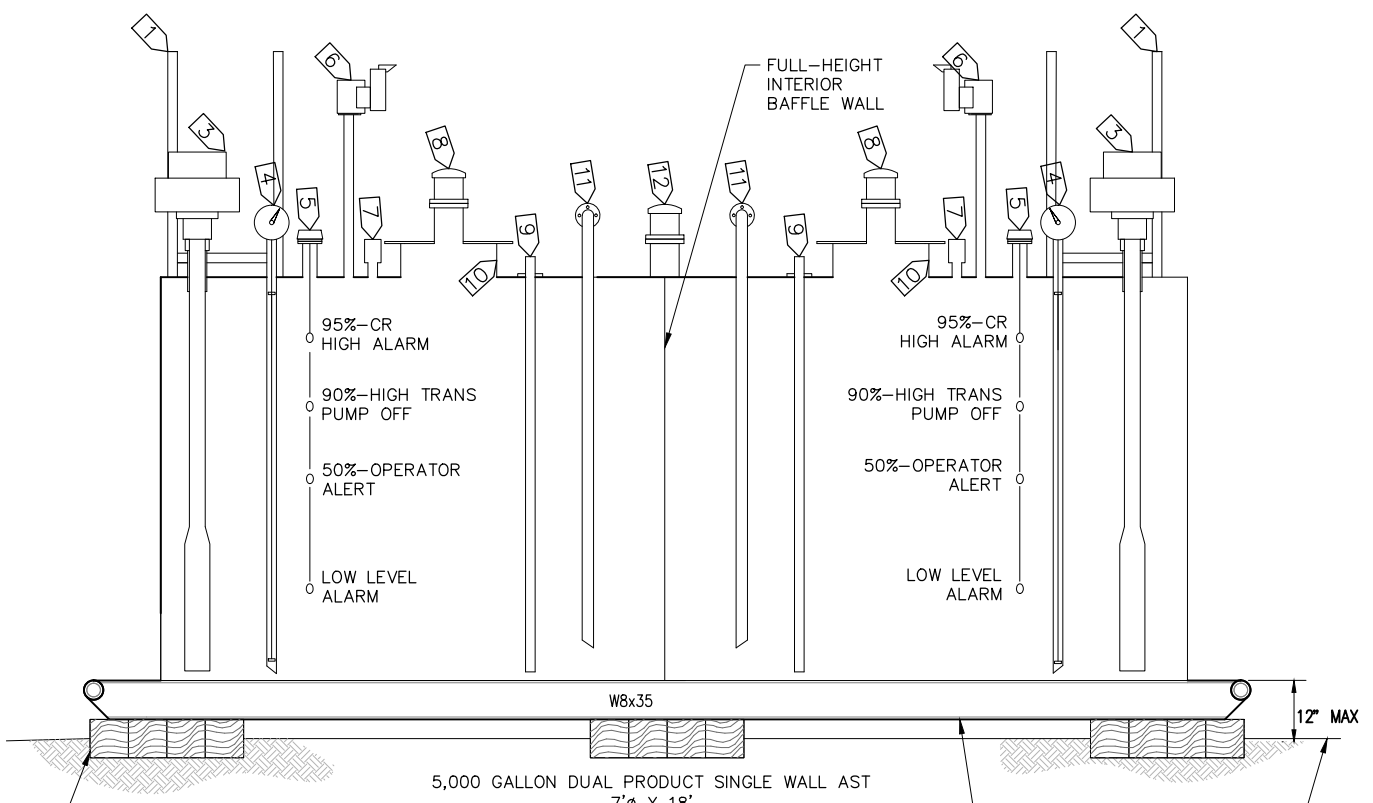
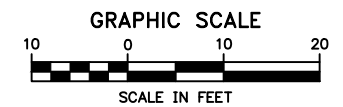
**NOTE:**  
TANK DETAILS ON THIS SHEET MAY DIFFER FROM ACTUAL TANKS PROCURED FOR THE PROJECT BY AUTHORITY. CONTRACTOR SHALL REFERENCE TANK SHOP DRAWINGS PROVIDED UNDER SEPARATE COVER.



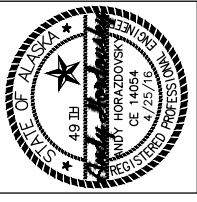
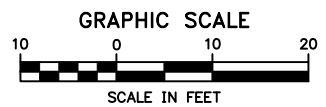
**1 5,000 GALLON DUAL PRODUCT DISPENSING TANK**  
SCALE: GRAPHIC



**B END VIEW**  
SCALE: GRAPHIC



**A SECTION VIEW**  
SCALE: GRAPHIC



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
5,000 GALLON DISPENSING TANK DETAILS

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	AH	4/26/16

Plot Date	4/26/16
Designed	NCP
Drawn	NCP
Approved	AH

**SPECIFIC NOTES:**

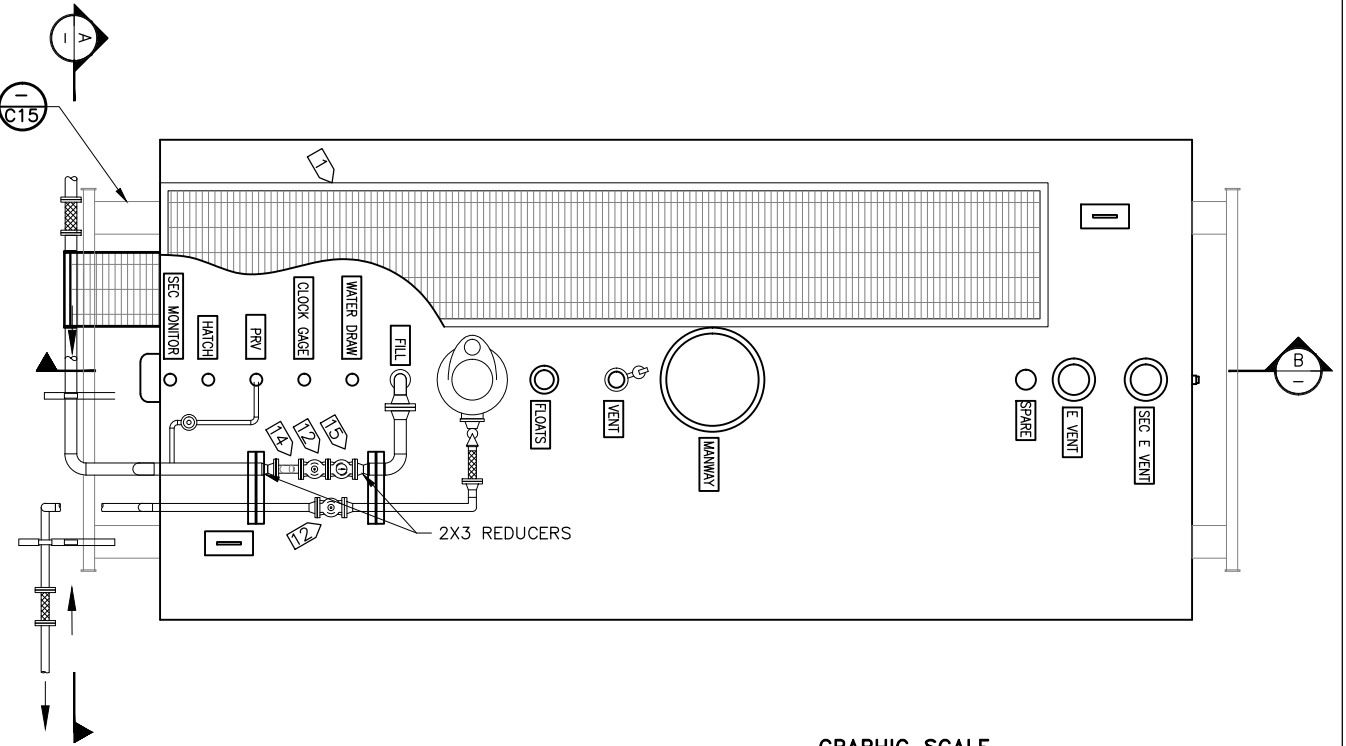
- 1 SHOP FABRICATED BOLT ON LADDER W/GRIP-STRUT DECK
- 2 2" FPT NOZZLE WITH MPT PLUG (SECONDARY TANK MONITOR)
- 3 3" FLANGED THREE POSITION LEVEL SWITCHES
- 4 4" FPT FILL w/ 4x3 DOUBLE TAP BUSHING & 3" DROP TUBE
- 5 2" CLOCK GAUGE INSTALLED ON 2" X 18" NIPPLE 2 C14
- 6 2" THREADED WATER DRAW 6 C14
- 7 4" FPT (SUBMERSIBLE PUMP) 1 C14
- 8 24" MANHOLE
- 9 2" PRESSURE VACUUM VENT WITH WHISTLE ALARM. INSTALL ON 3" BUNG WITH 3"x2" REDUCER & 2" X 24" NIPPLE. FEED CABLE THROUGH PIPE PRIOR TO CONNECTING TO TANK. SET WHISTLE TO ALARM AT 90%.
- 10 8" FLANGED E-VENT (PRIMARY)
- 11 8" FLANGED E-VENT (SECONDARY)
- 12 2" MOTORIZED BALL VALVE
- 13 2" BALL VALVE
- 14 2" STRAINER
- 15 2" CHECK VALVE
- 16 2" FPT (PRV CONNECTION/SPARE)
- 17 2" FPT (GAUGE HATCH INSTALLED ON 2"x4" NIPPLE)

**GENERAL NOTES:**

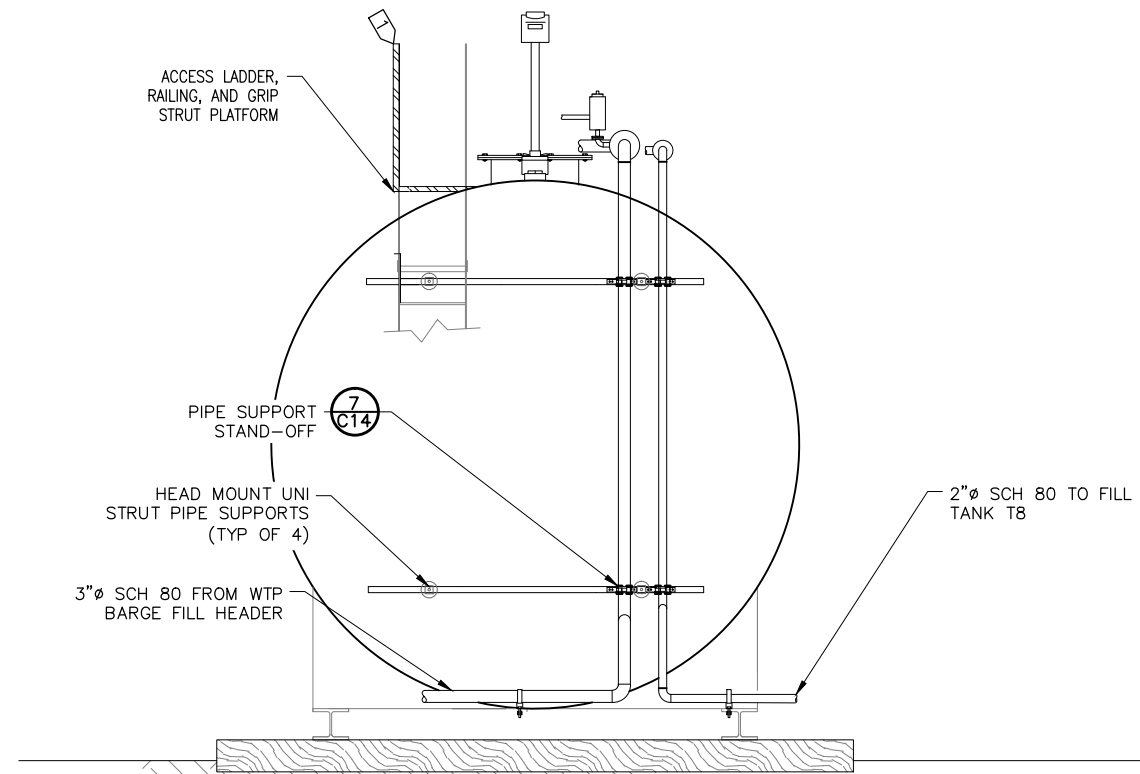
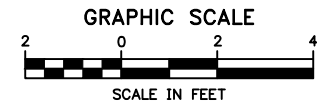
- 1. TANK SHALL BE A NEW, UL 142 LISTED AND LABELED, 10'Øx21.5' HORIZONTAL DOUBLE WALL AST AS DETAILED.
- 2. INSTALL PRESSURE RELIEF VALVE ASSEMBLY ON ONE TANK PER PRODUCT TYPE.
- 3. SEE SHEET G5 FOR DETAILED COMPONENT SPECIFICATIONS.
- 4. PROVIDE UL APPROVED GROUNDING LUG ON TANK SKIDS (TYP 2, ON OPPOSITE CORNERS).

**NOTE:**  
THIS TANK IS CONTRACTOR PROVIDED (ADD ALT A). PRIOR TO TANK FABRICATION CONTRACTOR SHALL PROVIDE TANK SHOP DRAWINGS TO ENGINEER FOR APPROVAL.

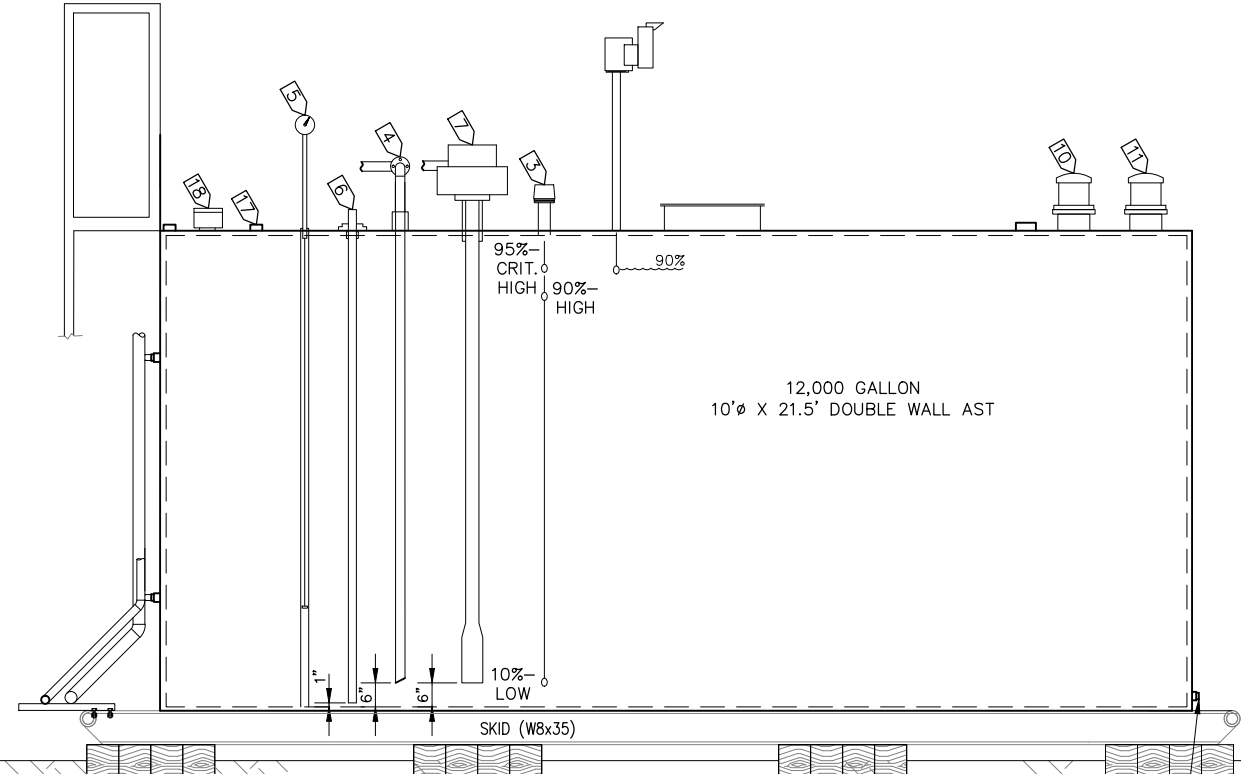
TANK MOUNTED LIGHT POLE, SEE ELECTRICAL FOR LOCATIONS



**1 12,000 GALLON DOUBLE WALL TANK (ADD ALT A)**  
SCALE: GRAPHIC

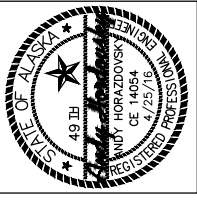


**A END VIEW**  
SCALE: GRAPHIC



**B SECTION VIEW**  
SCALE: GRAPHIC

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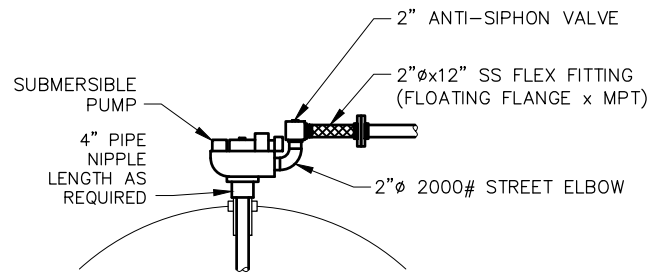


SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
ADD ALT A  
10,000 GALLON DOUBLE WALL TANK DETAILS

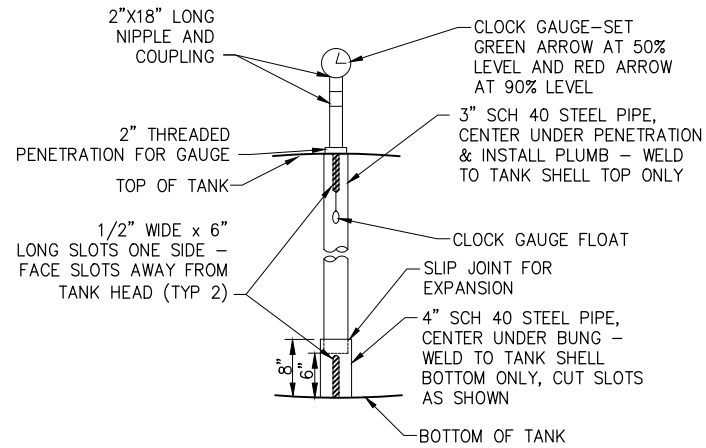
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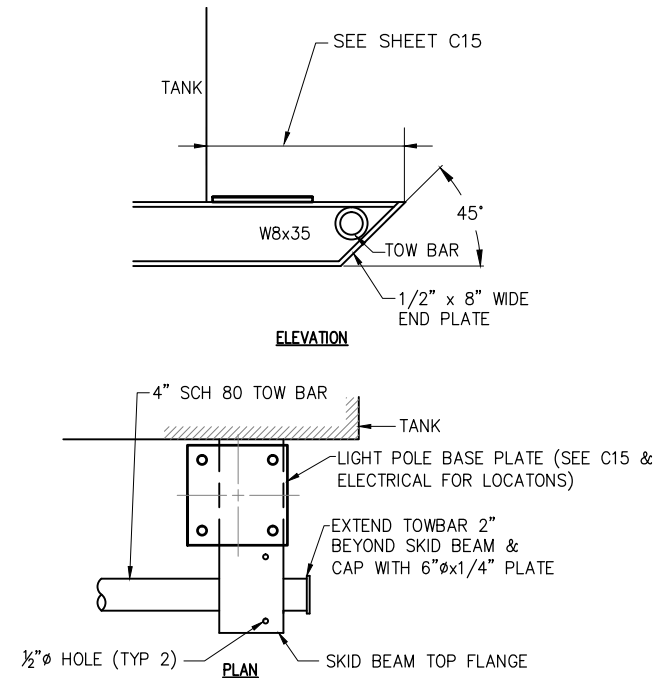


**1 SUBMERSIBLE PUMP ASSEMBLY**  
C14 SCALE: NTS

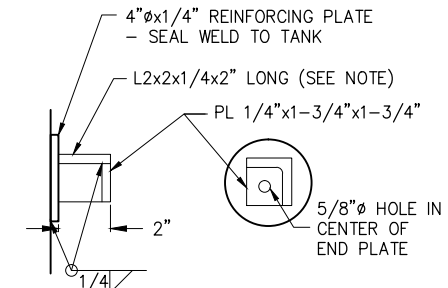


NOTE:  
INTERNAL TANK STILLING WELL COMPONENTS ARE INCLUDED WITH OWNER PROVIDED TANKS. CLOCK GAUGE AND NIPPLE ARE NOT OWNER PROVIDED.

**2 CLOCK GAUGE FLOAT STILLING WELL**  
C14 SCALE: NTS

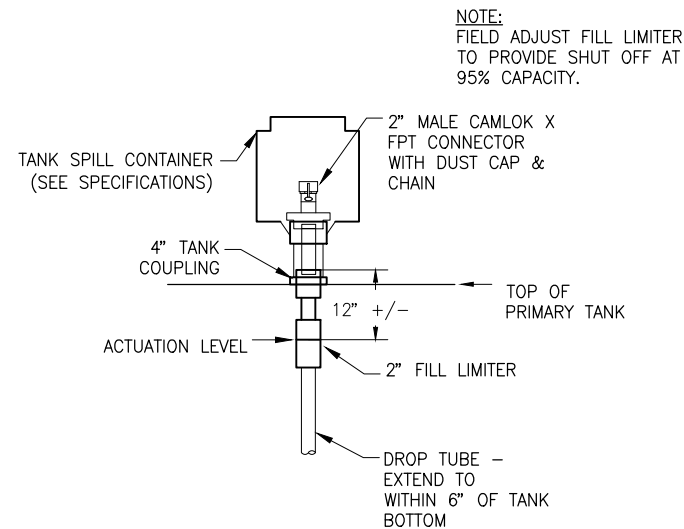


**3 END OF SKID**  
C14 SCALE: NTS



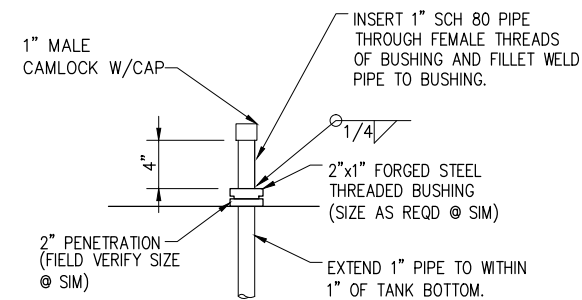
NOTE TO TANK MANUFACTURER:  
THE END PLATES OF STAND OFFS SHALL BE ON THE SAME VERTICAL PLANE. ANGLE LENGTHS MAY BE MODIFIED ±1 INCH TO ACCOUNT FOR CURVATURE OF THE TANK END.

**4 STRUT STAND OFF**  
C14 SCALE: NTS



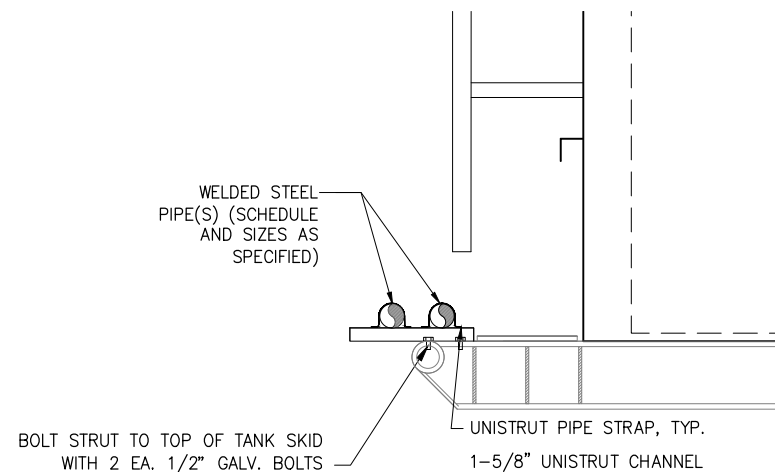
NOTE:  
FIELD ADJUST FILL LIMITER TO PROVIDE SHUT OFF AT 95% CAPACITY.

**5 SPILL CONTAINMENT AND FILL LIMITER**  
C14 SCALE: NTS (USED @ OLD WATER TREATMENT PLANT TANK ONLY)

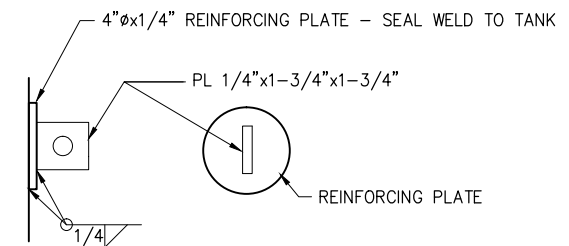


NOTE:  
WATER DRAW ASSEMBLY WILL BE OWNER PROVIDED WITH THE EXCEPTION OF THE MALE CAMLOCK FITTING AND CAP, WHICH WILL BE CONTRACTOR PROVIDED.

**6 TYP WATER DRAW**  
C14 SCALE: NTS



**7 PIPE SUPPORT FROM TANK SKID**  
C14 SCALE: NTS



NOTE TO TANK MANUFACTURER:  
THE ENDS OF LADDER STAND OFFS SHALL BE ON THE SAME VERTICAL PLANE. PLATE LENGTHS MAY BE MODIFIED ±1 INCH TO ACCOUNT FOR CURVATURE OF THE TANK END.

**8 LADDER STAND OFF**  
C14 SCALE: NTS

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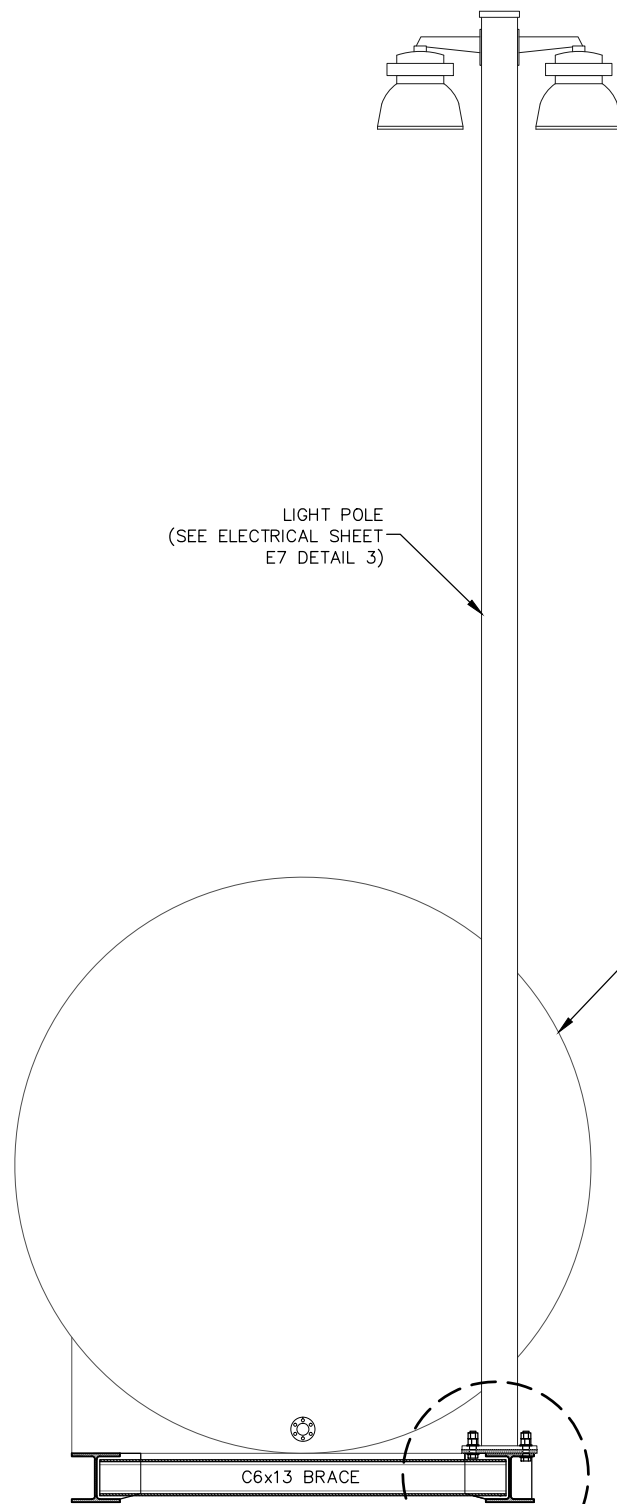


SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
MISCELLANEOUS TANK DETAILS

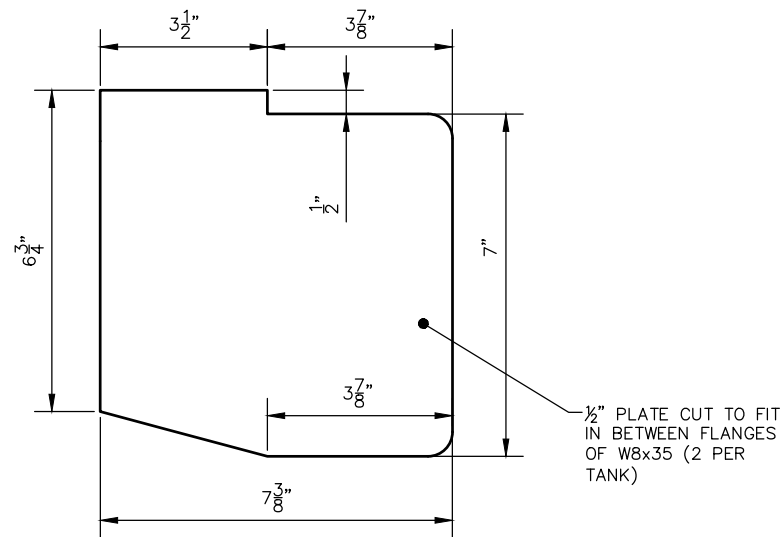
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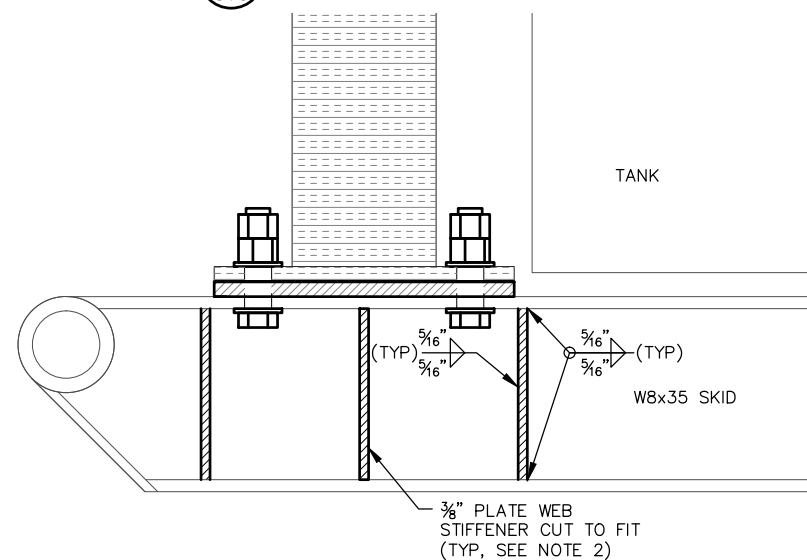
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**1 TANK MOUNT LIGHT POLE**  
C15



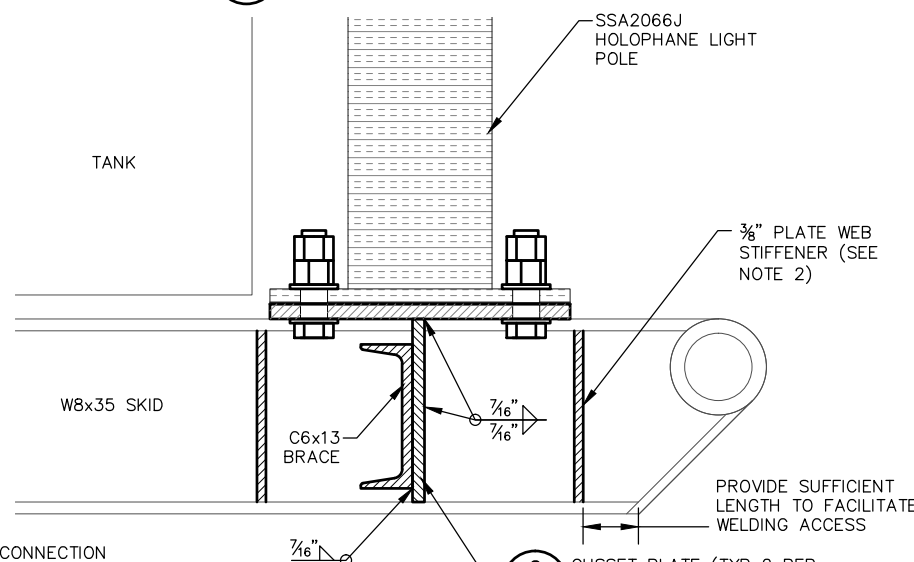
**2 GUSSET PLATE**  
C15



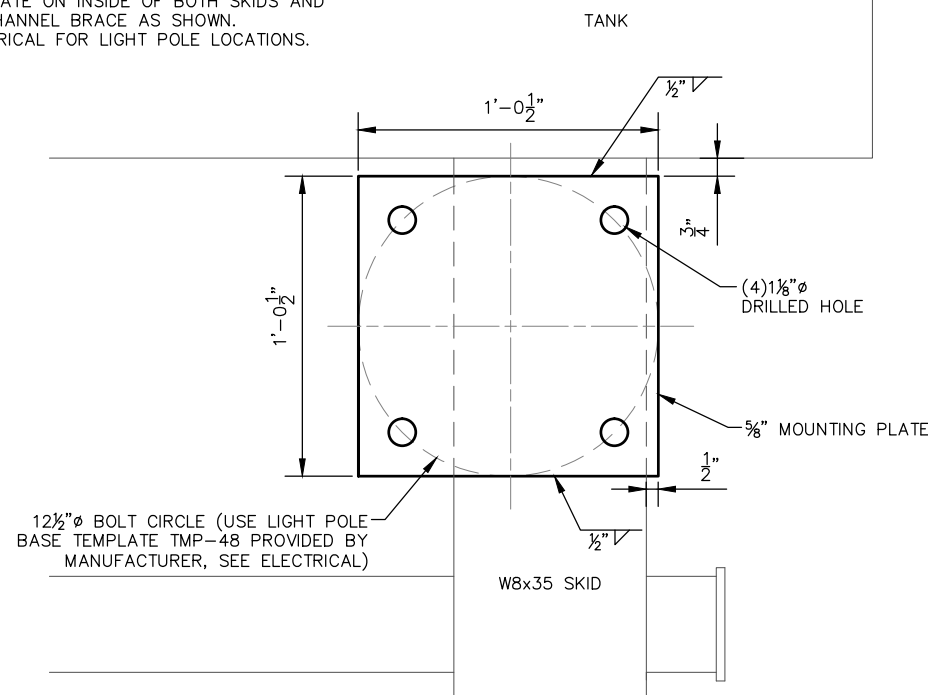
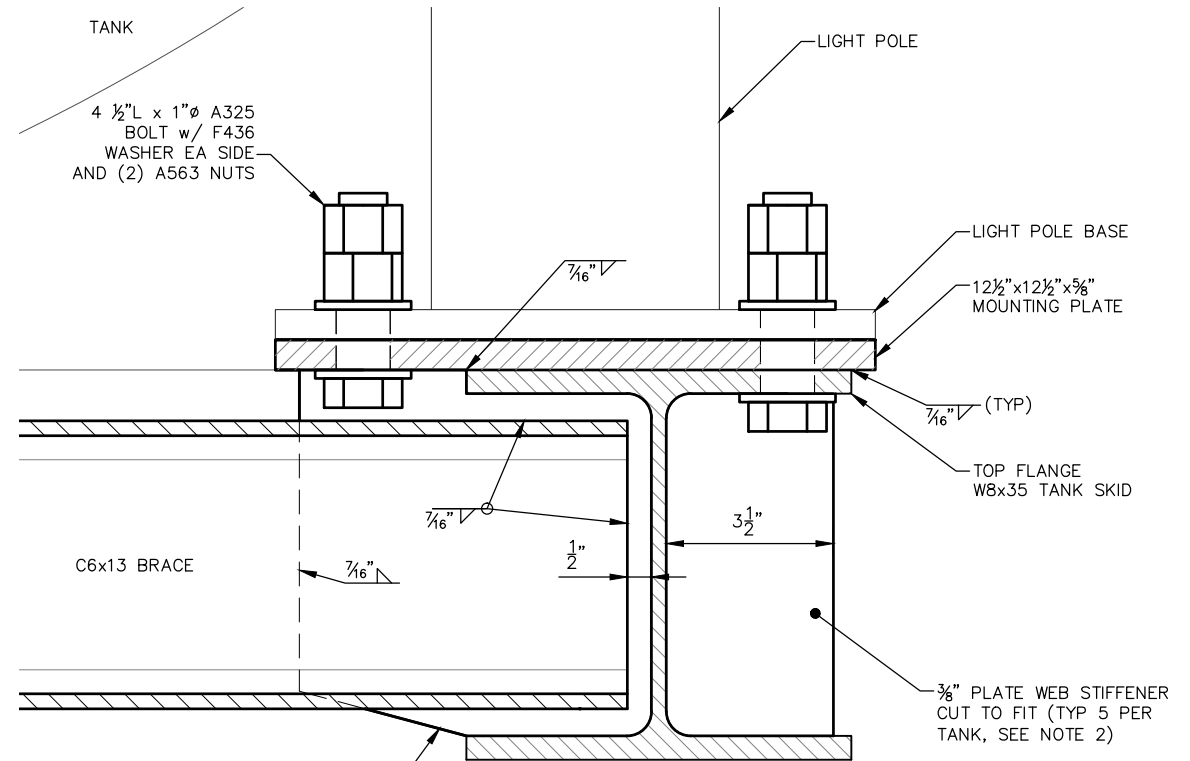
**5 CHANNEL BRACE CONNECTION**  
C15

- NOTES TO TANK MANUFACTURER:**
- ALL WELDING TO TANK SKID SHALL BE PERFORMED BY TANK FABRICATOR. FIELD WELDING TO TANK OR TANK SKID IS PROHIBITED.
  - INSTALL WEB STIFFENERS BENEATH LIGHT POLE BASE PLATE AS SHOWN (SEE DETAIL 3 & 4). INSTALL GUSSET PLATE ON INSIDE OF BOTH SKIDS AND ATTACH CHANNEL BRACE AS SHOWN.
  - SEE ELECTRICAL FOR LIGHT POLE LOCATIONS.

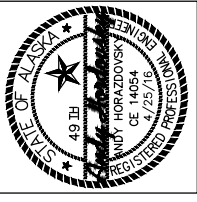
**3 OUTSIDE SKID VIEW**  
C15



**4 INSIDE SKID VIEW**  
C15



**6 BASE PLATE TOP VIEW**  
C15



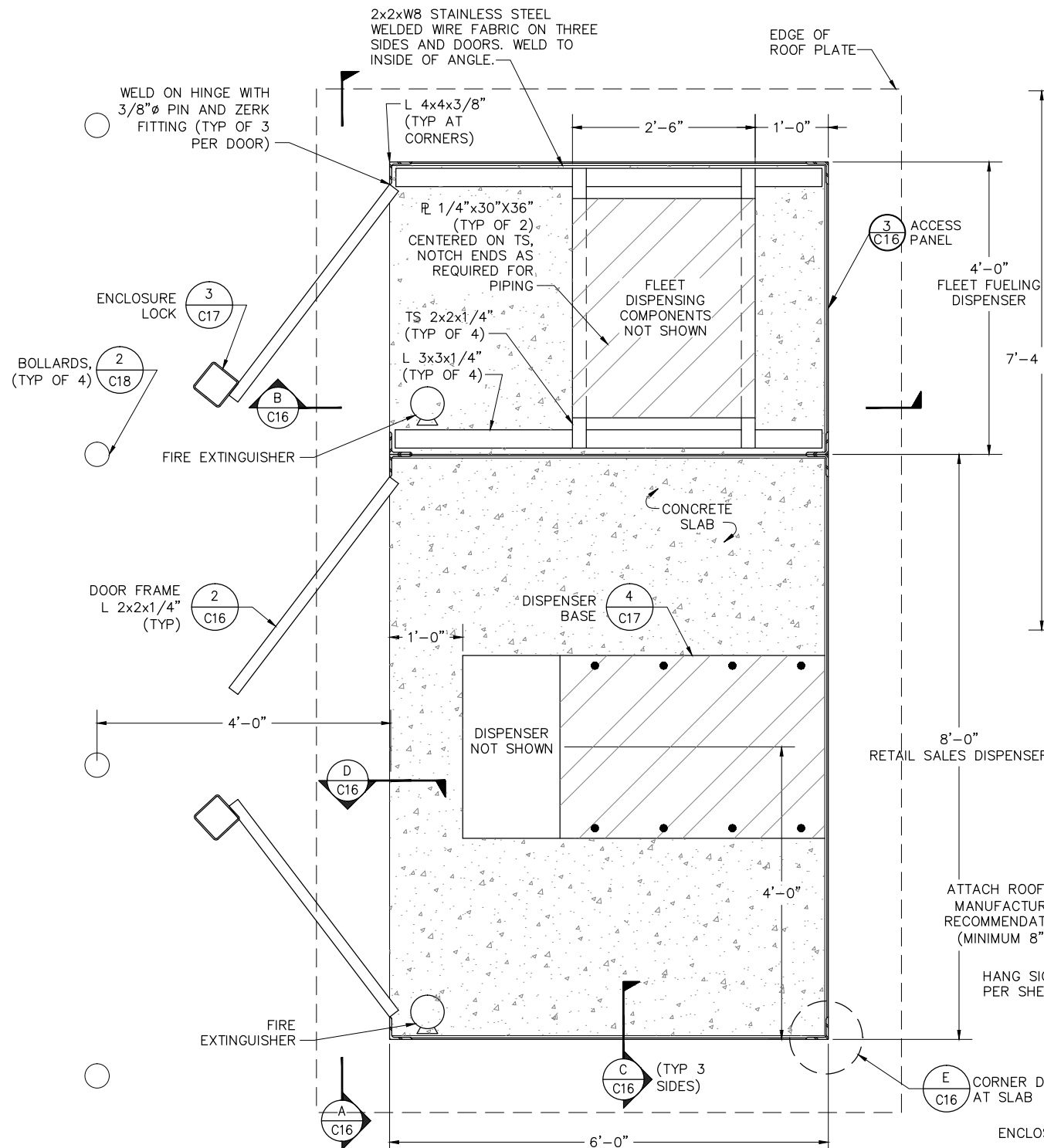
SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
TANK MOUNT LIGHT POLE DETAILS

NO.	REVISION	BY	DATE
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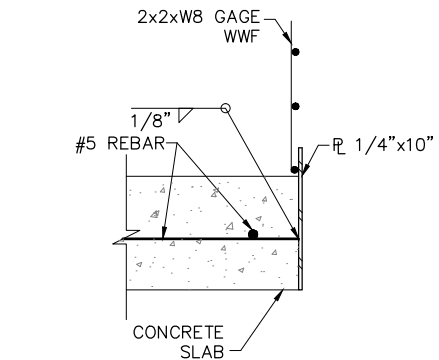
Plot Date	4/26/16
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Approved	AH



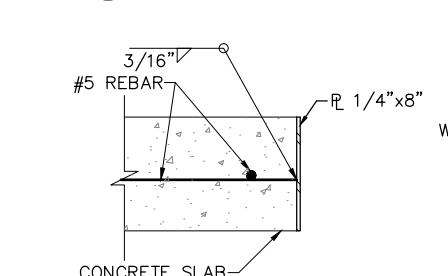
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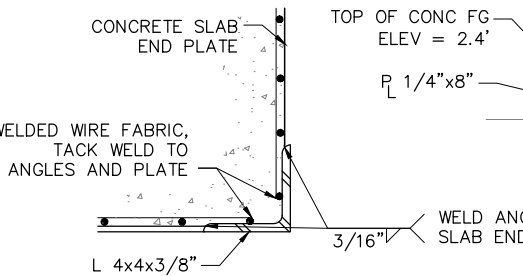
**1 DISPENSER ENCLOSURE PLAN**  
C16 NOT TO SCALE



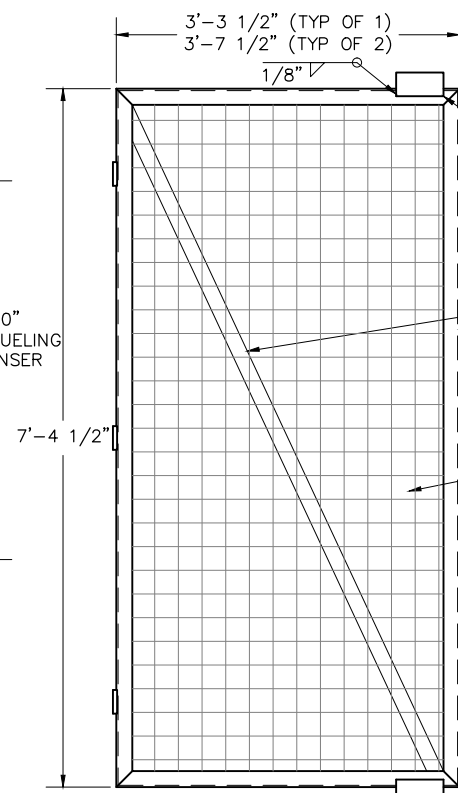
**C CONCRETE SLAB END**  
C16 NOT TO SCALE



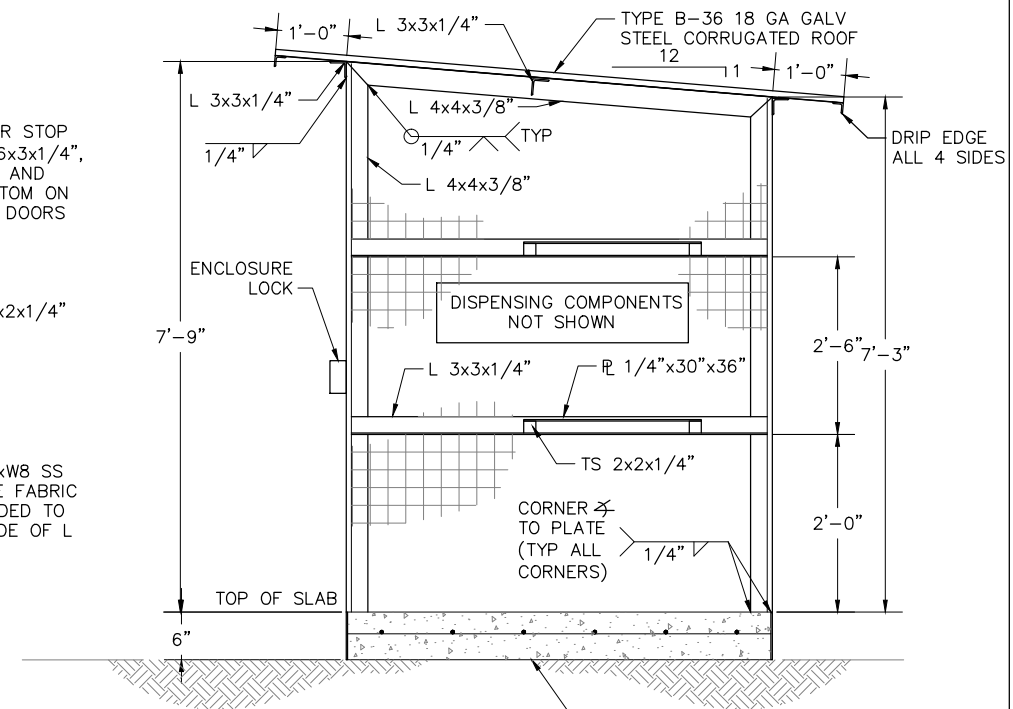
**D CONCRETE SLAB END**  
C16 NOT TO SCALE



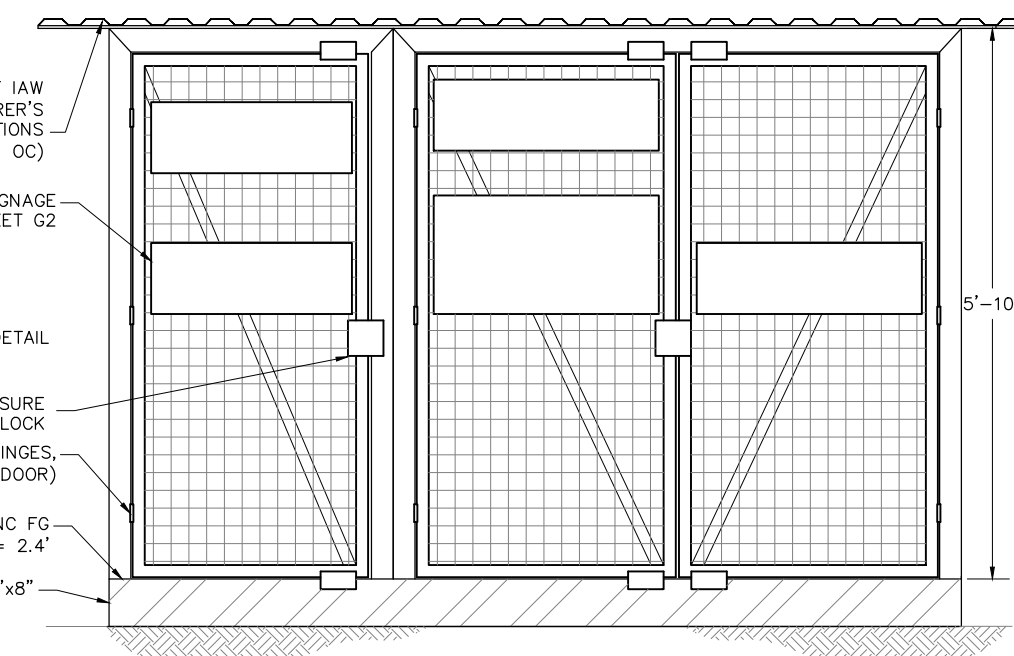
**E CORNER DETAIL AT SLAB**  
C16 NOT TO SCALE



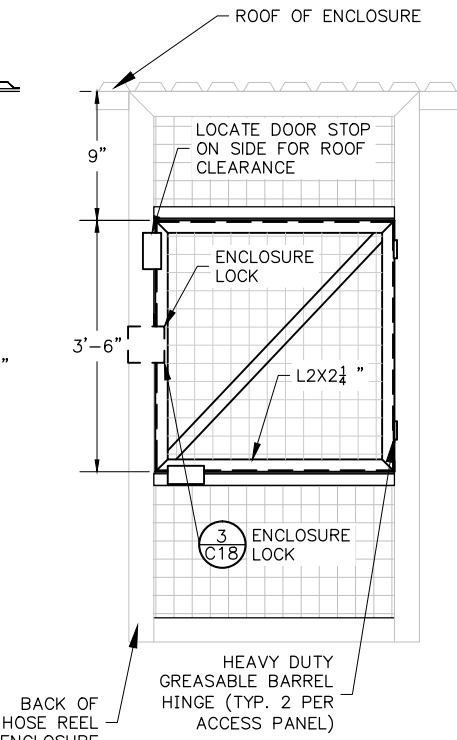
**2 DOOR FRAME**  
C16 SCALE: NTS



**B DISPENSER ENCLOSURE SECTION**  
C16 SCALE: NTS

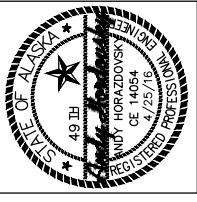


**A DISPENSER ENCLOSURE SECTION**  
C16 NOT TO SCALE



**3 ACCESS PANEL (TYP, 2)**  
C16 NOT TO SCALE

**NOTE:**  
REAR PANEL PROVIDES ACCESS TO FUEL FILTERS

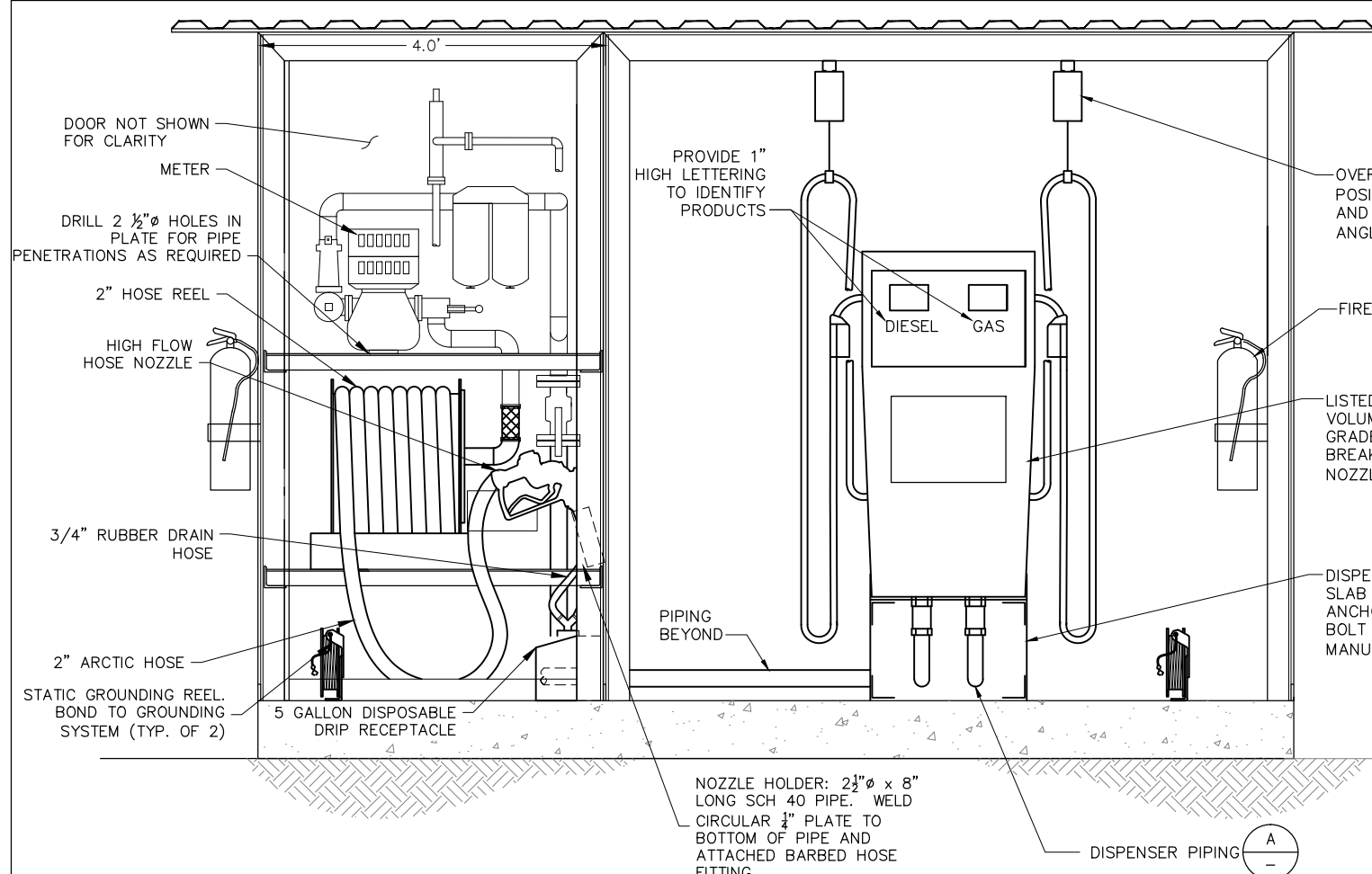


SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
DISPENSER ENCLOSURE DETAILS

NO.	REVISION	DATE	BY
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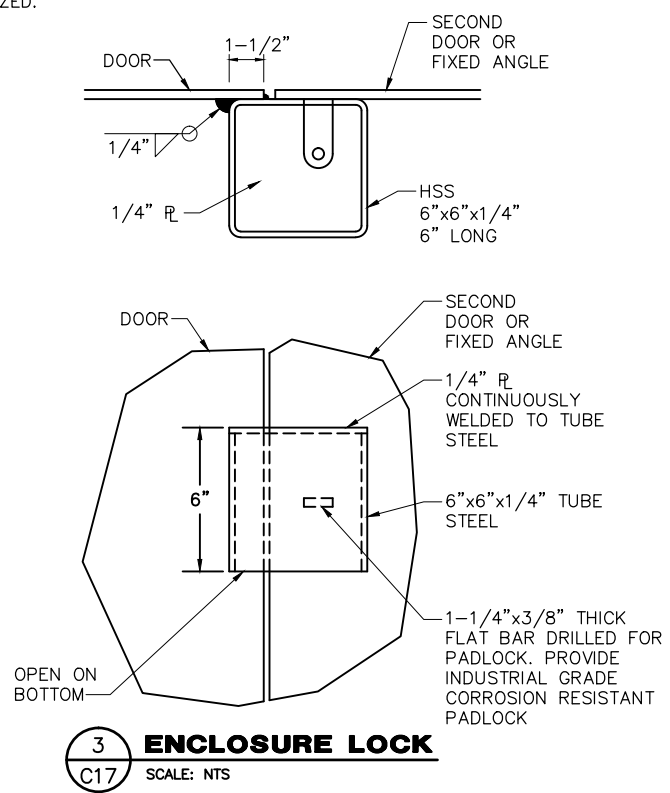
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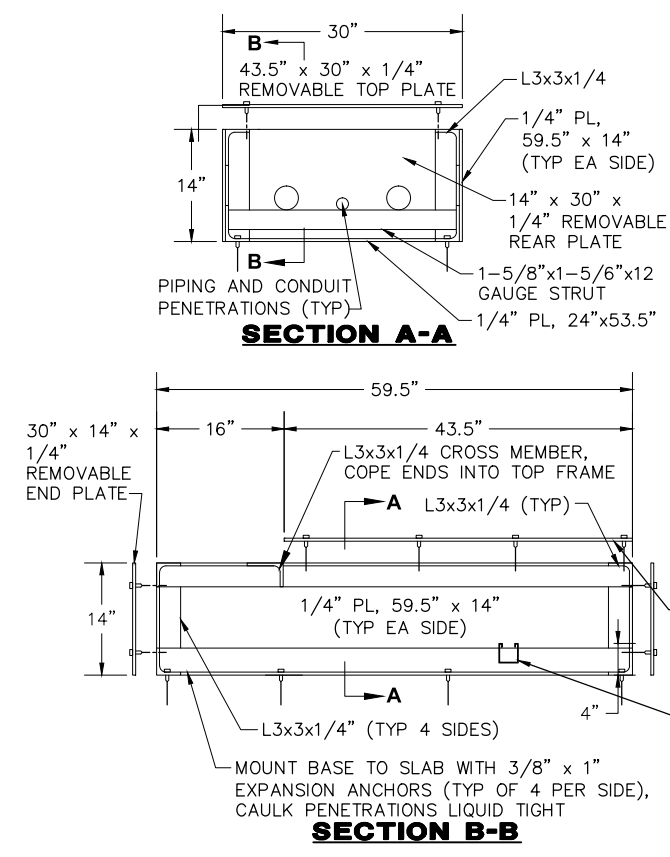


- NOTES:**
- ALL STRUCTURAL STEEL FOR DISPENSER ENCLOSURE TO BE HOT DIPPED GALVANIZED UNLESS OTHERWISE NOTED. WELDED WIRE FABRIC TO BE STAINLESS STEEL.
  - DISPENSER BASE TO BE HOT DIPPED GALVANIZED.

**1 DUAL PRODUCT DISPENSER INSTALLATION DETAILS**  
SCALE: C17

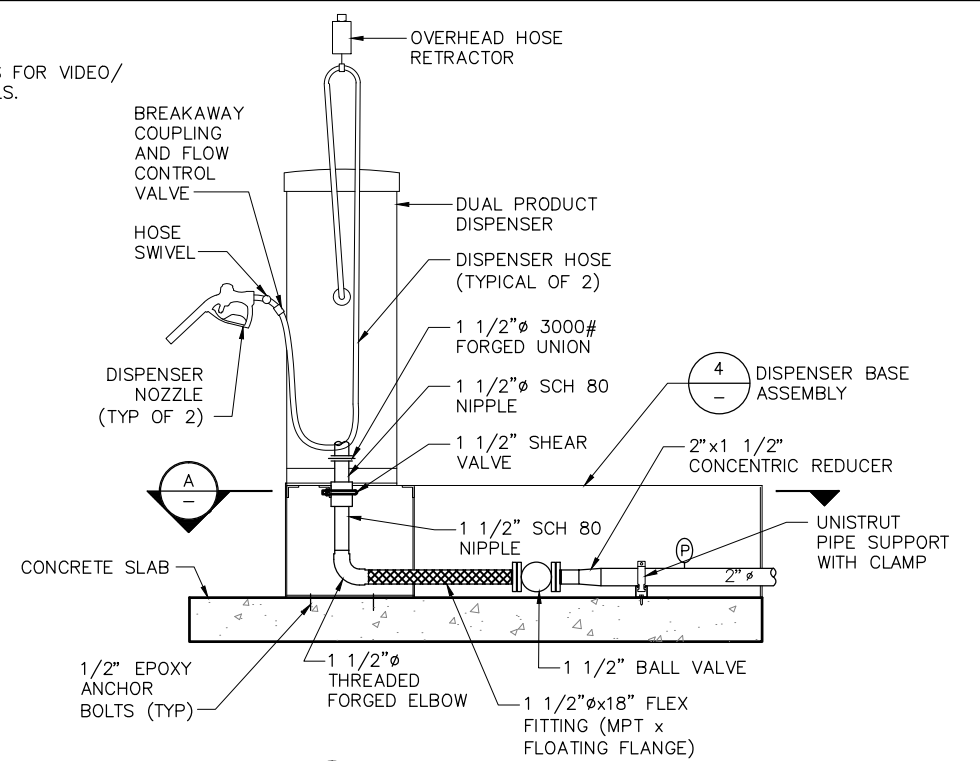


**3 ENCLOSURE LOCK**  
SCALE: NTS

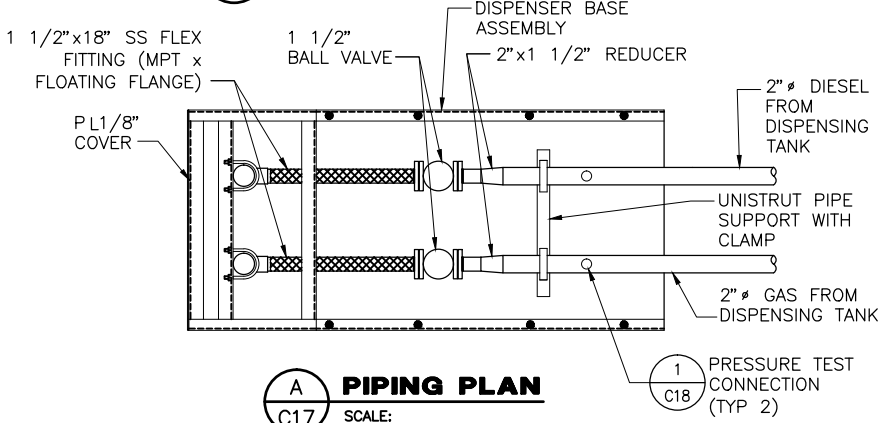


**4 DISPENSER BASE FABRICATION**  
SCALE: C17

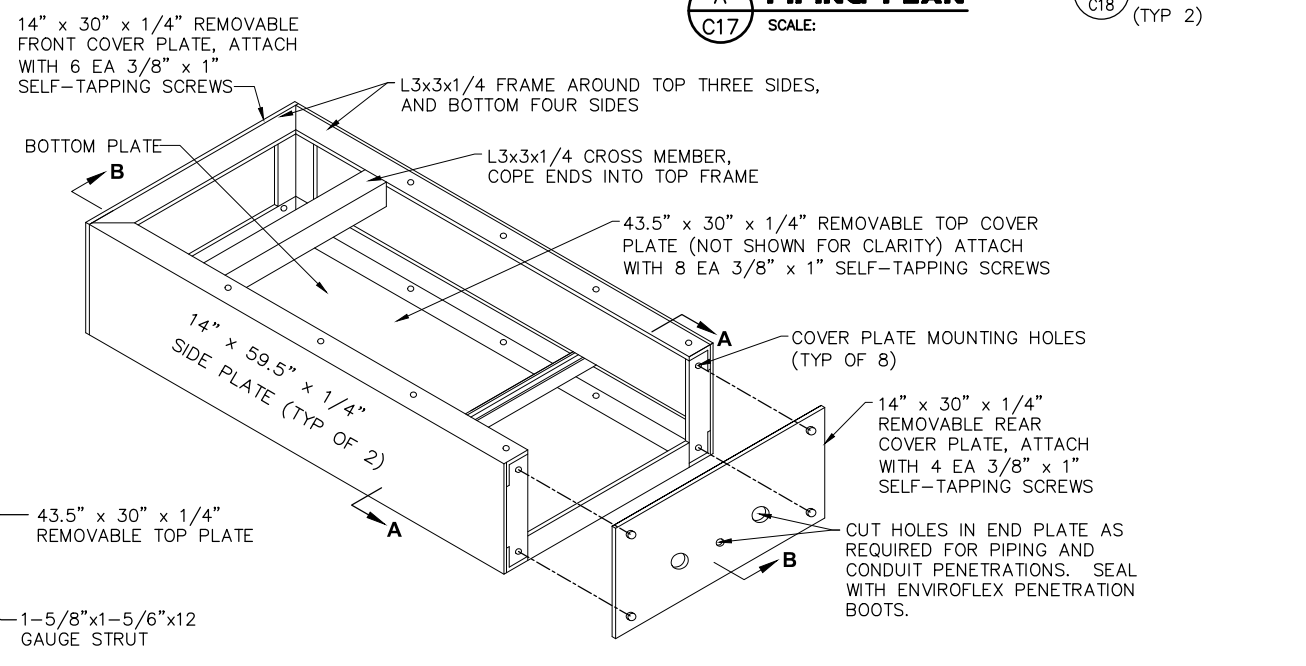
- NOTES:**
- REFERENCE ELECTRICAL SHEETS FOR VIDEO/ INTERCOM AND LIGHTING DETAILS.



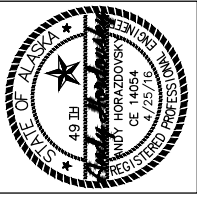
**2 SIDE ELEVATION**  
SCALE: C17



**A PIPING PLAN**  
SCALE: C17



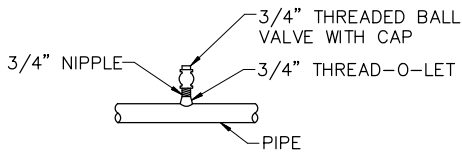
**ISOMETRIC VIEW**



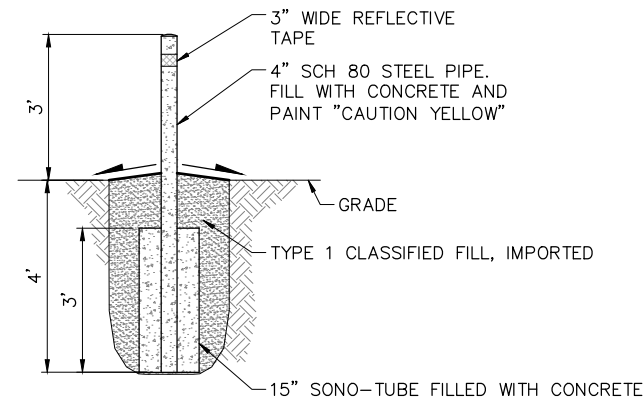
SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
DISPENSER DETAILS

NO.	REVISION	DATE	BY	DATE
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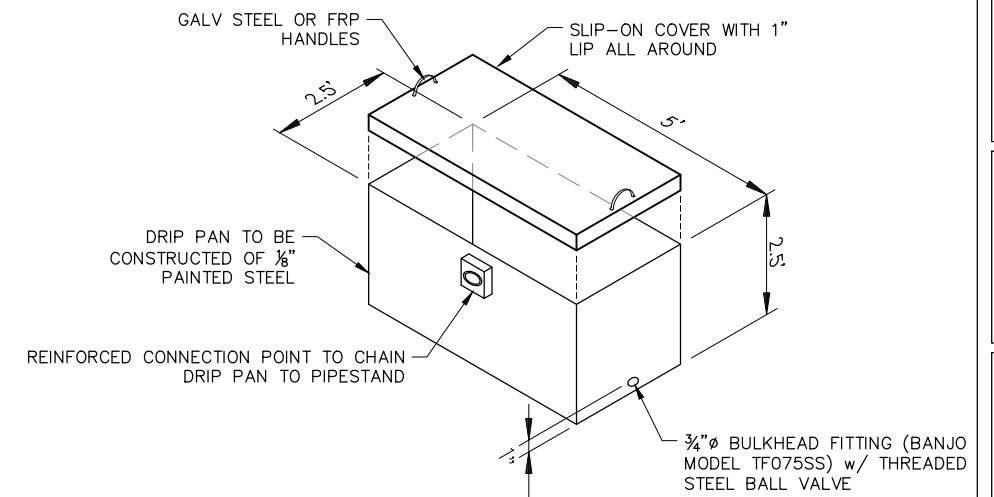
Plot Date	4/26/16	Designed	NCP	Drawn	NCP	Approved	AH
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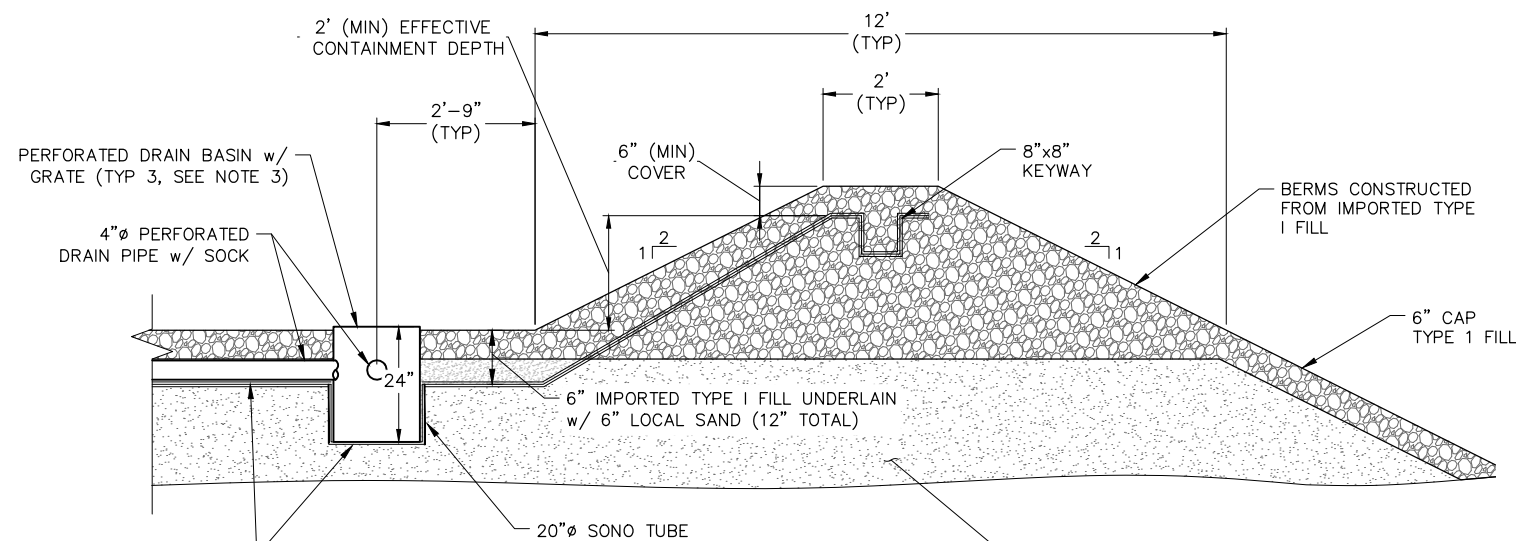
**1 PRESSURE TEST CONNECTION**  
C18 SCALE: NTS



**2 DETAIL - BOLLARD**  
C18 SCALE: NTS



**3 DRIP PAN**  
C18 SCALE: NTS

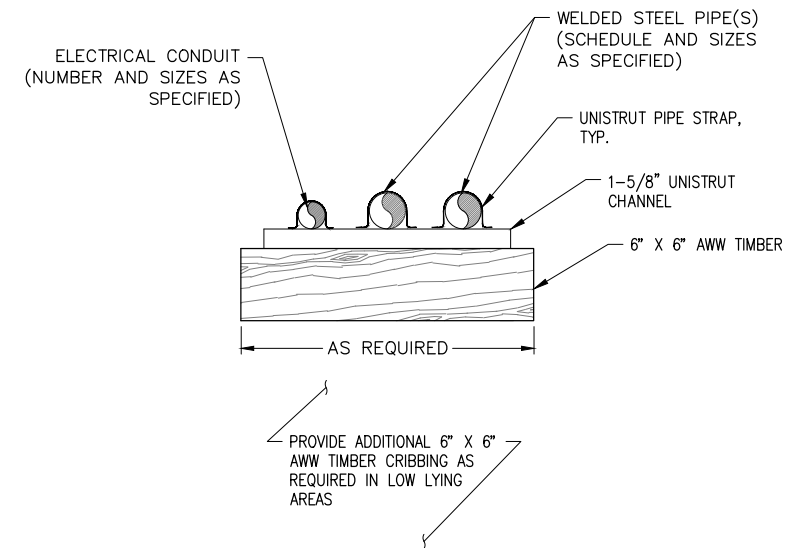


- LAYERED LINER SYSTEM:**
1. NON-WOVEN GEOTEXTILE
  2. PRIMARY MEMBRANE LINER
  3. NON-WOVEN GEOTEXTILE

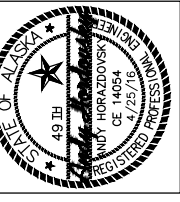
**NOTE:**

1. INSTALL DRAINAGE PIPE DIRECTLY ON TOP OF GEOTEXTILE ABOVE LINER.
2. HEAT WELD 19"Ø x 12" DEEP LINER SUMP TO LINER FOLLOWING MANUFACTURER'S INSTRUCTIONS. SET WITHIN 20"Ø SONO TUBE AS SHOWN.
3. DRAIN BASIN SHALL BE PERFORATED, 18"Ø x 24" DEEP AND SHALL INCLUDE TOP GRATE (ADS NYLOPLAST OAE).
4. PROVIDE 4"Ø COILED PERFORATED DRAINAGE PIPE WITH FILTER SOCK, SNAP RINGS AND FITTINGS. ADS HIGHWAY GRADE PERFORATED PIPE WITH SOCK OR APPROVED EQUAL.

**4 TYPICAL EARTHEN DIKE CONTAINMENT SECTION**  
C18 SCALE: NTS



**5 TIMBER PIPE SUPPORT**  
C18 SCALE: NTS

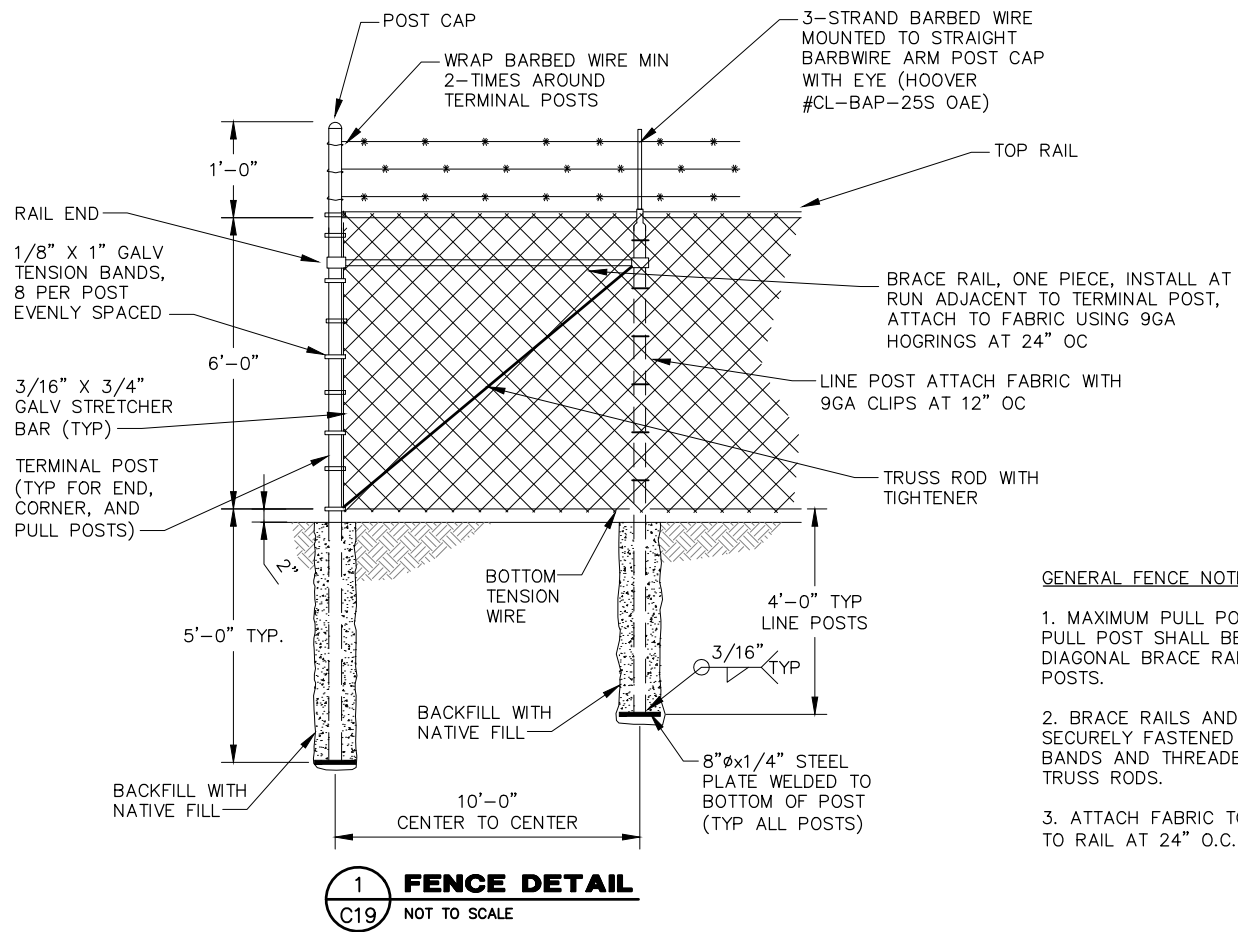


SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
MISCELLANEOUS DETAILS

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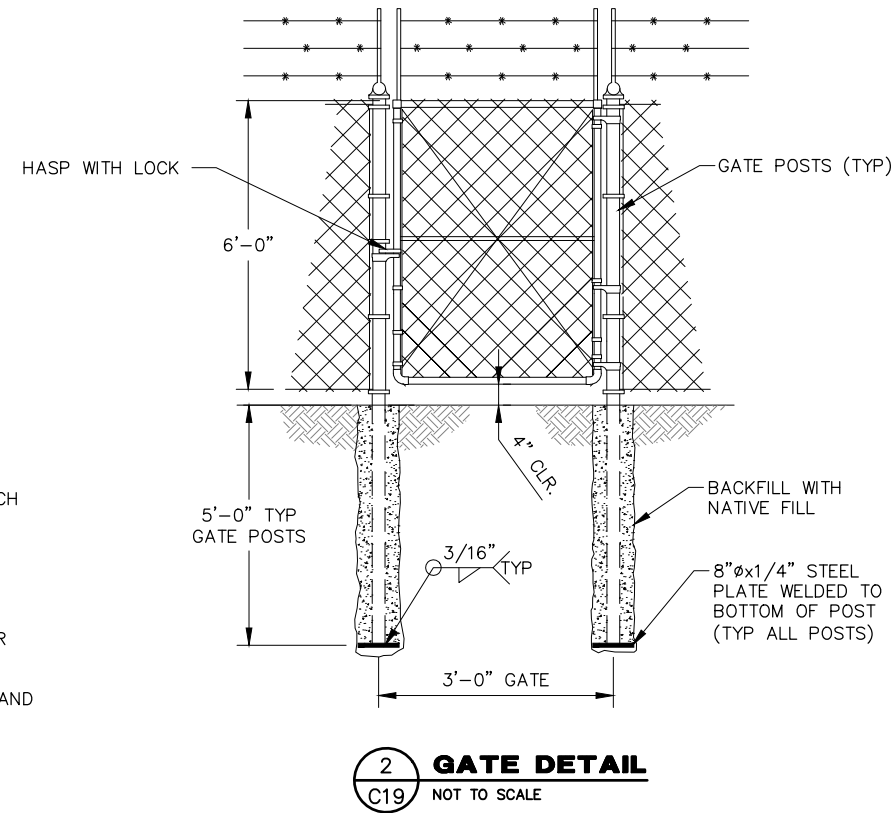
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**1 FENCE DETAIL**  
C19 NOT TO SCALE

GENERAL FENCE NOTES:

1. MAXIMUM PULL POST SPACING 75 FEET. EACH PULL POST SHALL BE SUPPORTED WITH A DIAGONAL BRACE RAIL TO THE ADJACENT LINE POSTS.
2. BRACE RAILS AND TRUSS RODS SHALL BE SECURELY FASTENED TO POSTS WITH BRACE BANDS AND THREADED TAKE-UP ADAPTER FOR TRUSS RODS.
3. ATTACH FABRIC TO BOTTOM TENSION WIRE AND TO RAIL AT 24" O.C. MAX



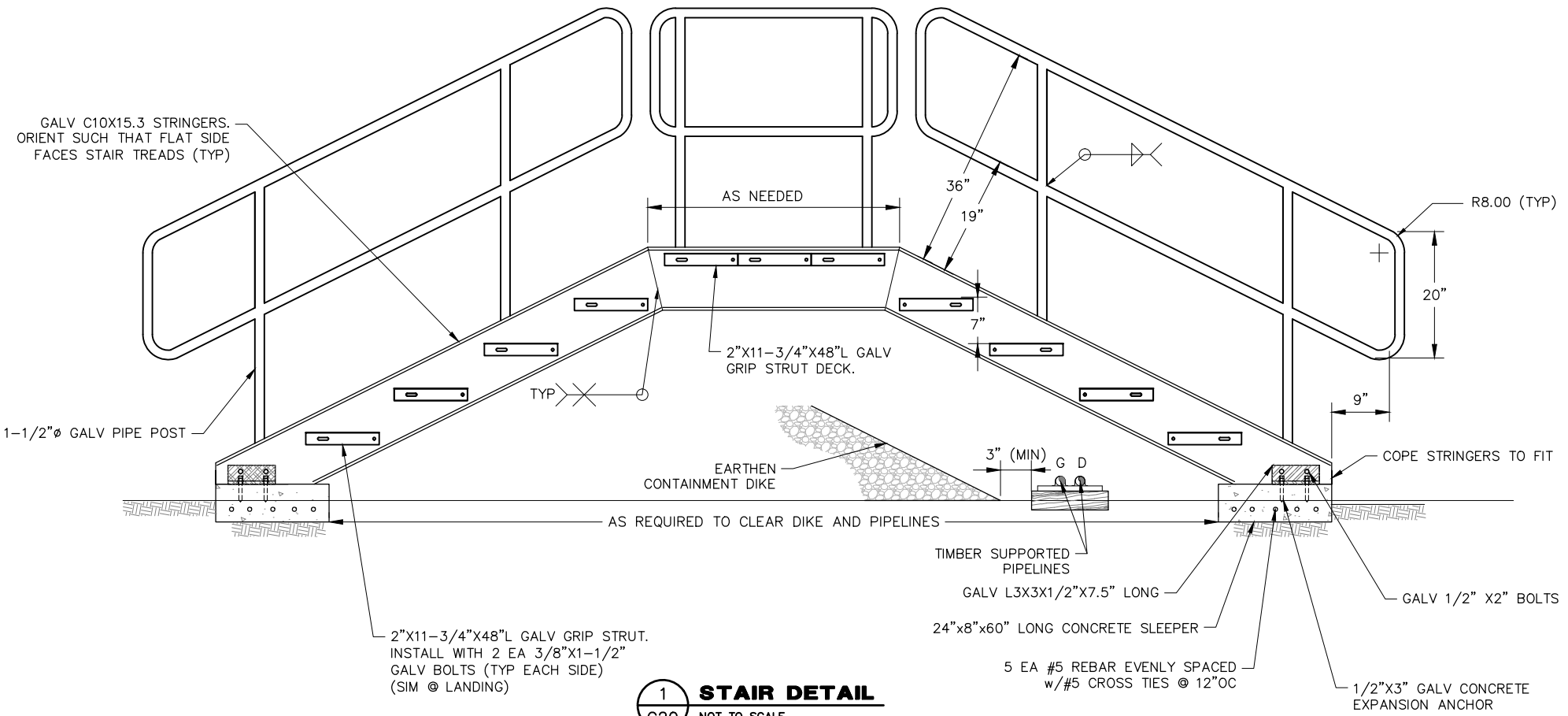
**2 GATE DETAIL**  
C19 NOT TO SCALE



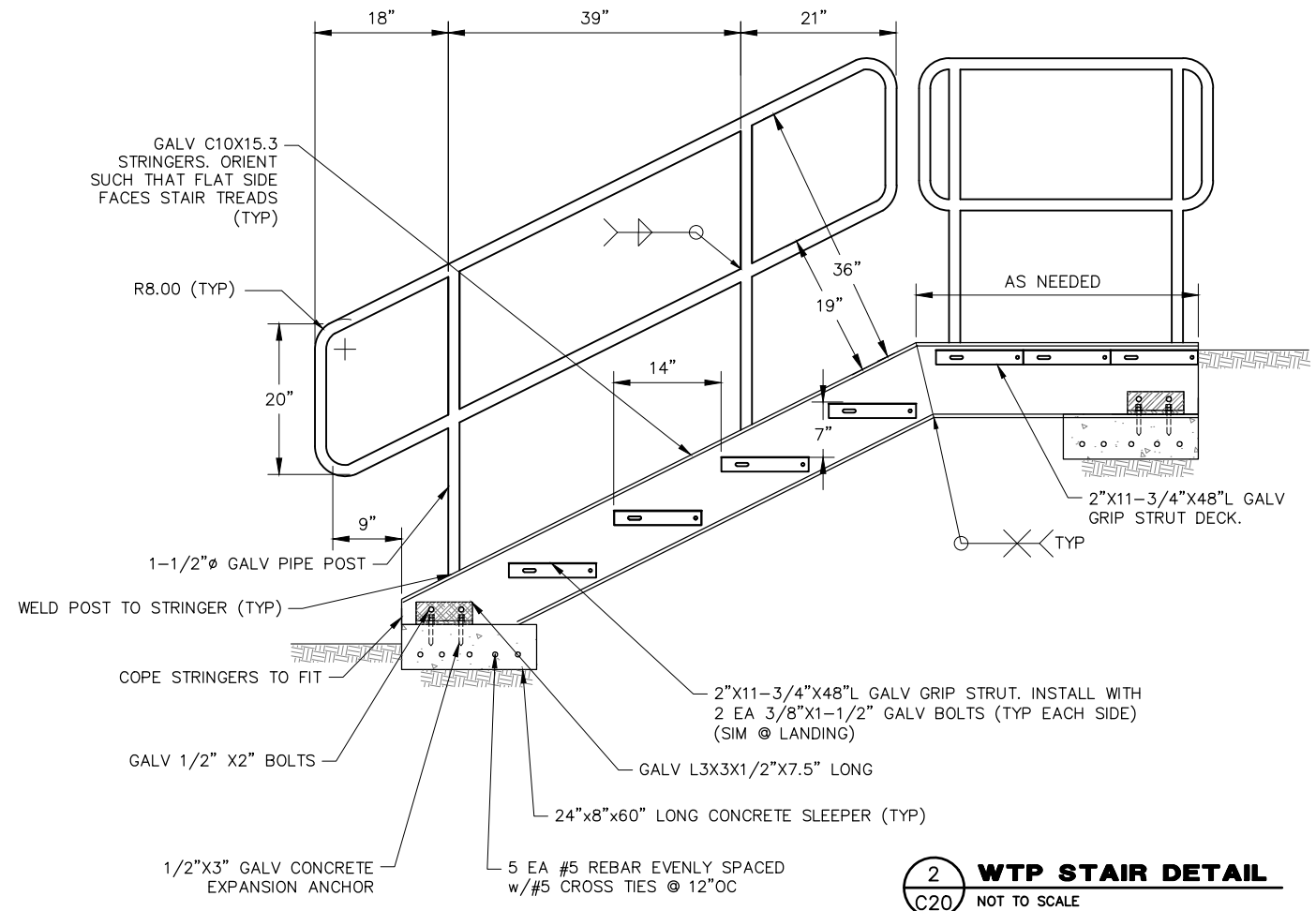
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SHISHMAREF BFU PROJECT  
FENCE DETAILS

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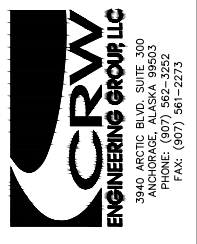
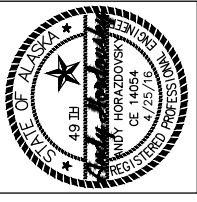


**1 STAIR DETAIL**  
C20 NOT TO SCALE



**2 WTP STAIR DETAIL**  
C20 NOT TO SCALE

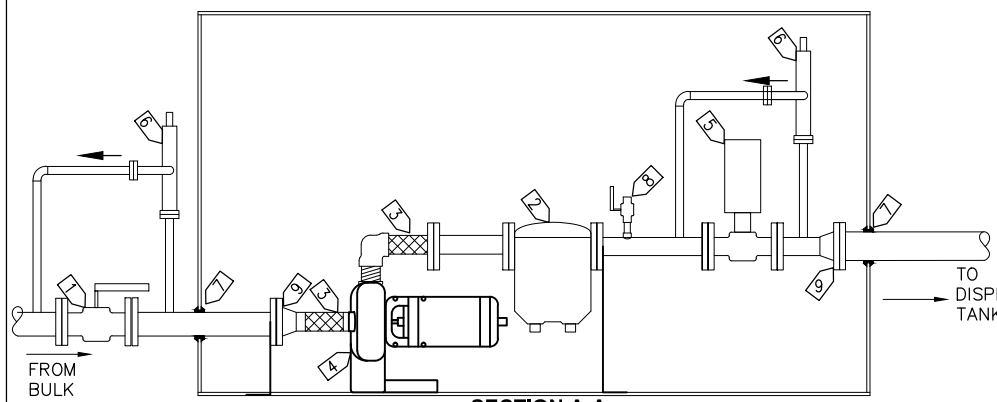
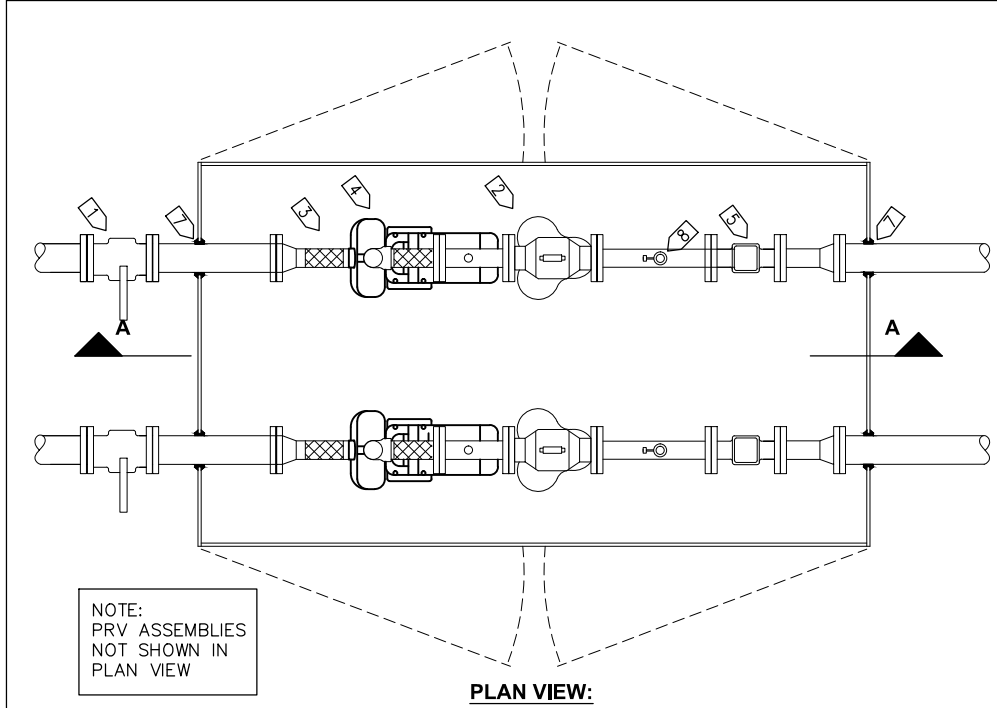
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SHISHMAREF BFU PROJECT  
STAIR DETAILS

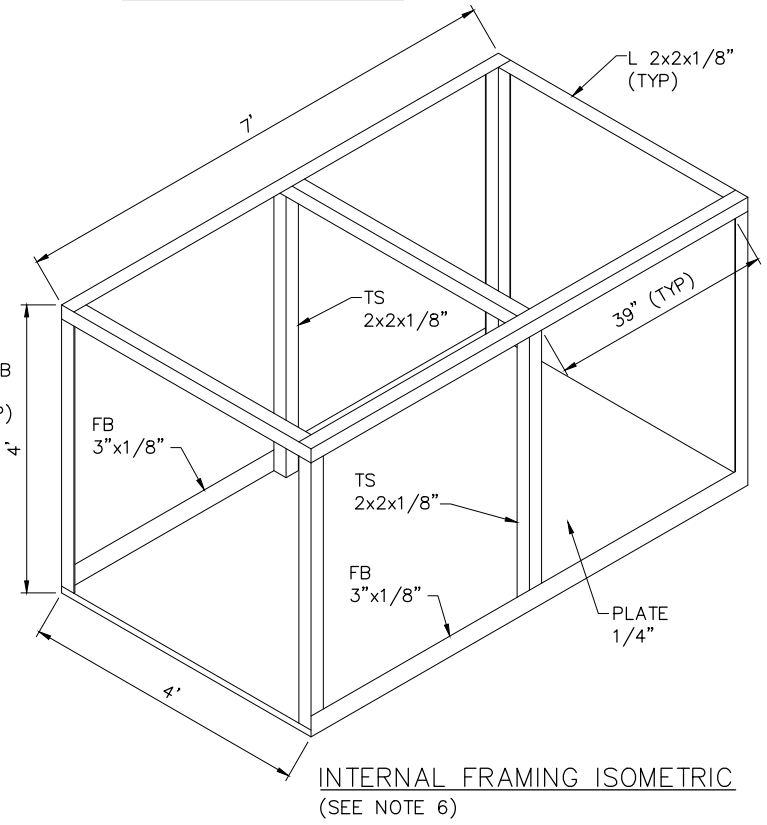
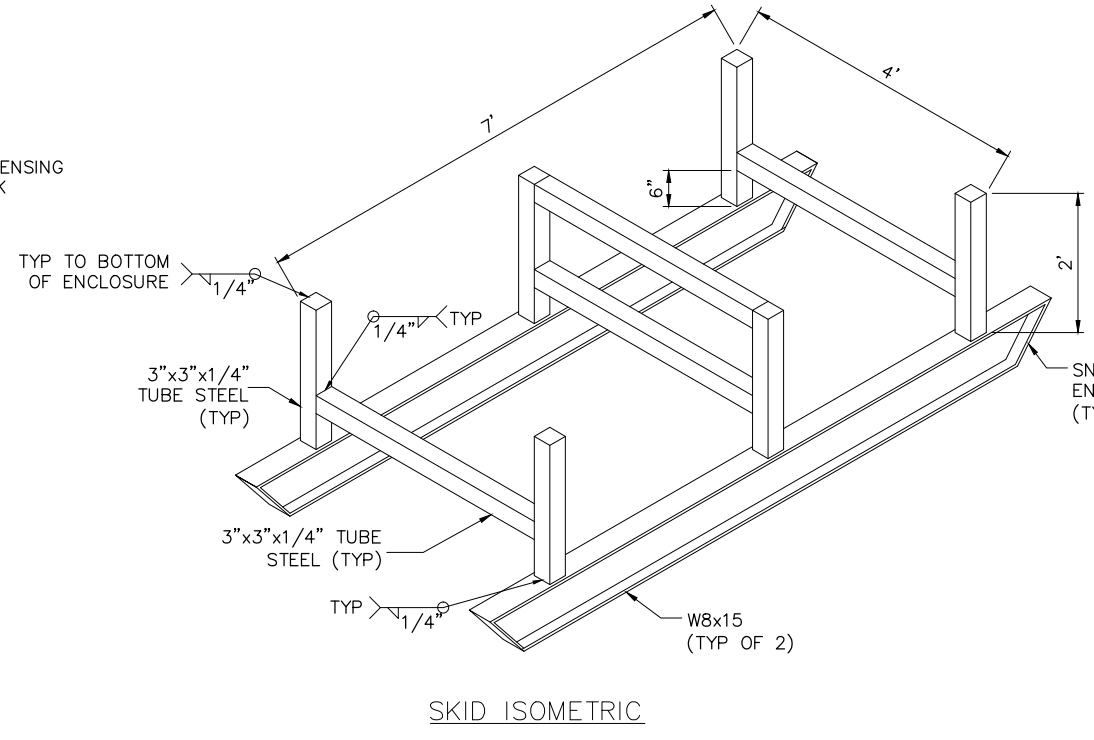
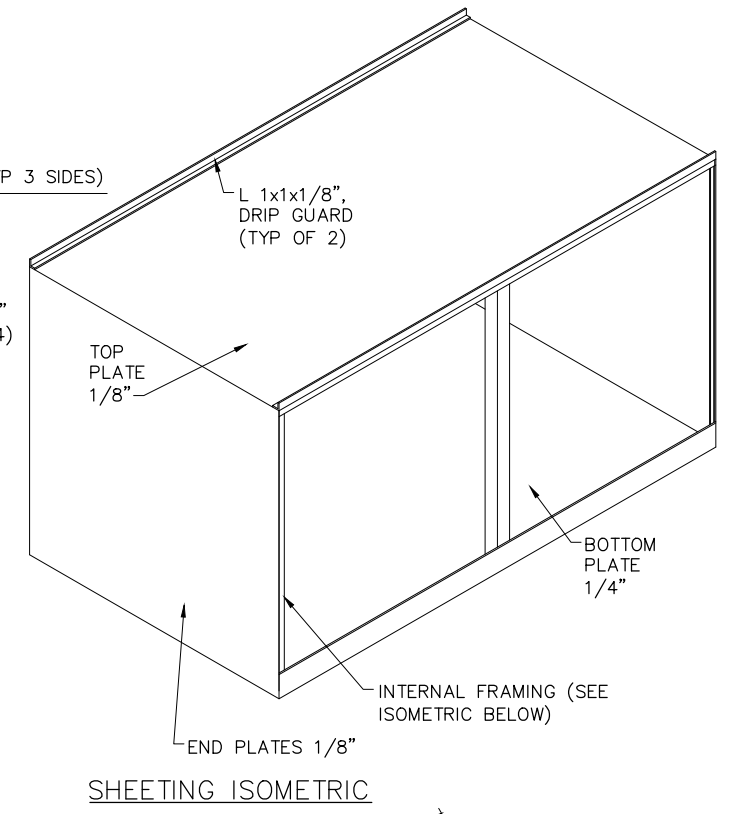
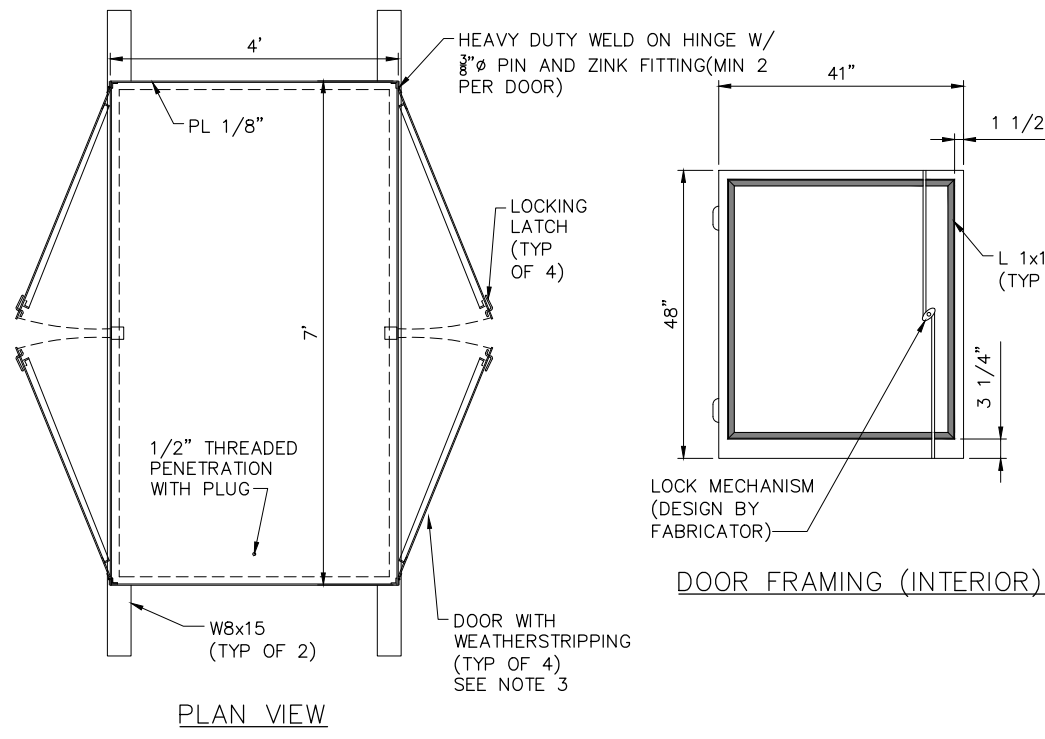
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- 1 2" BALL VALVE
- 2 FILTER
- 3 FLEX FITTING
- 4 TRANSFER PUMP
- 5 2" MOTORIZED BALL VALVE
- 6 PRESSURE RELIEF VALVE
- 7 ENVIROFLEX PENETRATION BOOT (TYP)
- 8 PRESSURE TEST CONNECTION (SEE DETAIL 1, SHEET C18)
- 9 2" X 1 1/2" REDUCER

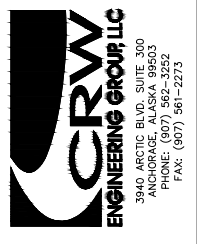
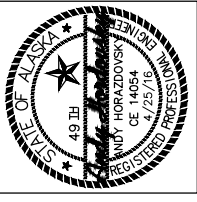
**1**  
**C21** **TIMBER PIPE SUPPORT**  
SCALE: NTS



**1**  
**C21** **PUMP CABINET FABRICATION DETAILS**  
SCALE: NTS

**PUMP CABINET NOTES:**

1. THE DESIGN, FABRICATION, AND ERECTION OF ALL STRUCTURAL STEEL COMPONENTS SHALL COMPLY WITH THE CURRENT CODE OF STANDARD PRACTICE OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION. ALL WELDING TO BE DONE IAW THE CURRENT CODE OF AMERICAN WELDING SOCIETY.
2. MAKE ALL CONNECTIONS WITH CONTINUOUS FILLET OR BUTT WELDS. ROUND ALL CORNERS & SHARP EDGES AFTER FABRICATION.
3. ALL SEAMS SHALL BE CONTINUOUSLY WELDED, AND WATER-TIGHT, UNLESS OTHERWISE NOTED. ADHESIVE BACK WEATHERSTRIPPING (PEMCO PK33 OAE) SHALL BE INSTALLED AROUND EACH DOOR. SET DOOR HINGES TO ALLOW FOR THICKNESS OF COATING AND WEATHERSTRIPPING.
4. PAINT INTERIOR AND EXTERIOR OF CABINET TO MATCH TANKS.
5. CABINET FABRICATOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEER PRIOR TO FABRICATION FOR REVIEW AND APPROVAL.
6. CABINET MAY BE CONSTRUCTED WITH INTERNAL FRAMING AS SHOWN OR A COMBINATION OF FRAMING AND BENT SECTIONS. CABINET SHALL BE WEATHER TIGHT, HAVE A LIQUID TIGHT DRIP PAN AND HAVE ADEQUATE STRENGTH FOR A 80 PSF ROOF LOAD.



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
PUMP CABINET DETAILS

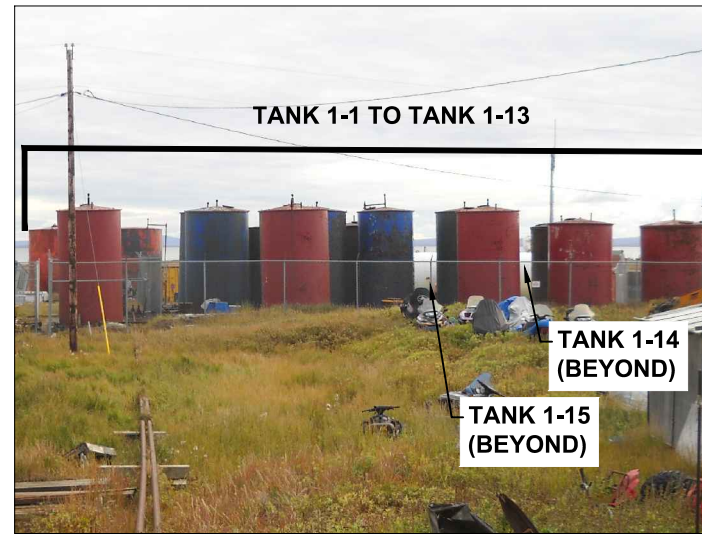
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TANK DECOMMISSIONING SCHEDULE					
TANK FARM # 1 - NATIVE STORE					
TANK NUMBER	CAPACITY (GALLONS)	TYPE	PRODUCT	HEIGHT (FT)	OPERATOR
1-1	7,600	VERTICAL BIA	GASOLINE	16	NATIVE STORE
1-2	9,400	VERTICAL BIA	GASOLINE	16	NATIVE STORE
1-3	8,400	VERTICAL BIA	GASOLINE	16	NATIVE STORE
1-4	8,200	VERTICAL BIA	GASOLINE	14	NATIVE STORE
1-5	9,900	VERTICAL BIA	GASOLINE	14	NATIVE STORE
1-6	9,000	VERTICAL BIA	DIESEL	16	NATIVE STORE
1-7	8,400	VERTICAL BIA	DIESEL	14	NATIVE STORE
1-8	8,200	VERTICAL BIA	DIESEL	16	NATIVE STORE
1-9	7,600	VERTICAL BIA	DIESEL	16	NATIVE STORE
1-10	8,400	VERTICAL BIA	DIESEL	14	NATIVE STORE
1-11	6,600	VERTICAL BIA	DIESEL	14	NATIVE STORE
1-12	9,000	VERTICAL BIA	DIESEL	14	NATIVE STORE
1-13	9,000	VERTICAL BIA	DIESEL	14	NATIVE STORE
1-14	20,000	HORIZONTAL TANK	DIESEL	15	NATIVE STORE
1-15	20,000	HORIZONTAL TANK	DIESEL	16	NATIVE STORE
TANK FARM # 2 - CITY					
2-1	9,000	VERTICAL BIA	DIESEL	14	CITY
2-2	8,200	VERTICAL BIA	DIESEL	14	CITY
2-3	7,400	VERTICAL BIA	DIESEL	14	CITY
2-4	8,000	VERTICAL BIA	DIESEL	14	CITY
2-5	8,000	VERTICAL BIA	DIESEL	14	CITY
2-6	8,000	VERTICAL BIA	DIESEL	14	CITY
2-7	8,200	VERTICAL BIA	DIESEL	14	CITY
TANK FARM # 3 - OLD WTP, NEW WTP/WASHETERIA (ADD ALT A)					
3-1	500	HORIZONTAL DAY TANK	DIESEL	5	WTP/WASHERIA
3-2	500	HORIZONTAL DAY TANK	DIESEL	6	OLD WTP
3-3	500	HORIZONTAL DAY TANK	DIESEL	7	OLD WTP
3-4	500	HORIZONTAL DAY TANK	DIESEL	8	OLD WTP
3-5	500	HORIZONTAL DAY TANK	DIESEL	9	N/A
3-6	500	HORIZONTAL DAY TANK	DIESEL	10	N/A
3-7	500	HORIZONTAL DAY TANK	DIESEL	11	N/A
3-8	500	HORIZONTAL DAY TANK	DIESEL	12	N/A



**NATIVE STORE-TANK FARM #1**



**CITY TANK FARM-TANK FARM #2**

**NOTES:**

1. TANK FARM LOCATIONS ARE SHOWN ON SHEETS C23.
2. THE CONTRACTOR SHALL CONTACT TANK OWNERS AT THE START OF THE PROJECT TO COORDINATE WORK WITH FUEL DELIVERIES FOR 2016 AND 2017 TO MAINTAIN CONTINUOUS FUEL SUPPLY.
3. CONTRACTOR TO DECOMMISSION TANKS TAKEN OUT OF SERVICE AS A RESULT OF THE PROJECT IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.
4. DISPOSAL OF THE DECOMMISSIONED TANKS IS COVERED UNDER ADDITIVE ALTERNATE B.



**WTP DAY TANK (ADD ALT A)**



**OLD WTP TANKS (ADD ALT A)**



**MISC TANKS AT TANK FARM SITE**

**TANK FARM #3**

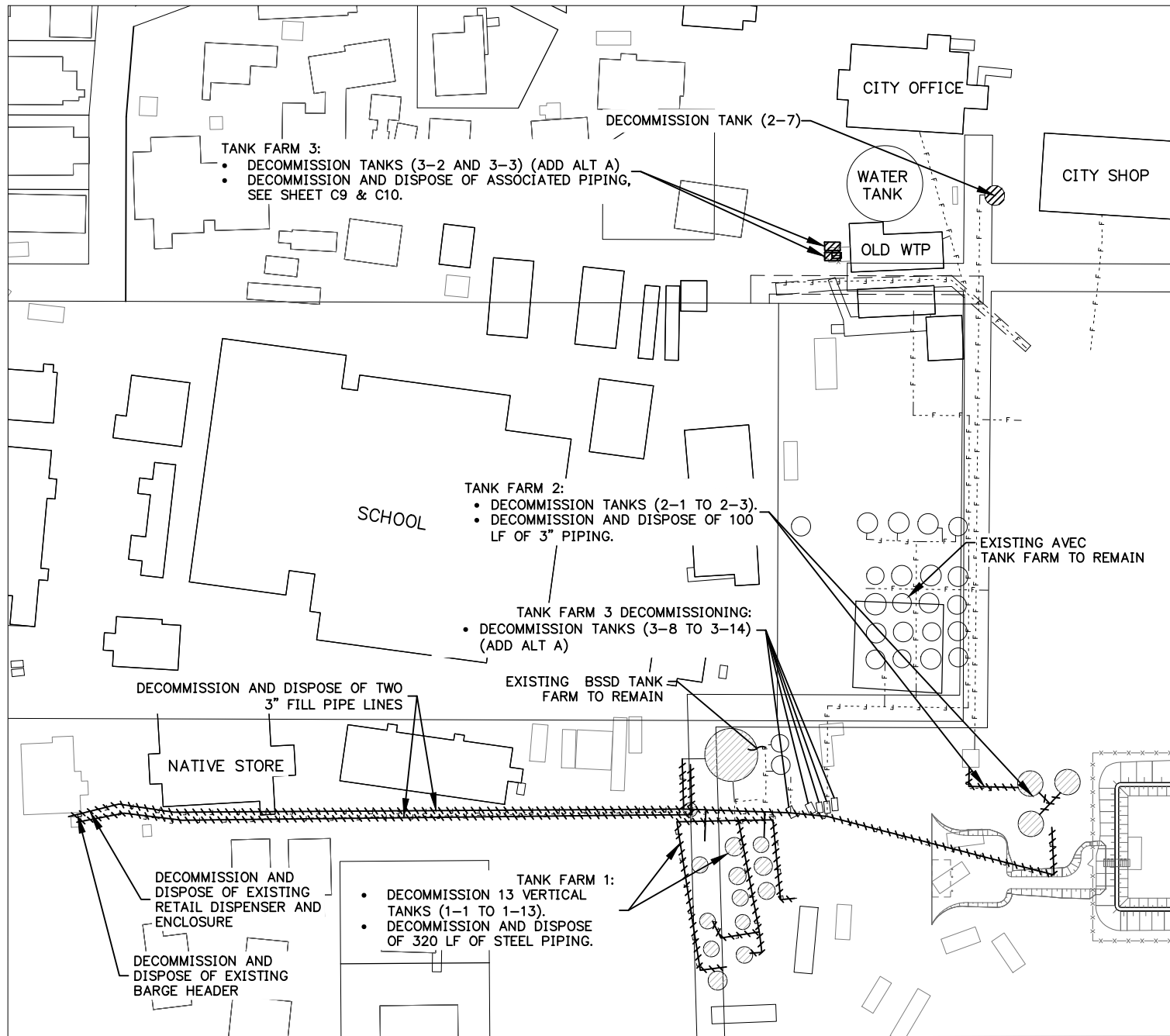


SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
TANK DECOMMISSIONING SCHEDULE

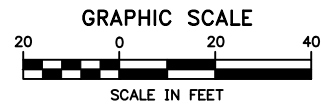
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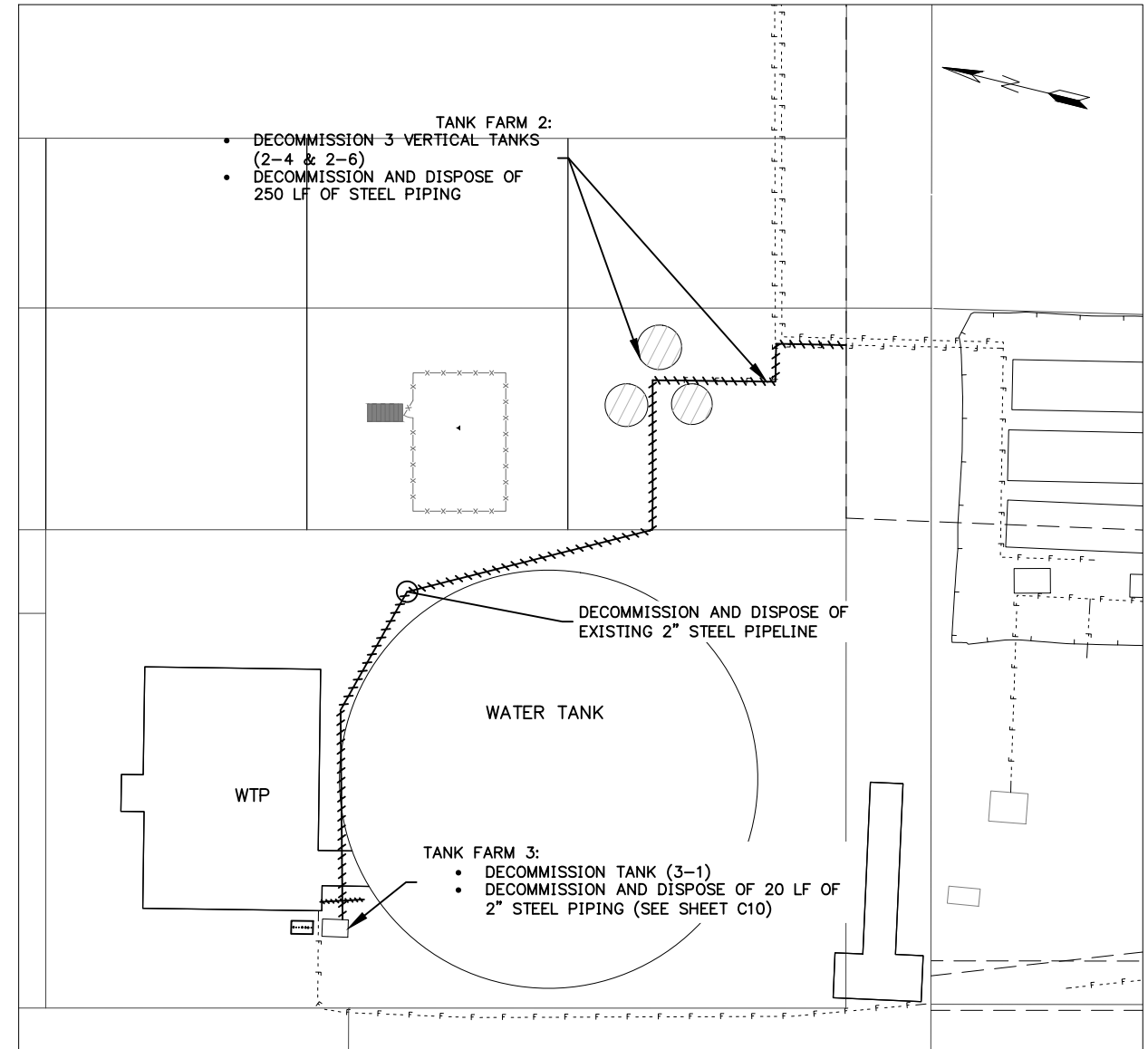


**1 DECOMMISSIONING PLAN**  
SCALE: GRAPHIC

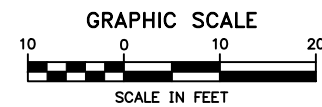


**NOTES**

1. SEE SHEET C22 FOR TANK DECOMMISSIONING DETAILS.
2. APPROXIMATE EXTENT OF FUEL LINES TO BE DECOMMISSIONED SHOWN ON THIS SHEET. CONTRACTOR TO FIELD VERIFY WHICH LINES ARE TO BE DECOMMISSIONED PRIOR TO BEGINNING WORK.
3. SEE SPECIFICATIONS FOR DECOMMISSIONING DETAILS.
4. DISPOSAL OF DECOMMISSIONED TANKS IS COVERED UNDER ADD ALT B.
5. REMOVE ALL FUEL FROM HORIZONTAL TANKS 1-14 & 1-15 AND STORE AS SPILL CONTINGENCY TANKS. RELOCATE AS DIRECTED BY THE ENGINEER.



**2 WTP DECOMMISSIONING PLAN (ADD ALT A)**  
SCALE:



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
PIPING DECOMMISSIONING PLAN

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# LEGEND

	BUS		MOTOR OVERLOAD
	EXPOSED CONDUIT		FIELD MOUNTED INSTRUMENT XX = FUNCTION; YY = TAG NO.
	CONDUIT/CABLE RUN UNDERGROUND OR IN CONCRETE		INSTRUMENT DEVICE LOCATION (SEE TAG)
	HOMERUN TO PANEL "X", CIRCUITS NO. Y AND Z CONDUIT RUNS NOT DEFINED ARE 1/2" C with 3#12.		NORMALLY OPEN CONTACT
	GROUND		NORMALLY CLOSED CONTACT
	CONDUIT RUN - CHANGE IN ELEVATION		PILOT LIGHT R=RED, B=BLUE, A=AMBER, G=GREEN
	GROUND ROD		RELAY COIL
	LIQUID-TIGHT FLEXIBLE CONDUIT		TIME DELAY RELAY CONTACTS NORMALLY CLOSED TIMED OPEN XXX= DESCRIPTION YYY=RELATED COIL & CONTACT # ZZZ=COIL RUNG
	MOTOR, HP AS SHOWN, SINGLE PHASE, "F" = FRACTIONAL		TIME DELAY RELAY CONTACTS NORMALLY OPEN TIMED CLOSED XXX= DESCRIPTION YYY=RELATED COIL & CONTACT # ZZZ=COIL RUNG
	MOTOR, HP AS SHOWN, THREE PHASE		TIME DELAY RELAY CONTACTS NORMALLY OPEN TIMED OPEN XXX= DESCRIPTION YYY=RELATED COIL & CONTACT # ZZZ=COIL RUNG
	SHEET NOTE "X"		TIME DELAY RELAY CONTACTS NORMALLY OPEN TIMED OPEN XXX= DESCRIPTION YYY=RELATED COIL & CONTACT # ZZZ=COIL RUNG
	ELECTRICAL EQUIPMENT TAG "X"		TIME DELAY RELAY CONTACTS NORMALLY OPEN TIMED OPEN XXX= DESCRIPTION YYY=RELATED COIL & CONTACT # ZZZ=COIL RUNG
	PANELBOARD		TIME DELAY RELAY CONTACTS NORMALLY OPEN TIMED OPEN XXX= DESCRIPTION YYY=RELATED COIL & CONTACT # ZZZ=COIL RUNG
	DISCONNECT SWITCH		TIME DELAY RELAY CONTACTS NORMALLY OPEN TIMED OPEN XXX= DESCRIPTION YYY=RELATED COIL & CONTACT # ZZZ=COIL RUNG
	TRANSFORMER		TIME DELAY RELAY CONTACTS NORMALLY OPEN TIMED OPEN XXX= DESCRIPTION YYY=RELATED COIL & CONTACT # ZZZ=COIL RUNG
	KILOWATT-HOUR METER		TIME DELAY RELAY CONTACTS NORMALLY OPEN TIMED OPEN XXX= DESCRIPTION YYY=RELATED COIL & CONTACT # ZZZ=COIL RUNG
	125V DUPLEX GROUND FAULT INTERRUPT WEATHER PROOF RECEPTACLE, NEMA CONFIGURATION 5 - 20R		TIME DELAY RELAY CONTACTS NORMALLY OPEN TIMED OPEN XXX= DESCRIPTION YYY=RELATED COIL & CONTACT # ZZZ=COIL RUNG
	CAMERA		TIME DELAY RELAY CONTACTS NORMALLY OPEN TIMED OPEN XXX= DESCRIPTION YYY=RELATED COIL & CONTACT # ZZZ=COIL RUNG
	TWO-WAY SPEAKER		TIME DELAY RELAY CONTACTS NORMALLY OPEN TIMED OPEN XXX= DESCRIPTION YYY=RELATED COIL & CONTACT # ZZZ=COIL RUNG

# ABBREVIATIONS

A	AMPERE
AFF	ABOVE FINISH FLOOR
AIC	AMPERES INTERRUPTING CAPACITY
AVEC	ALASKA VILLAGE ELECTRIC COOPERATIVE
bCU	BARE COPPER
BKT	BRACKET
C	CONDUCTOR
C	CONDUIT
CCT	CORRELATED COLOR TEMPERATURE
C1D1	CLASS 1, DIVISION 1
C1D2	CLASS 1, DIVISION 2
CP	CONTROL PANEL
CT	CURRENT TRANSFORMER
DWG	DRAWING
EA	EACH
ENT	ELECTRICAL NON-METALLIC TUBING
EOL	END OF LINE RESISTOR
ESD	EMERGENCY SHUTDOWN
EXP	EXPLOSION PROOF
FVNR	FULL VOLTAGE NON-REVERSING, THERMAL MAGNETIC OCP
G	GROUND CONDUCTOR
GFI	GROUND FAULT INTERRUPTING
H	HOT CONDUCTOR
HOA	HAND OFF AUTO
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
KVA	KILO-VOLT-AMPERES
KW	KILOWATT
LTFC	LIQUID-TIGHT FLEXIBLE METAL CONDUIT
LTG	LIGHTING
MAX	MAXIMUM
MCM	THOUSAND CIRCULAR MILLS
MCP	MAGNETIC ONLY CIRCUIT PROTECTOR
MIN	MINIMUM
MV	MOTORIZED VALVE
N	NEUTRAL CONDUCTOR
NEMA	NATIONAL ELECTRICAL MANUFACTURES ASSOCIATION
NTS	NOT TO SCALE
OC	OVERCURRENT PROTECTION
P	POLE
RCP	RECEPTACLE
RMC	RIGID METAL CONDUIT, GALVANIZED
SG	SPECIFIC GRAVITY
SIG	SIGNAL CONDUCTOR
SL	SWITCH LEG
SS	STAINLESS STEEL
TWSH	TWISTED/SHIELDED CONDUCTOR
TYP	TYPICAL
U/G	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VA	VOLT-AMPERES
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHER PROOF
XFMR	TRANSFORMER

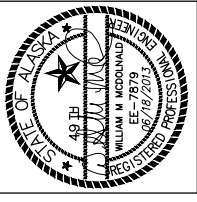
# FIXTURE SCHEDULE

SYMBOL	LAMP SIZE	MOUNTING	DESCRIPTION	MANUFACTURER
	137W LED	SQUARE STEEL POLE MOUNTED	120V, -40F RATED, CLASS 1, DIVISION 2 LED FIXTURE, 3/4" WALL MOUNT THRU FREED MOUNTING. ATTACH TO SKID MOUNTED 20' ALUMINUM 6" SQUARE POLE. PROVIDE BOLT PATTERN TO TANK SUPPLIER FOR FOUNDATION. SEE 1/C14.	COOPER CROUSE-HINDS (FIXTURE): VMV11L2TWD1/UNV LITHONIA (POLE): SSA206JDM19XXDNA
	137W LED	WALL MOUNT	120V, -40F RATED, CLASS 1, DIVISION 2 LED FIXTURE, 3/4" WALL MOUNT THRU FEED MOUNTING.	COOPER CROUSE-HINDS (FIXTURE): VMV11L2TWD1/UNV
	143W LED	CLASS 5 25' WOOD STUB POLE. MOUNT AT 20'	L.E.D AREA LIGHT, ROUND POLE MOUNTING, 120V, 60LEDs, 700mA DRIVER, 4000K CCT, FORWARD THROW DISTRIBUTION, NEMA TWIST-LOCK RECEPTACLE. PROVIDE ACCESSORIES PHOTOCELL - SSL TWIST-LOCK (120-277V) AND SHORTING CAP. ALSO PROVIDE 2' ALUMINUM ELLIPTICAL TUBE ARM.	LITHONIA: DSX1 LED 2 30B700/40K FT MVOLT RPA PER DNATXD PHOTOCELL: DSS124N 1.5 TJJE U SHORTING CAP: SC U ARM: AMACE T20 US2 DNA
	143W LED	CLASS 5 25' WOOD STUB POLE. MOUNT AT 20'	L.E.D AREA LIGHT, ROUND POLE MOUNTING, 120V, 60LEDs, 700mA DRIVER, 4000K CCT, TYPE V DISTRIBUTION, NEMA TWIST-LOCK RECEPTACLE. PROVIDE ACCESSORIES PHOTOCELL - SSL TWIST-LOCK (120-277V) AND SHORTING CAP. ALSO PROVIDE 2' ALUMINUM ELLIPTICAL TUBE ARM.	LITHONIA: DSX1 LED 2 30B700/40K SR5 MVOLT RPA PER DNATXD PHOTOCELL: DSS124N 1.5 TJJE U SHORTING CAP: SC U ARM: AMACE T20 US2 DNA
	25W LED	SURFACE MOUNT	VAPORTITE L.E.D AREA LIGHT SURFACE MOUNT	COURSE HINDS: V2LCA3/UNV1 WITH J-BOX VXFT20
	25W LED	WALL MOUNT	VAPORTITE L.E.D AREA LIGHT WALL MOUNT	COURSE HINDS: V2LCHBF2/UNV1

# ELECTRICAL EQUIPMENT SCHEDULE

ITEM NO.	DESCRIPTION	MANUFACTURER
1	EMERGENCY SHUTOFF SWITCH. NEMA 4 DIE-CAST ALUMINUM ENCLOSURE, 2-1/4" DIA. RED MUSHROOM HEAD MAINTAINED CONTACT PUSH BUTTON WITH 1 EA. NC CONTACT, 10A RATED.	ALLEN BRADLEY 800T-FX6D4 WITH 800T-1TZ ENCLOSURE & 800T-N247R HEAD
2	WEATHER PROOF RECEPTACLE. COMPLETE WITH 20A, 125V DUPLEX GFCI RECEPTACLE. INSTALL IN CAST SINGLE GANG FD BOX WITH WEATHERPROOF COVER.	P&S 2095TRWRI RED DOT CCGV COVER RED DOT IH32LM BOX
3	LIGHT SWITCH AND RECEPTACLE. COMPLETE WITH 20A, 125V DUPLEX GFCI RECEPTACLE, 20A SINGLE POLE SWITCH. INSTALL IN CAST MULTI-GANG FD BOX WITH WEATHERPROOF COVER.	P&S 2095TRWRI RECEPTACLE P&S PS20AC1-1 SWITCH RED DOT 2CCTG COVER RED DOT 2IH4-2 BOX
4	LOCKABLE SWITCH. NEMA 4, 7, 9 EXPLOSION PROOF CONSTRUCTION WITH 3/4" FEED THRU HUB, 4PST, 250V, 20A.	KILLARK
5	MULTI-TONE ALARM WITH STROBE, 115V, NEMA 3R, WEATHER RESISTANT SURFACE MOUNT BELL BOX.	WHEELLOCK MT4-115-WH-VNS
6	THREE POSITION FLOAT ACTIVATED LEVEL SWITCH, 316 SS STEM, 2" 316 SS FLOAT, 2" NPT BUSHING, 1/2" NPT CONDUIT ENTRY, EXPLOSION PROOF CONSTRUCTION, LISTED FOR CLASS 1, DIVISION 1, GROUP D, 120VAC, 100W MAX SWITCHING POWER. PROVIDE FLOAT ACTIVATED SWITCHES AT DIMENSIONS BASED ON APPROVED SHOP DRAWINGS. CONTRACTOR SHALL VERIFY ACTUAL TANK DIMENSIONS AND SUBMIT SWITCH DIMENSIONS TO CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO ORDERING.	CUSTOM SWITCHES, INC. MODEL LS-1900 TYPE 7 OR APPROVED EQUAL. CONTRACTOR TO VERIFY CUSTOM PROBE LENGTHS PRIOR TO ORDERING. SEE DESCRIPTION.
7	FOUR POSITION FLOAT ACTIVATED LEVEL SWITCH, 316 SS STEM, 2" 316 SS FLOAT, 2" NPT BUSHING, 1/2" NPT CONDUIT ENTRY, EXPLOSION PROOF CONSTRUCTION, LISTED FOR CLASS 1, DIVISION 1, GROUP D, 120VAC, 100W MAX SWITCHING POWER. PROVIDE FLOAT ACTIVATED SWITCHES AT DIMENSIONS BASED ON APPROVED SHOP DRAWINGS. CONTRACTOR SHALL VERIFY ACTUAL TANK DIMENSIONS AND SUBMIT SWITCH DIMENSIONS TO CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO ORDERING.	CUSTOM SWITCHES, INC. MODEL LS-1900 TYPE 8 OR APPROVED EQUAL. CONTRACTOR TO VERIFY CUSTOM PROBE LENGTHS PRIOR TO ORDERING. SEE DESCRIPTION.

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SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
NOTES, LEGEND & ABBREVIATIONS

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# ELECTRICAL SPECIFICATION

**SCOPE OF WORK:** FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT AS REQUIRED FOR FINAL DESIGN, FABRICATION AND INSTALLATION OF THE FUEL SYSTEM CONTROLS AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS ON ALL OF THE DRAWINGS.

**STANDARDS, CODES AND REGULATIONS:** CONTRACTOR SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), INTERNATIONAL BUILDING CODE (IBC), AND INTERNATIONAL FIRE CODE (IFC) INCLUDING ALL STATE AND LOCAL AMENDMENTS TO THESE CODES.

**DRAWINGS:** THE DRAWINGS ARE DIAGRAMMATIC, NOT NECESSARILY SHOWING ALL OFFSETS OR EXACT LOCATIONS OF FIXTURES, EQUIPMENT, ETC., UNLESS SPECIFICALLY DIMENSIONED. REVIEW THE DRAWINGS AND SPECIFICATIONS FOR EQUIPMENT FURNISHED BY OTHER CRAFTS BUT INSTALLED IN ACCORDANCE WITH THIS SECTION. BRING QUESTIONABLE OR OBSCURE ITEMS, APPARENT CONFLICTS BETWEEN PLANS, SPECIFICATIONS, GOVERNING CODES AND/OR UTILITIES REGULATIONS TO THE ATTENTION OF THE ENGINEER. CODES, ORDINANCES, REGULATIONS, MANUFACTURER'S INSTRUCTIONS OR STANDARDS TAKE PRECEDENCE WHEN THEY ARE MORE STRINGENT OR CONFLICT WITH THE DRAWINGS AND SPECIFICATIONS.

**RECORD DRAWINGS:** MARK UP A CLEAN SET OF DRAWINGS AS THE WORK PROGRESSES TO SHOW THE DIMENSIONED LOCATION AND ROUTING OF ALL ELECTRICAL WORK THAT WILL BECOME PERMANENTLY CONCEALED. SHOW ROUTING OF WORK IN PERMANENTLY CONCEALED BLIND SPACES WITHIN BUILDINGS AND STRUCTURES. SHOW COMPLETE ROUTING AND SIZING OF ANY SIGNIFICANT REVISIONS TO THE SYSTEMS SHOWN. PROVIDE AS-BUILT SHOP DRAWINGS OF EACH OF THE FUEL SYSTEM CONTROL PANELS. PROVIDE FULL SIZE HARD COPY AND DRAWING FILES IN AUTOCAD V2013 ON CD.

**WORKMANSHIP:** INSTALLATION OF ALL WORK SHALL BE MADE SO THAT ITS SEVERAL COMPONENT PARTS SHALL FUNCTION AS A WORKABLE SYSTEM COMPLETE WITH ALL ACCESSORIES NECESSARY FOR ITS OPERATION. ALL MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, INSTRUCTIONS AND/OR INSTALLATION DRAWINGS AND IN ACCORDANCE WITH NECA STANDARDS. MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL CONFORM TO APPLICABLE INDUSTRY STANDARDS, NEMA STANDARDS AND UNDERWRITERS LABORATORIES (U/L) STANDARDS.

**SUBMITTALS:** PROVIDE MATERIAL AND EQUIPMENT SUBMITTALS CONTAINING A COMPLETE LISTING OF MATERIAL AND EQUIPMENT SHOWN ON THE DRAWINGS. INCLUDE CATALOG NUMBERS, WIRING DIAGRAMS, ROUGH-IN DIMENSIONS AND PERFORMANCE DATA FOR ALL MATERIAL AND EQUIPMENT. SUBMITTALS SHALL BE BOUND IN HARD COVER, LOOSE-LEAF BINDERS SEPARATE FROM WORK FURNISHED UNDER OTHER DIVISIONS. INDEX AND CLEARLY IDENTIFY ALL MATERIAL AND EQUIPMENT BY ITEM, NAME OR DESIGNATION USED ON THE DRAWINGS.

SUBMITTAL REVIEW IS FOR GENERAL DESIGN AND ARRANGEMENT ONLY AND DOES NOT RELIEVE THE CONTRACTOR FROM ANY REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE SUBMITTALS ARE NOT CHECKED FOR QUANTITY, DIMENSION, OR FOR PROPER OPERATION. WHERE ALLOWED, SUBSTITUTIONS WILL BE REVIEWED USING THE CRITERIA/MANUFACTURERS DATA OF THE SPECIFIED COMPONENT.

**OPERATION AND MAINTENANCE MANUALS:** PROVIDE OPERATION AND MAINTENANCE MANUALS FOR TRAINING OF THE OWNER'S PERSONNEL. DESCRIBE IN THE MANUALS THE PROCEDURES NECESSARY TO OPERATE THE SYSTEM INCLUDING START-UP, OPERATION, EMERGENCY OPERATION AND SHUTDOWN. PROVIDE INSTRUCTIONS AND A SCHEDULE OF PREVENTIVE MAINTENANCE IN TABULAR FORM FOR ALL ROUTINE CLEANING, INSPECTION AND LUBRICATION WITH RECOMMENDED LUBRICANTS. PROVIDE INSTRUCTIONS FOR MINOR REPAIR OR ADJUSTMENTS REQUIRED FOR PREVENTIVE MAINTENANCE ROUTINES. PROVIDE MANUFACTURER'S DESCRIPTIVE LITERATURE INCLUDING APPROVED SHOP DRAWINGS COVERING DEVICES USED IN ANY CONTRACTOR-PROVIDED EQUIPMENT OR SYSTEMS WITH ILLUSTRATION, EXPLODED VIEWS, ETC. PROVIDE A NON-PASSWORD PROTECTED PDF FILE OF EACH MANUAL IN ITS ENTIRETY ON A CD IN ADDITION TO THE REQUIRED HARD COPIES.

**WARRANTY:** THE CONTRACTOR SHALL GUARANTEE ALL WORK EXECUTED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM BENEFICIAL OCCUPANCY. ANY FAULTY MATERIALS OR WORKMANSHIP SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST DURING THE WARRANTY PERIOD.

**PERMITS:** SECURE AND PAY FOR ALL FEES, PERMITS, ETC. REQUIRED BY LOCAL AND STATE AGENCIES AND ALL LOCAL UTILITY COMPANIES.

**REFERENCE SYMBOLS:** THE ELECTRICAL "LEGEND" ON THE DRAWINGS IS A STANDARDIZED VERSION, AND ALL SYMBOLS SHOWN MAY NOT BE USED. USE THE "LEGEND" AS A REFERENCE FOR THE SYMBOLS USED ON THE DRAWINGS.

**IDENTIFICATION:** PROVIDE ENGRAVED THREE-LAYER LAMINATED PLASTIC NAMEPLATES WITH BLACK LETTERS ON A WHITE BACKGROUND TO IDENTIFY ALL ELECTRICAL DISTRIBUTION AND CONTROL EQUIPMENT, LOADS SERVED AND AS NOTED ON THE DRAWINGS. LETTER HEIGHTS SHALL BE 1/8 INCH FOR INDIVIDUAL SWITCHES, MOTOR STARTERS AND LOADS SERVED AND 1/4 INCH ON PANELBOARDS. SECURE NAMEPLATES TO EQUIPMENT FRONTS USING SCREWS, RIVETS OR ADHESIVES.

**CONDUITS:** MARK ALL CONDUITS ENTERING OR LEAVING PANELBOARDS/CONTROL PANELS WITH AN INDELIBLE BLACK MARKER WITH THE CIRCUIT NUMBERS OF THE CIRCUITS CONTAINED INSIDE.

**JUNCTION BOXES:** MARK ALL CIRCUIT NUMBERS OF WIRING ON ALL JUNCTION BOXES WITH SHEET STEEL COVERS. MARK WITH INDELIBLE BLACK MARKER. MARK ALL OTHER SPECIAL SYSTEM JUNCTION BOXES WITH SHEET STEEL COVERS.

**CONDUIT:** ALL WIRING SHALL BE INSTALLED IN GALVANIZED RIGID STEEL OR INTERMEDIATE METAL RACEWAY UNLESS OTHERWISE NOTED. ALL FITTINGS, CONNECTORS, BOXES, ETC., SHALL BE APPROVED FOR USE AS A GROUNDING MEANS. UTILIZE SHORT EXTENSIONS (36 INCHES MAXIMUM) OF FLEXIBLE LOW TEMPERATURE, LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT FOR CONNECTION OF ALL MOTORS AND OTHER EQUIPMENT SUBJECT TO VIBRATION AND WHERE CONDUITS TRANSITION BETWEEN STRUCTURES OR ON RISERS FROM BELOW GRADE TO IN NON-HAZARDOUS AND CLASS 1, DIVISION 2 AREAS. USE EXPLOSION-PROOF FLEXIBLE COUPLINGS FOR CONNECTIONS IN CLASS 1, DIVISION 1 HAZARDOUS LOCATIONS. PAINT ALL EXPOSED RACEWAYS TO MATCH THE SURFACE TO WHICH IT IS ATTACHED OR CROSSES. OTHERWISE PAINT INDUSTRIAL GRAY. COMPLETELY AND THOROUGHLY SWAB RACEWAY SYSTEM BEFORE INSTALLING CONDUCTORS. ALL UNDERGROUND CONDUIT SHALL BE BURIED A MINIMUM OF 18" BELOW FINISHED GRADE.

**CONDUCTORS:** CONDUCTORS SHALL BE COPPER, SOLID OR STRANDED, WITH TYPE XHHW-2 INSULATION. MINIMUM BRANCH CIRCUIT CONDUCTOR SIZE SHALL BE #12 AWG. MINIMUM CONTROL CIRCUIT CONDUCTOR SIZE SHALL BE #14 AWG. PULL ALL CONDUCTORS INTO THE RACEWAY AT THE SAME TIME. USE UL LISTED WIRE-PULLING LUBRICANT FOR PULLING #4 AWG AND LARGER WIRES. COLOR CODE CONDUCTORS AS FOLLOWS: 480V SYSTEMS: BROWN (L1), YELLOW (L2), 120/240 VOLT SYSTEMS: BLACK (L1), RED (L2), WHITE (N) AND GREEN OR BARE (G). USE PROPERLY SIZED INSULATED SPRING WIRE CONNECTORS WITH PLASTIC CAPS FOR ALL CONDUCTORS #8 AWG AND SMALLER. TERMINATE #6 AWG AND LARGER CONDUCTORS WITH CRIMP OR COMPRESSION TYPE CONNECTORS INSTALLED WITH TOOL RECOMMENDED BY CONNECTION MANUFACTURER AND INSULATE WITH PROPERLY SIZED 600-VOLT RATED HEAT SHRINK TUBING.

**CIRCUIT BREAKERS:** MOLDED CASE CIRCUIT BREAKERS SHALL BE BOLT-ON THERMAL MAGNETIC TRIP TYPE WITH COMMON TRIP HANDLE FOR ALL POLES.

**LIGHTING EQUIPMENT:** PROVIDE ALL LIGHTING EQUIPMENT OR APPROVED EQUAL AS SHOWN ON THE DRAWINGS AND DESCRIBED IN THE "FIXTURE SCHEDULE". PROVIDE LIGHTING EQUIPMENT COMPLETE, WIRED, ASSEMBLED, WITH PROPER FLANGES, MOUNTING SUPPORTS, HARDWARE, ETC.

**EQUIPMENT CONNECTIONS:** PROVIDE WIRING AND CONNECTION TO EQUIPMENT REQUIRING ELECTRICAL POWER BUT SPECIFIED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS. EQUIPMENT SHALL INCLUDE BUT IS NOT LIMITED TO MOTORS, PUMPS, DISPENSING EQUIPMENT, ETC. REVIEW EQUIPMENT SUBMITTAL FROM THE OTHER TRADES PRIOR TO INSTALLATION AND ELECTRICAL ROUGH-IN. VERIFY LOCATION, SIZE, TYPE OF CONNECTIONS, AND THAT EQUIPMENT IS READY FOR ELECTRICAL CONNECTION. MAKE WIRING CONNECTIONS IN CONTROL PANEL OR IN WIRING COMPARTMENT OF PRE-WIRED EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. PROVIDE INTERCONNECTING WIRING AND DISCONNECTS WHERE REQUIRED.

**DISCONNECT SWITCHES:** PROVIDE 250V HEAVY DUTY NON-FUSIBLE QUICK-MAKE, QUICK BREAK, LOAD INTERRUPTER, ENCLOSED KNIFE SWITCHES WITH EXTERNALLY OPERABLE HANDLE INTERLOCKED TO PREVENT OPENING FRONT COVER WITH SWITCH IN ON POSITION, HANDLE LOCKABLE IN OFF POSITION.

**PENETRATIONS OF HAZARDOUS LOCATIONS:** ALL ELECTRICAL PENETRATIONS OF HAZARDOUS LOCATION BOUNDARIES SHALL BE PROVIDED WITH SEAL-OFF FITTINGS AS REQUIRED BY NEC ARTICLES 500 & 501.

**MOTOR STARTERS:** PROVIDE FULL VOLTAGE STARTING, NON-REVERSING, MAGNETIC TYPE MOTOR STARTERS, IEC RATED, AC GENERAL-PURPOSE, CLASS A, WITH MAGNETIC CONTROLLER FOR INDUCTION MOTORS RATED IN HORSEPOWER. OVERLOAD RELAY SHALL BE NON-AMBIENT SENSITIVE. PROVIDE TWO FIELD CONVERTIBLE CONTACTS IN ADDITION TO SEAL-IN CONTACT. INSTALL MOTOR CONTROL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. SELECT AND INSTALL HEATER ELEMENTS OR SET ADJUSTABLE OVERLOADS IN MOTOR STARTERS TO MATCH INSTALLED MOTOR CHARACTERISTICS.

**MOTOR DATA:** PROVIDE NEATLY TYPED LABEL INSIDE EACH MOTOR STARTER OR CONTROL PANEL ENCLOSURE DOOR IDENTIFYING MOTOR(S) SERVED, NAMEPLATE HORSEPOWER, FULL LOAD AMPERES, CODE LETTER, SERVICE FACTOR, AND VOLTAGE/PHASE RATING.

**EQUIPMENT MOUNTING:** PROVIDE ALL BRACING AS REQUIRED TO SECURELY MOUNT ENCLOSURES, FIXTURES AND DEVICES. UNLESS OTHERWISE NOTED USE GALVANIZED HARDWARE AND GALVANIZED FORMED STEEL COMPONENTS SUCH AS UNISTRUT OR EQUAL. WHEN BOLTING TO STRUCTURE, VERIFY THAT THE ORIGINAL STRUCTURAL AND PERFORMANCE (I.E. WATER TIGHT) CHARACTERISTICS ARE MAINTAINED.

**ENCLOSURE RATING:** UNLESS NOTED OTHERWISE, ENCLOSURES, JUNCTION BOXES AND OTHER EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE -

- EXTERIOR, NON HAZARDOUS - NEMA 4X NONMETALLIC
- EXTERIOR, HAZARDOUS - NEMA 7 (CLASS 1, GROUP D) AND NEMA 4 OR 4X
- INTERIOR - NEMA 12 (UNHEATED CONNEX)



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
ELECTRICAL SPECIFICATIONS

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Plot Date: 4/26/16  
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Drawn: JJ  
Approved: WMM

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# CONTROL SPECIFICATION

## CONTROLS

FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT AS REQUIRED FOR FINAL DESIGN, FABRICATION AND INSTALLATION OF THE WATER PLANT CONTROLS AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS ON ALL OF THE DRAWINGS.

STANDARDS, CODES AND REGULATIONS: CONTRACTOR SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), AND NFPA 79 AND UL 508A.

## SUBMITTALS

PRODUCT DATA: INCLUDE MANUFACTURER'S TECHNICAL LITERATURE FOR EACH CONTROL DEVICE. INDICATE DIMENSIONS, CAPACITIES, PERFORMANCE CHARACTERISTICS, ELECTRICAL CHARACTERISTICS, FINISHES FOR MATERIALS, AND INSTALLATION AND STARTUP INSTRUCTIONS FOR EACH TYPE OF PRODUCT INDICATED.  
EACH CONTROL DEVICE LABELED WITH SETTING OR ADJUSTABLE RANGE OF CONTROL.

SHOP DRAWINGS: SUBMITTAL DRAWINGS SHALL BE PREPARED AND SUBMITTED FOR APPROVAL PRIOR TO CONSTRUCTION. SUBMITTAL FORMAT SHALL BE BASED ON A 22X34 SIZE SHEET WITH EITHER VENDOR'S OR PROJECT BORDER. HARD COPY SUBMITTALS SHALL BE 1/2 SIZE (11X17) ON BOND PAPER AND A SINGLE COPY OF A ".PDF" FILE AND A ".DWG" FILE IN AUTOCAD 2010 WITH CTB FILE FOR PRINTING. ELECTRONIC MEDIA SHALL BE SUBMITTED ON CD FORMATTED FOR READING ON INTEL-BASED PC'S (NOT MAC). DATA TO BE INCLUDED ON THE SUBMITTAL DRAWINGS INCLUDE:

DIMENSIONED OPERATOR DOOR AND BACK PANEL LAYOUT SHOWING ALL COMPONENTS.

BILL OF MATERIALS WITH MANUFACTURER AND RELEVANT PART NUMBERS.

SCHEMATIC DIAGRAM. POWER, SIGNAL, AND CONTROL WIRING.

DIFFERENTIATE BETWEEN MANUFACTURER-INSTALLED AND FIELD-INSTALLED WIRING.

DETAILS OF CONTROL PANEL FACES, INCLUDING CONTROLS, INSTRUMENTS, AND LABELING.

TERMINAL ASSIGNMENTS WITH ALL EXTERNAL COMPONENT TERMINATIONS SHOWN.

DETAIL EQUIPMENT ASSEMBLIES AND INDICATE DIMENSIONS, WEIGHTS, LOADS, REQUIRED CLEARANCES, METHOD OF FIELD ASSEMBLY, COMPONENTS, AND LOCATION AND SIZE OF EACH FIELD CONNECTION.

WRITTEN DESCRIPTION OF SEQUENCE OF OPERATION.

MAINTENANCE DATA INCLUDE THE FOLLOWING:

MAINTENANCE INSTRUCTIONS AND LISTS OF SPARE PARTS FOR EACH TYPE OF CONTROL DEVICE. INTERCONNECTION WIRING DIAGRAMS WITH IDENTIFIED AND NUMBERED SYSTEM COMPONENTS AND DEVICES.

STEP-BY-STEP PROCEDURES INDEXED FOR EACH OPERATOR FUNCTION. INSPECTION PERIOD, CLEANING METHODS, CLEANING MATERIALS RECOMMENDED, AND CALIBRATION TOLERANCES. CALIBRATION RECORDS AND LIST OF SET POINTS.

PROJECT RECORD DOCUMENTS: SUBMIT ALL CUT-SHEETS, O&M INFORMATION AND INSTRUCTIONS IN EITHER MS WORD (.DOC) OR ADOBE (.PDF) FORMAT ON CD FORMATTED FOR USE ON INTEL-BASED PC'S.

QUALITY ASSURANCE: ALL CONTROL/ALARM PANELS PROVIDED FOR THIS PROJECT SHALL BE LISTED OR LABELED AS AN ELECTRICAL ASSEMBLY BY AN AGENCY ACCEPTABLE TO THE STATE OF ALASKA DEPARTMENT OF LABOR - MECHANICAL INSPECTIONS DIVISION. CONSTRUCTION SHALL PROCEED ONLY AFTER THE OWNER APPROVES THE REQUIRED SUBMITTALS.

AS-BUILT DRAWINGS: UPON RECEIPT OF APPROVED SUBMITTALS AND AFTER CONSTRUCTION OF THE PANEL(S), PREPARE AS-BUILT DRAWINGS USING THE APPROVED SUBMITTAL FILES. SUBMIT 3 SETS OF FULL SIZE DRAWINGS ENCLOSED WITHIN EACH PANEL AND A CD WITH A COPY OF AUTOCAD FILES (22X34 DRAWING SIZE) OF THE SUBMITTAL DRAWINGS EDITED TO AS-BUILT STATUS. PROVIDE ONE CD FOR EACH PANEL.

O&M MATERIAL: PROVIDE AS-BUILT VERSIONS OF PROJECT RECORD DOCUMENTS, CURRENT PRICE AND SOURCE FOR ALL REPLACEABLE COMPONENTS (I.E. PLUG-IN RELAYS, PILOT LIGHT LAMPS, ETC). IF A COMMON COMPONENT IS USED IN SEVERAL PANELS, A SINGLE CUT SHEET/DESCRIPTOR IS ACCEPTABLE IF ALL APPLICABLE PANELS ARE ANNOTATED ON THE SUBMITTAL. ALL PREPARED O&M MATERIAL SHALL BE TYPED IN MS WORD OR SCANNED AND CONVERTED TO .PDF FORMAT. O&M DATA CAN BE FURNISHED ON THE SAME CD WITH AS-BUILT DWGS.

## PRODUCTS

CONTROL PANEL: ENCLOSURES SHALL BE NEMA 4X NON-METALLIC. CONTROL PANEL ENCLOSURE INTERIOR SHALL BE PROVIDED WITH A STEEL BACK PANEL FOR MOUNTING OF CONTROL AND POWER DISTRIBUTION COMPONENTS. HOFFMAN OR EQUAL.

WIRE MARKERS: SHALL CONSIST OF WHITE OR YELLOW, SLIP-ON ELASTIC SLEEVES SIZED TO TIGHTLY GRIP THE WIRE INSULATION AND MARKED IN BLOCK PRINTING WITH THE LETTERS OR NUMBERS TO IDENTIFY THE CIRCUIT.

TERMINAL BLOCKS: SHALL BE ALLEN BRADLEY 1492 SERIES OR EQUAL. POWER TERMINATIONS FOR SUPPLY AND MOTOR LOADS A MINIMUM RATING OF 600 VOLTS AC AND 35 AMPS. CONTROL AND SENSOR TERMINALS SHALL BE DETERMINED BY THE MANUFACTURER AND BASED ON UPSTREAM OVER CURRENT PROTECTION, FAULT DUTY ETC. WHEN INDIVIDUAL DEVICES OR COMPONENT TERMINAL BLOCKS ARE ENCOUNTERED WITH SCREW TERMINALS, TERMINATION SHALL BE BY SLIP ON SPADE TONGUE INSULATED COMPRESSION TERMINATORS.

NAMEPLATES: SHALL BE INSTALLED PLUMB AND PARALLEL TO THE LINES OF DOORS OR STRUCTURE TO WHICH THEY ARE ATTACHED. A NAMEPLATE SHALL BE PROVIDED FOR EACH PANEL. IT SHALL BE 2"X6" MINIMUM SIZE WITH 1/2 INCH MINIMUM ENGRAVED LETTERS. THE ENGRAVING SHALL BE AS SHOWN ON THE DRAWINGS FOR THE IDENTIFICATION OF EACH PANEL.

PANEL COMPONENTS SHALL BE AS LISTED UNDER THE COMPONENT SCHEDULE.

## INSTALLATION

CONTROL PANELS: SHALL BE FACTORY OR SHOP FABRICATED UNITS COMPLETELY ASSEMBLED, WIRED AND TESTED IN THE PRESENCE OF AN OWNER REPRESENTATIVE BEFORE SHIPMENT TO THE JOB SITE. PANEL CONSTRUCTION SHALL, IN GENERAL, MEET APPLICABLE NEMA AND IEEE STANDARDS. THE PANELS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS OF AND BEAR THE LABEL OF AN ACCREDITED NATIONALLY RECOGNIZED TESTING LABORATORY.

THE ASSEMBLED PANEL SHALL BE MEGGERED AND TESTED TO BE FREE FROM GROUNDS AND SHORTS. ALL CONTROLLERS, CIRCUITS AND INTERLOCKS SHALL BE RUNG OUT AND TESTED TO ASSURE THAT THEY FUNCTION CORRECTLY BEFORE THE PANEL IS SHIPPED. REVISE ALL DRAWINGS UPON COMPLETION OF THE WORK TO SHOW "AS SHIPPED" CONDITION OF THE PANEL. AFTER COMPLETION OF SHOP ASSEMBLY AND TESTING, PANELS SHALL BE ENCLOSED IN HEAVY-DUTY POLYETHYLENE ENVELOPES OR SECURED SHEETING TO PROVIDE COMPLETE PROTECTION FROM DUST AND MOISTURE. DEHUMIDIFIERS SHALL BE PLACED INSIDE THE POLYETHYLENE COVERING. THE EQUIPMENT SHALL THEN BE SKID-MOUNTED FOR FINAL TRANSPORT. SHIPPING WEIGHT SHALL BE SHOWN ON SHIPPING TAGS, TOGETHER WITH INSTRUCTIONS FOR UNLOADING, TRANSPORTING, STORING, AND HANDLING ON JOB SITE.

WIRING DUCT: SHALL BE PROVIDED FOR WIRING WITHIN THE PANEL ENCLOSURE INCLUDING ALL FIELD WIRING. WIRING WITHIN THE PANEL SHALL BE LABELED WITH WIRE NUMBERS AND RUN IN WIRING DUCT NEATLY TIED AND BUNDLED WITH TIE WRAPS OR SIMILAR MATERIALS. LINE VOLTAGE (120 VOLT OR HIGHER) WIRING IN PANELS SHALL BE CLASS C STRANDED COPPER CONDUCTOR #14AWG, WITH TYPE MTW OR SIS INSULATION. COLOR CODING OF INSULATION SHALL BE:

BLACK: UNGROUNDED LINE, LOAD, AND CONTROL CONDUCTORS AT LINE VOLTAGE.

RED: UNGROUNDED AC CONTROL CONDUCTORS, AT LESS THAN LINE VOLTAGE.

BLUE: UNGROUNDED DC CONTROL CONDUCTORS.

YELLOW: UNGROUNDED CONTROL CIRCUIT CONDUCTORS THAT MAY REMAIN ENERGIZED WHEN THE MAIN DISCONNECTING MEANS IS IN THE OFF POSITION. THESE CONDUCTORS SHALL BE YELLOW THROUGHOUT THE ENTIRE CIRCUIT, INCLUDING WIRING IN THE CONTROL PANEL AND THE EXTERNAL FIELD WIRING.

WHITE OR NATURAL GRAY: GROUNDED CIRCUIT CONDUCTOR.

WHITE WITH BLUE STRIPE: GROUNDED (CURRENT-CARRYING) DC CIRCUIT CONDUCTORS.

WIRING WHICH IS AN INTERNAL PART OF A DEVICE AND IS NOT CONNECTED TO EXTERNAL TERMINAL BLOCKS MAY BE WIRED USING THE MANUFACTURER'S STANDARD WIRE DESIGNATIONS. WIRE WHICH CONNECTS TO EXTERNAL CIRCUITS, TO TERMINAL BLOCKS, OR THE NUMBERS SHOWN ON THE ELEMENTARY WIRING DIAGRAMS SHALL IDENTIFY OTHER DEVICES THAT ARE CONNECTED TO EXTERNAL CIRCUITS. EVERY WIRE TERMINATION, INCLUDING ALL JUMPERS, SHALL BE IDENTIFIED WITH WIRE MARKERS. WIRE MARKERS SHALL BE INSTALLED OVER WIRE TERMINATORS OR DIRECTLY ADJACENT TO THEM. MARKERS SHALL BE ARRANGED TO PERMIT READING OF IDENTIFICATION.

TERMINAL BLOCKS SHALL BE PROVIDED FOR THE TERMINATION OF POWER AND CONTROL WIRING. WHERE MULTIPLE TERMINAL BLOCKS ARE SHOWN FOR A GIVEN WIRE NUMBER, ADDITIONAL BLOCKS SHALL BE PROVIDED AND JUMPERED AS NECESSARY TO PROVIDE TERMINAL SPACES FOR EACH INDIVIDUAL OUTGOING WIRE. TERMINAL STRIPS SHALL BE MOUNTED ON A FLAT STEEL CHANNEL OR STRUT WHICH RAISES THEM TO THE LEVEL OF THE ADJACENT WIRE GUTTERS (2 INCH TO 3 INCH ABOVE BACKPLATE). PROVIDE SPACE FOR A MINIMUM OF 10 PERCENT ADDITIONAL CONTROL WIRING TERMINAL BLOCKS ON EACH SIDE.

NAMEPLATES SHALL BE PROVIDED FOR ALL RELAYS, TIMERS, TRANSFORMERS, FUSES, TERMINAL BLOCK, SWITCHES MOUNTED INTERNALLY, AND OTHER COMPONENTS THAT ARE MOUNTED TO THE INTERNAL MOUNTING PANEL. THESE NAMEPLATES SHALL BE SIZED TO THE SCALE OF THE DEVICE TO WHICH THEY REFER. THE ENGRAVING SHALL BE AS SHOWN FOR THE DEVICE ON THE ELEMENTARY WIRING DIAGRAMS.

OPERATION: AFTER THE PANEL INSTALLATION HAS BEEN INSPECTED AND APPROVED, VENDOR SHALL VERIFY AND DEMONSTRATE TO THE PROJECT MANAGER, OR HIS DESIGNATED REPRESENTATIVE, PROPER OPERATION OF EACH FUNCTION AS DESCRIBED IN THESE SPECIFICATIONS.

EACH FUNCTION WILL BE TESTED - SIMULATED INPUTS AND OR FAILURES WILL BE USED WHERE THE ACTUAL CONDITIONS ARE NOT POSSIBLE (I.E. OVERLOAD TRIP). ANY DISCREPANCY NOTED SHALL BE CORRECTED AND PROPER FUNCTION DEMONSTRATED TO PROJECT MANAGER OR DESIGNATED REPRESENTATIVE.

## VIDEO / INTERCOM SYSTEM

THE VIDEO/INTERCOM SYSTEM SHALL BE A TOSHIBA M24 SYSTEM MANUFACTURED BY MOBOTIX AS PROVIDED BY TECHPRO SOLUTIONS OR EQUAL. THE SYSTEM SHALL HAVE THE FOLLOWING CHARACTERISTICS:

- DAY/NIGHT LENS
- SHALL BE SET UP FOR VIDEO SECURITY
- INTEGRATED DVR WITH HIRES VIDEO RECORDING
- WEATHERPROOF FROM -30 TO +60°C (-22 TO +140°F), (IP66)
- DIGITAL CONTINUOUS ZOOM, PAN AND TILT
- INTEGRATED VIDEO, MICROPHONE AND SPEAKER INTERCONNECTION VIA ETHERNET BRIDGE BETWEEN STORE AND BFU SITE.
- VIDEO MANAGEMENT SOFTWARE SHALL BE INCLUDED

THE SYSTEM SHALL BE FURNISHED, INSTALLED AND TESTED WITH TRAINING BY THE PROVIDER.



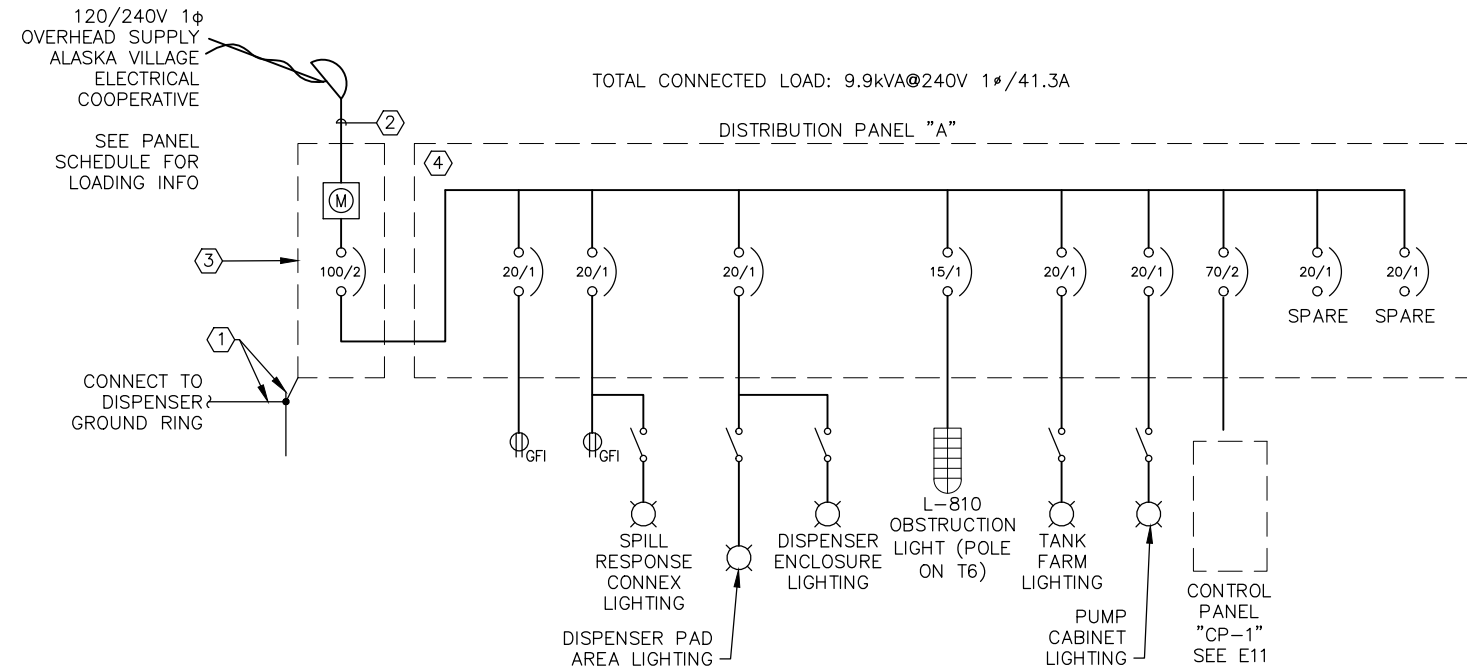
SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
CONTROL SPECIFICATIONS

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	BM	4/18/16

Plot Date	4/26/16
Designed	JJ
Drawn	JJ
Approved	WMM

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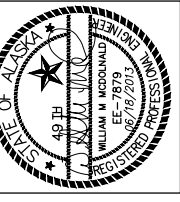
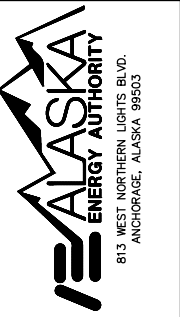
**1**  
**E4** **POWER ONE-LINE**  
Scale: NTS

**NOTES**

- ① 3/4"X10' COOPER CLAD STEEL GROUND RODS CONNECTED WITH #2 bCU. BOND GROUND TO SERVICE USING #6 bCU.
- ② 1-1/2"C, 3#2 XXHW-2 CU SERVICE RISER.
- ③ 120/240V, 100A METER MAIN COMBO.
- ④ 100A, 120/240V, 1φ, 3 WIRE, 12 SPACE NEMA 12 SURFACE MOUNT PANEL.

PANEL "A" SCHEDULE									
Location: Spill Response Connex			240/120V			1φ , 3 Wire		10,000 AIC	
Served from: AVEC Transformer			100A MAINS					NEMA 3R	
POLE #	AMP TRIP	LOAD DESCRIPTION	POLE Kva	MLO		POLE Kva	LOAD DESCRIPTION	AMP TRIP	POLE #
				L1	L2				
1	20/1	Receptacles	0.2	0.8		0.6	Tank Farm Lighting	20/1	2
3	20/1	Connex Receptacles, Lighting	0.3		0.5	0.2	Pump Cabinet Lighting	20/1	4
5	20/1	Dispenser Pad/Enclosure Lightng	0.4	4.5		4.1	CP-1	70/2	6
7	20/1	Spare	0.0		4.1	4.1			8
9			0.0	0.2		0.2	L-810 Obstruction Light (Tank T6)	15/1	10
11			0.0	0.0	0.0	0.0			12
				5.5	4.6	Total kVA =		10.1 kVA	
						Total Amps @ 240V =		42.1 A	

\* = GFCI Circuit Breaker



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POWER ONE-LINE & PANEL SCHEDULE

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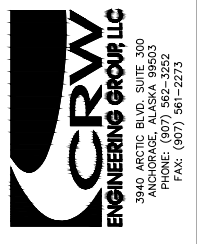
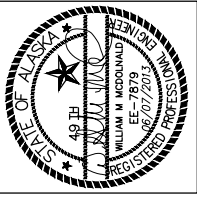
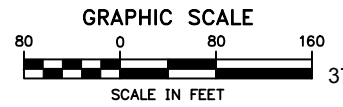
  

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**1**  
**E5** **ELECTRICAL SITE PLAN**  
Scale: GRAPHIC

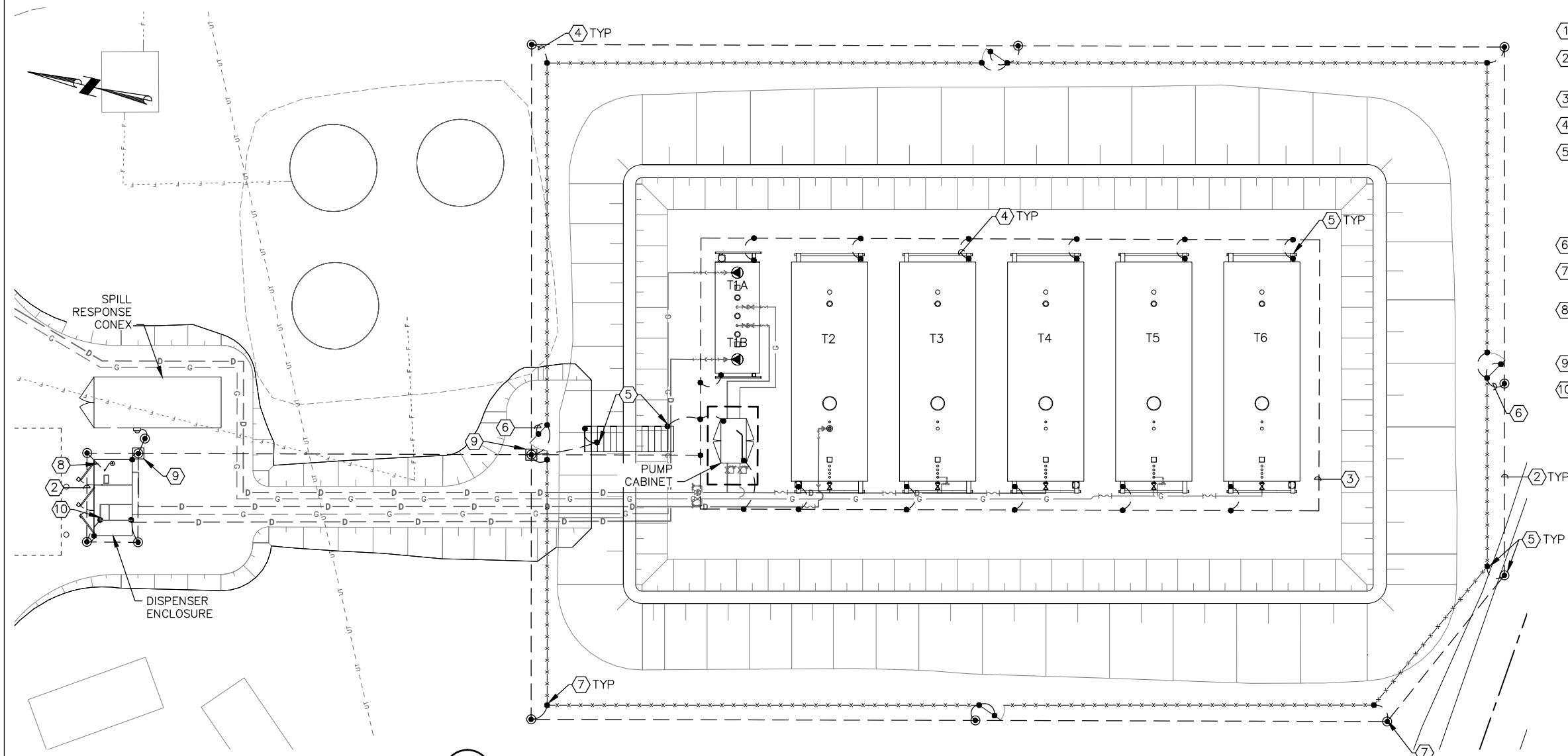


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SHISHMAREF BFU PROJECT  
ELECTRICAL SITE PLAN

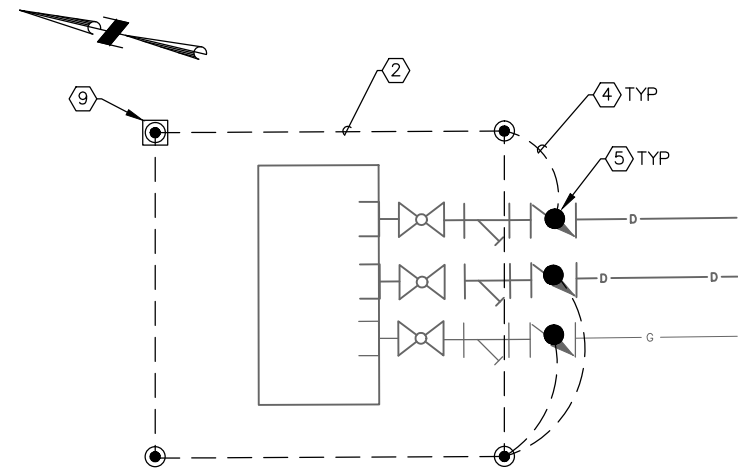
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Drawn	JJ
Approved	WMM

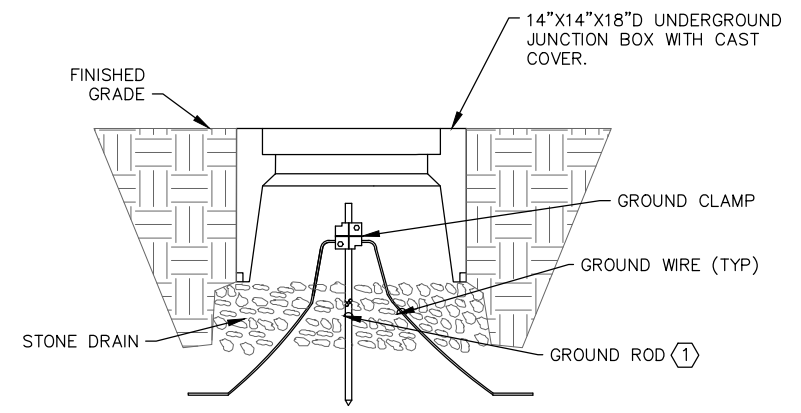
File: J:\Jobsdata\30404.12 Shishmaref BFU\00 CADD\01 Working Set\03 Electrical\30403.22-SITE PLANS.dwg



**1 TANK FARM GROUNDING PLAN**  
E6 Scale: GRAPHIC



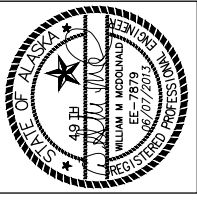
**2 BARGE HEADER GROUNDING PLAN**  
E6 Scale: NTS



**3 GROUND TEST POINT ELEVATION**  
E6 Scale: NTS

**NOTES**

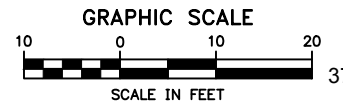
- ① 3/4"X10' COOPER CLAD GROUND ROD.
- ② #2 bCU GROUND RING BURIED MIN 30" BELOW GRADE.
- ③ #2 bCU GROUND RING BURIED 6" BELOW GRADE.
- ④ #6 bCU JUMPER.
- ⑤ BELOW GRADE BOND: EXOTHERMIC WELDMENT  
ABOVE GRADE BOND: FENCEPOST/STAIRS, SPLIT BOLT  
TANK SKID: EXOTHERMIC WELDMENT, DO NOT WELD  
TO TANK, TOUCH UP AND PAINT AREA  
AFFECTED WHEN WELD IS COMPLETE.  
PIPELINE: APPROVED PIPE GROUNDING CLAMP
- ⑥ #6 BRAID TO GATE.
- ⑦ EXTEND #6 GROUND TO BARBED WIRE AND BOND AT ALL CORNERS AND WHERE SHOWN.
- ⑧ PROVIDE ATTACHMENT POINT FOR GROUND REEL AT FLEET DISPENSER. COORDINATE LOCATION AND CONNECTION MEANS WITH GROUND REEL SUPPLIER.
- ⑨ GROUND TEST POINT, SEE 3/E6 FOR DETAILS.
- ⑩ GROUND DUAL DISPENSER PER MANUFACTURER RECOMMENDATIONS. GROUND DISPENSER ENCLOSURE.

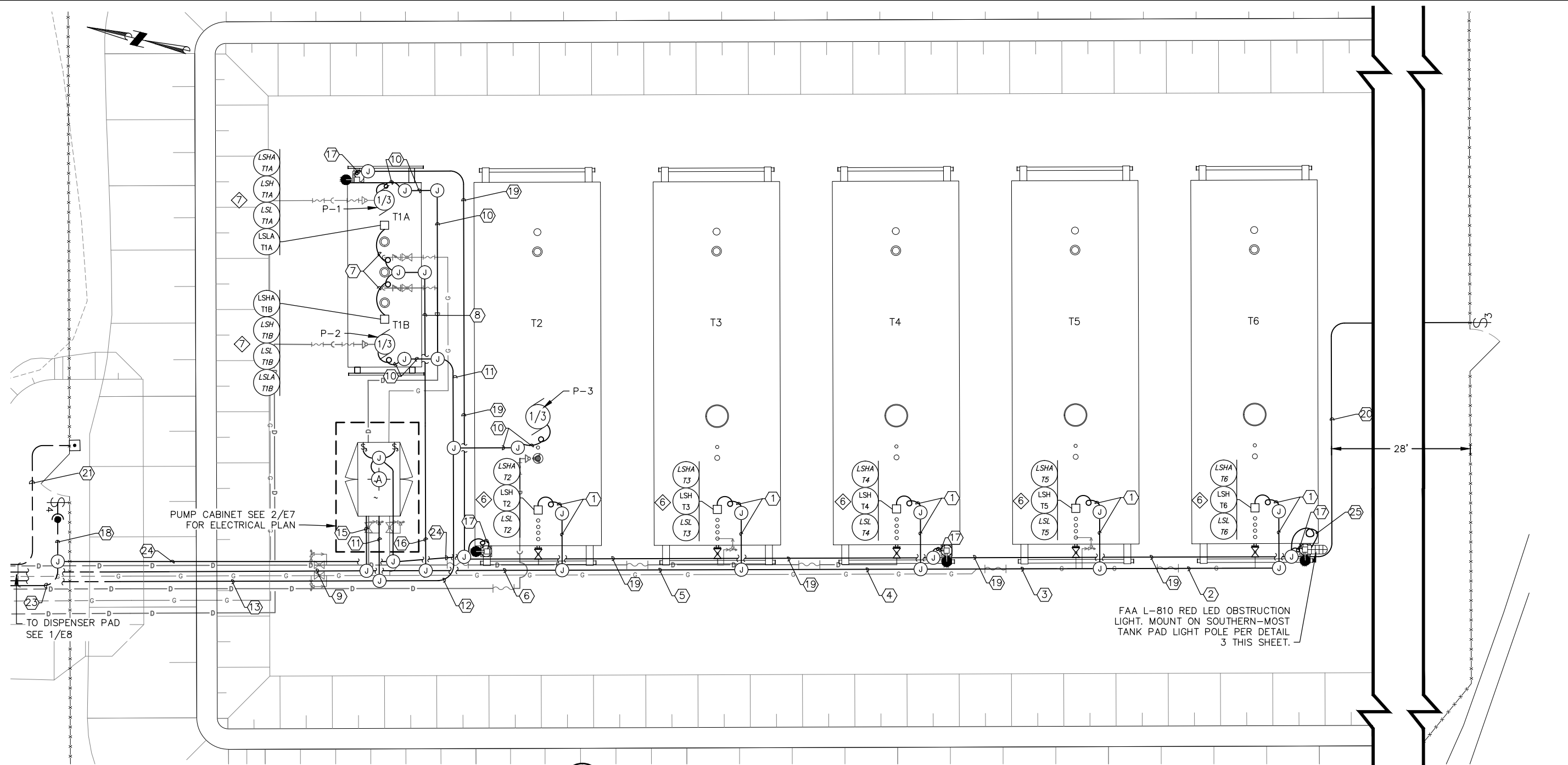


SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
ELECTRICAL GROUNDING PLAN

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Plot Date	4/26/16
Designed	JJ
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Approved	WMM



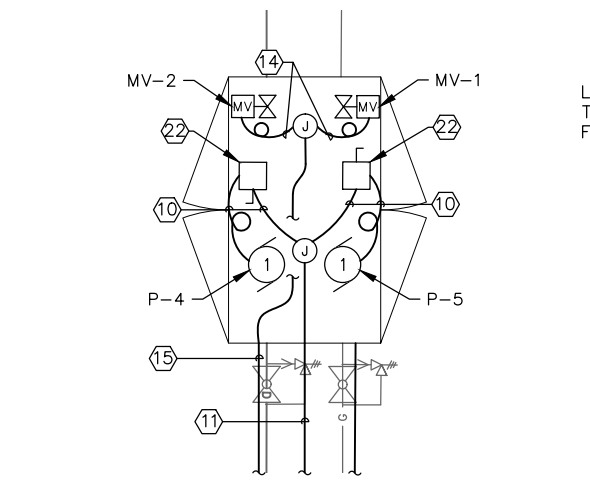


PUMP CABINET SEE 2/E7 FOR ELECTRICAL PLAN

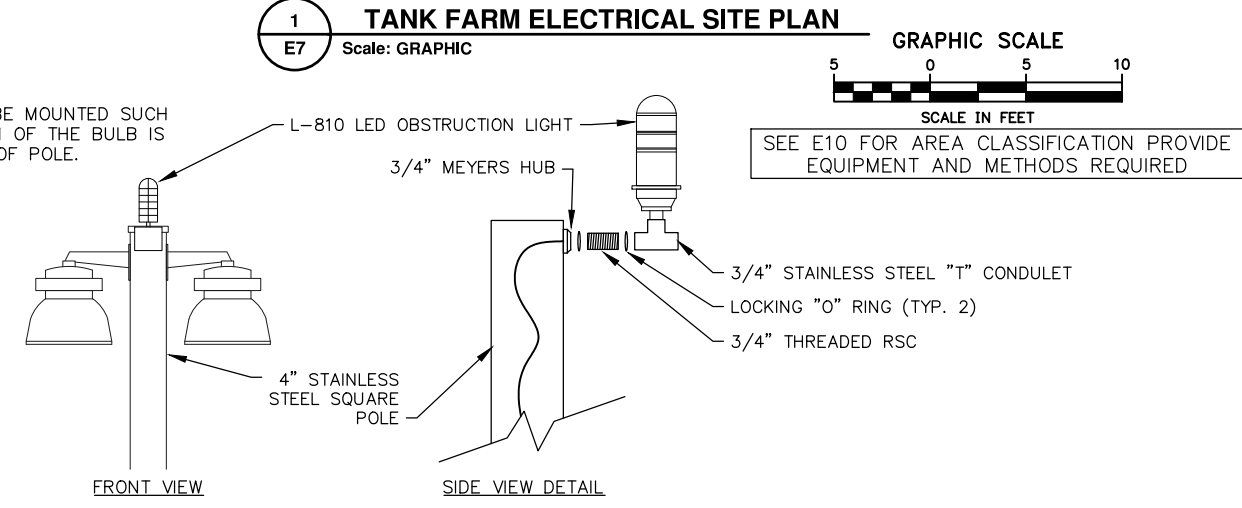
TO DISPENSER PAD SEE 1/E8

FAA L-810 RED LED OBSTRUCTION LIGHT. MOUNT ON SOUTHERN-MOST TANK PAD LIGHT POLE PER DETAIL 3 THIS SHEET.

File: J:\Jobsdata\30404.12 Shishmaref BFU\00 CADD\01 Working Set\03 Electrical\30403.22-SITE PLANS.dwg

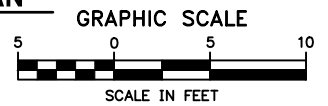


**2 PUMP CABINET ELECTRICAL PLAN**  
 Scale: NTS



**3 L-810 OBSTRUCTION LIGHT MOUNTING DETAIL**  
 Scale: NTS

**1 TANK FARM ELECTRICAL SITE PLAN**  
 Scale: GRAPHIC



SEE E10 FOR AREA CLASSIFICATION PROVIDE EQUIPMENT AND METHODS REQUIRED

**NOTES**

- ① 1/2" C, 5#12(H, 3SIGNAL, G).
- ② 1" C, 5#12H, 3SIGNAL, G).
- ③ 1" C, 9#12(2H, 6SIGNAL, G).
- ④ 1" C, 13#12(3H, 9SIGNAL, G).
- ⑤ 1-1/2" C, 17#12(4H, 12SIGNAL, G).
- ⑥ 1-1/2" C, 21#12(5H, 15SIGNAL, G).
- ⑦ 1/2" C, 6#12(H, 4SIGNAL, G).
- ⑧ 1" C, 11#12(2H, 8SIGNAL, G).
- ⑨ 2" C, 43#12(9H, 2N, 23SIGNAL, 4CONTROL, 4STATUS, G).
- ⑩ 3/4" C, 3#12(2PUMP, G).
- ⑪ 3/4" C 5#12(4PUMP, G).
- ⑫ 3/4" C, 7#12(6PUMP, G).
- ⑬ 1" C, 11#12(10PUMP, G).
- ⑭ 3/4" C, 7#12(H, N, 2CONTROL, 2STATUS, G).
- ⑮ 1" C, 13#12(2H, 2N, 4CONTROL, 4STATUS, G).
- ⑯ 1-1/2" C, 23#12(4H, 2N, 8SIGNAL, 4CONTROL, 4STATUS, G).
- ⑰ 3/4" C, 3#12(SWITCHLEG, N, G).
- ⑱ 3/4" C, 4#12(2TRAVELER, H, G).
- ⑲ 1-1/2" C, 4#12(2TRAVELER, SWITCHLEG, N), 4#10(2H, 2N), 1#12(G).
- ⑳ 3/4" C, 4#12(2TRAVELER, SWITCHLEG, G).
- ㉑ 3/4" C, 4#12(3ESD, G).
- ㉒ C1D1 RATED, 2P HP RATED DISCONNECT.
- ㉓ 3/4" C, 3#12(H, N, G, 4 TRAVELERS).
- ㉔ 1" C, 7#12(H, N, G, 2 TRAVELERS).
- ㉕ 1" C, 4#10(2H, 2N) 1#12(G).

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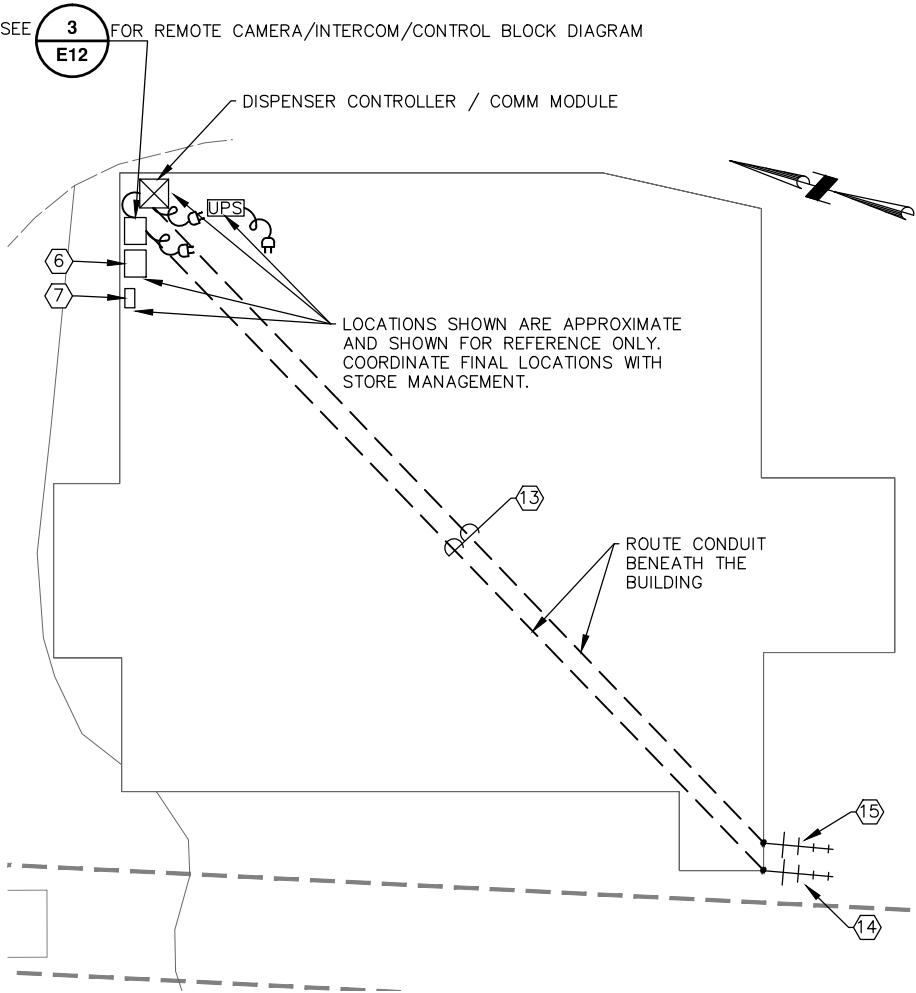
Plot Date	4/26/16
Designed	JJ
Drawn	JJ
Approved	WMM



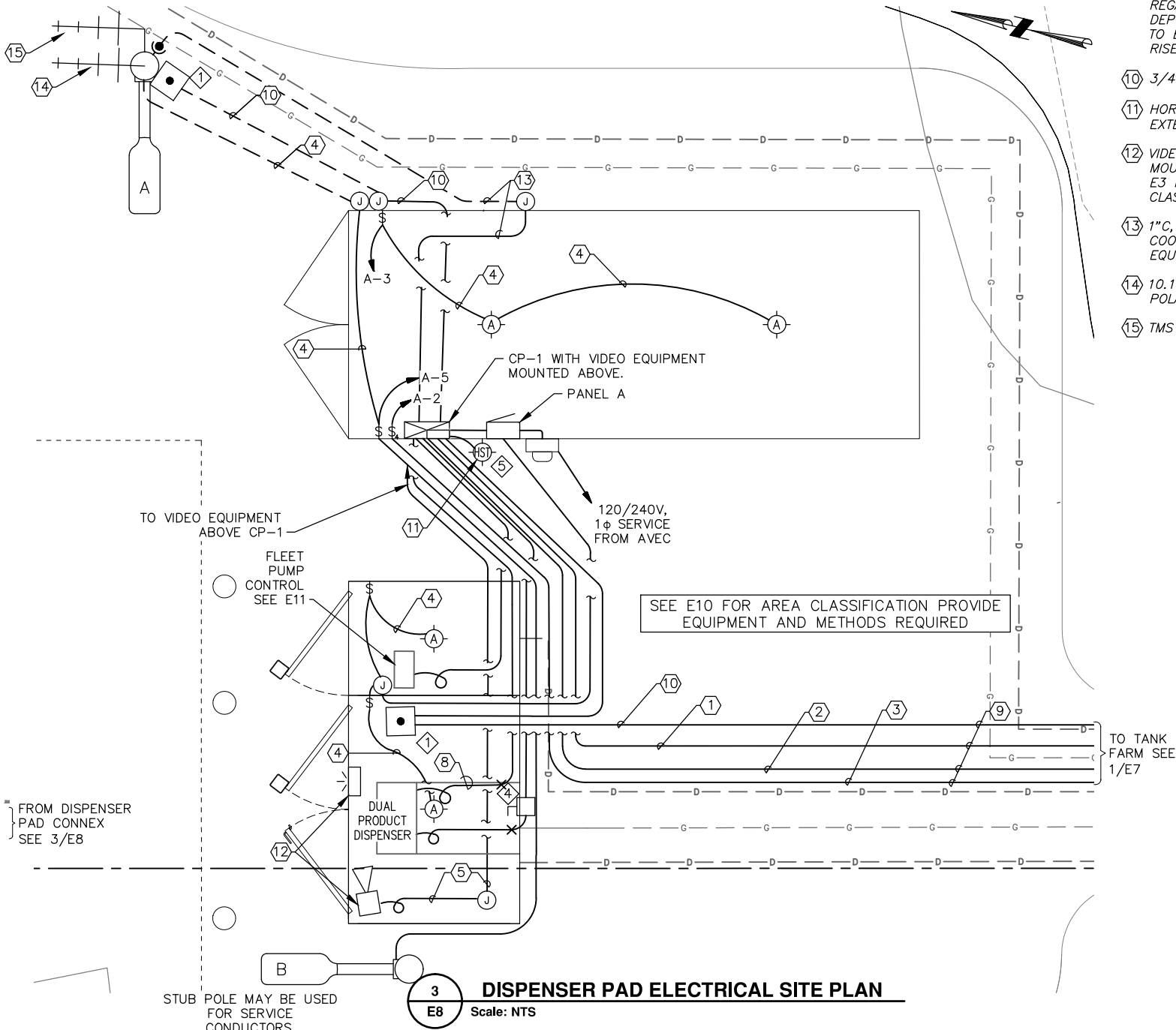
File: J:\Jobsdata\30404.12 Shishmaref BFU\00 CADD\01 Working Set\03 Electrical\30403.22-SITE PLANS.dwg



**1 TANK FARM ELECTRICAL SITE PLAN**  
**E8** Scale: GRAPHIC  
 GRAPHIC SCALE  
 80 0 80 160  
 SCALE IN FEET

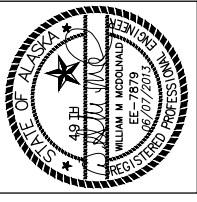


**2 NATIVE STORE ELECTRICAL PLAN**  
**E8** Scale: NTS



**3 DISPENSER PAD ELECTRICAL SITE PLAN**  
**E8** Scale: NTS

- NOTES**
- ① 2" C, 43#12(9H, 2N, 23SIGNAL, 4CONTROL, 4STATUS, G).
  - ② 1" C, 11#12(10PUMP, G).
  - ③ 3/4" C, 4#12(2TRAVELER, N, G).
  - ④ 3/4" C, 3#12(SWITCHLEG, N, G).
  - ⑤ VIDEO AND INTERCOM CABLES (2) CAT6E IN 1" C.
  - ⑥ VIDEO MONITOR – WALL MOUNTED. SEE CONTROL SPECIFICATION E3 FOR DETAILS.
  - ⑦ VIDEO / INTERCOM UNIT – WALL MOUNTED. SEE CONTROL SPECIFICATION E3 FOR DETAILS.
  - ⑧ 1" C, (2)#14 TWISTED PAIRS, UNSHIELDED (DISPENSER COMMUNICATIONS)
  - ⑨ SUPPORT CONDUITS INDEPENDENTLY FROM PIPING USING SHARED SLEEPERS AND SUPPORT. PROVIDE ADDITIONAL SUPPORT WHERE ROUTED AWAY FROM PIPES. BURY ALONG WITH PIPES – MAINTAIN MINIMUM DEPTH PER NEC REGARDLESS OF ACTUAL FUEL LINE DEPTHS. PROVIDE RISER AT TRANSITION TO BURIED AND AT CONEX WITH LTF RISERS.
  - ⑩ 3/4" C, 4#12(ESD, G)
  - ⑪ HORN/STROBE. MOUNT ON 1/2" RISER EXTEND 18" ABOVE ROOF OF CONEX.
  - ⑫ VIDEO CAMERA AND INTERCOM – WALL MOUNTED. SEE CONTROL SPECIFICATION E3 FOR DETAILS. MOUNT OUTSIDE OF CLASSIFICATION ZONE.
  - ⑬ 1" C, ETHERNET BRIDGE RF COAX. LM400. COORDINATE CONNECTORS WITH EQUIPMENT REQUIREMENTS.
  - ⑭ 10.1dB YAGI ANTENNA, 900MHz, MATCH POLARITY. AIM AS REQUIRED.
  - ⑮ TMS WIRELESS ANTENNA.



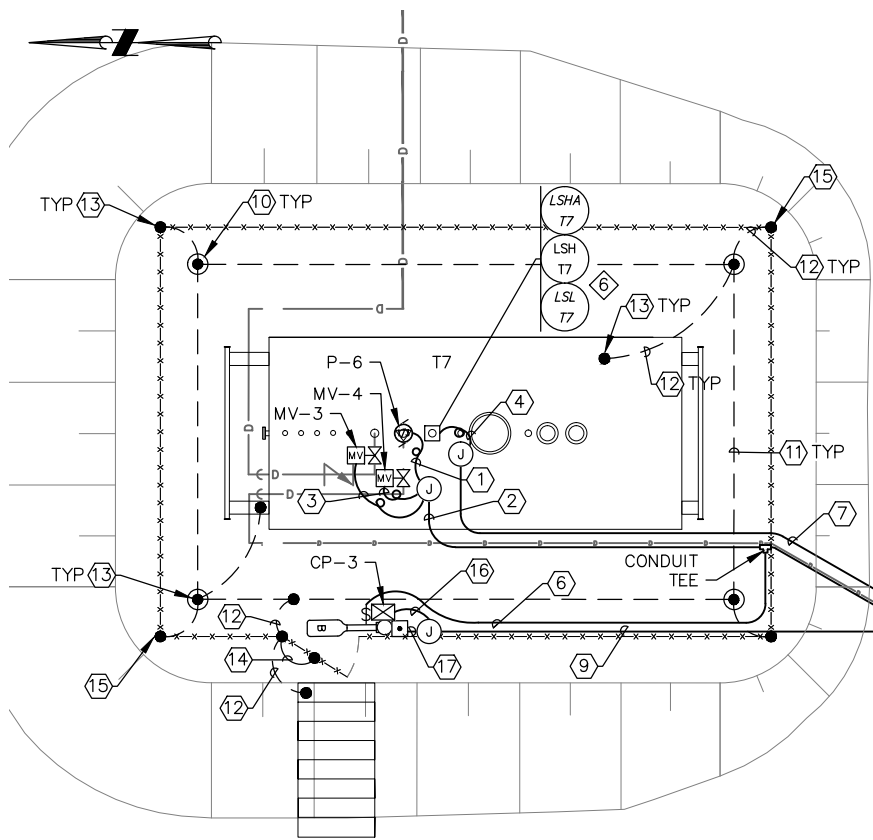
SHISHMAREF, ALASKA  
 SHISHMAREF BFU PROJECT  
 TANK FARM PIPING SITE PLAN

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 Drawn: JU  
 Approved: WMM

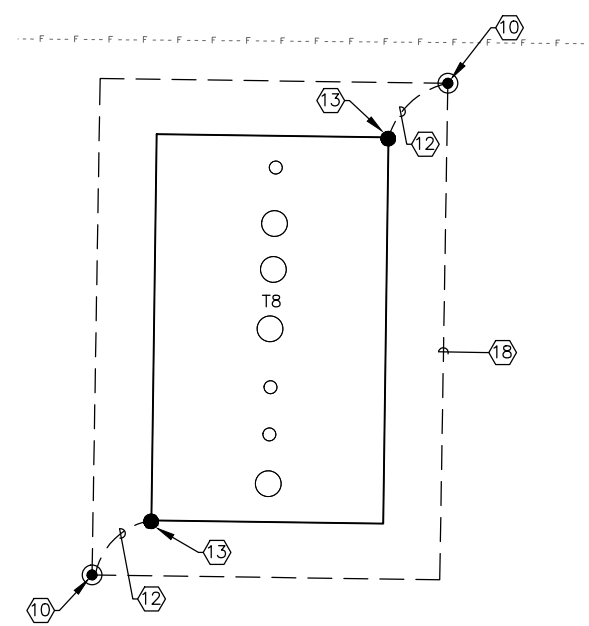


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**1**  
E9 **WASHETERIA/WTP FUEL TANK ELECTRICAL SITE PLAN**  
Scale: GRAPHIC

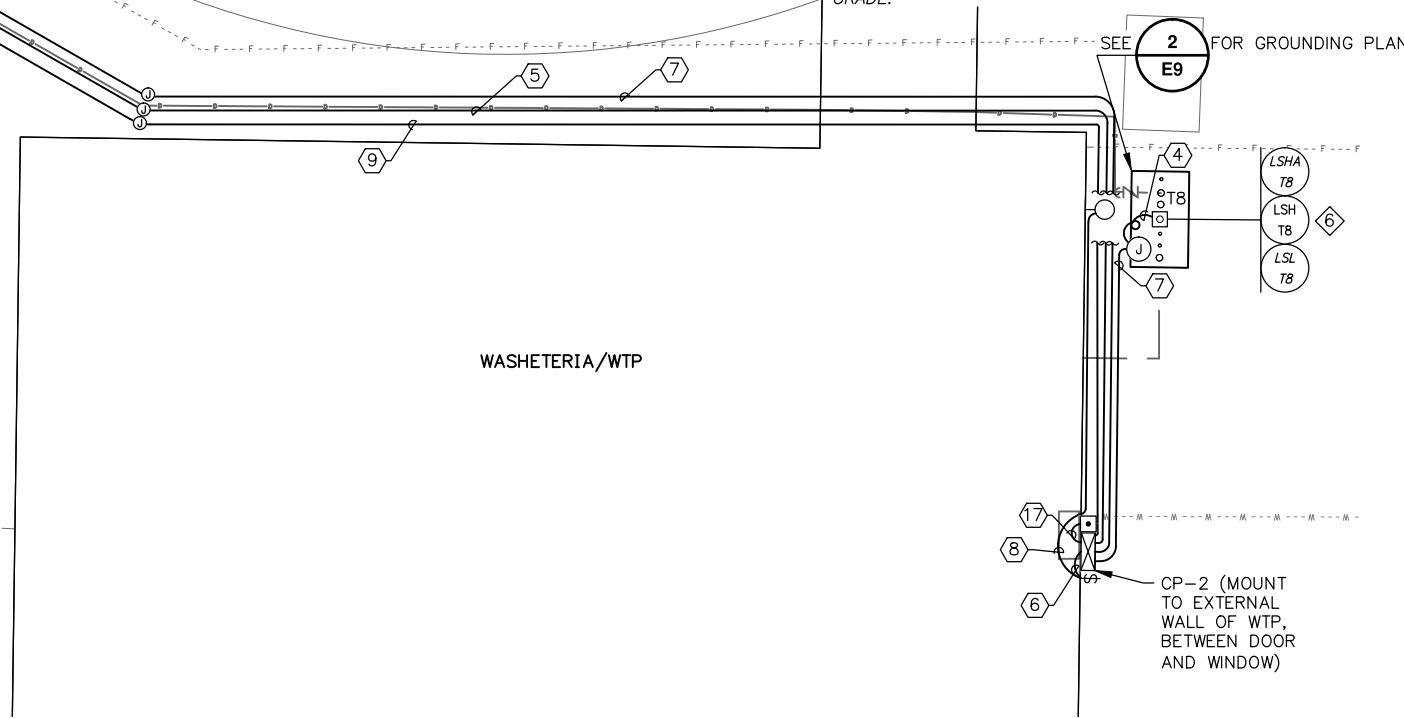
WORK ON THIS SHEET TO BE PERFORMED UNDER ADDITIVE ALTERNATE "A"



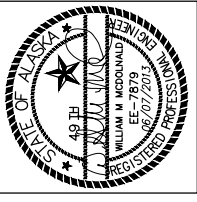
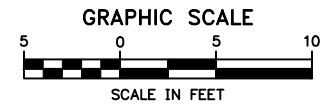
**2**  
E9 **DAYTANK GROUNDING PLAN**  
Scale: NTS

**NOTES**

- ① 3/4"C, 3#10 (2PUMP, G).
- ② 1-1/2"C, 3#10 (2PUMP, G), 12#12 (2H, 2N, 4CONTROL, 4 STATUS).
- ③ 3/4"C, 7#12 (H, N, 2CONTROL, 2 STATUS, G).
- ④ 1/2"C, 5#12 (H, 3SIGNAL, G).
- ⑤ 1-1/2"C, 3#10 (2PUMP, G), 14#12 (3H, 3N, 4CONTROL, 4 STATUS).
- ⑥ 3/4"C, 3#12 (H, N, G).
- ⑦ 3/4"C, 5#12 (H, 3SIGNAL, G).
- ⑧ 3/4"C, 3#12 (SWITCHLEG, N, G).
- ⑨ 1"C, 14#12 (3CONTROL, 5SIGNAL, 3ESD, H, N, G).
- ⑩ 3/4"X10' COOPER CLAD GROUND ROD.
- ⑪ #2 bCU GROUND RING BURIED 6" BELOW GRADE.
- ⑫ #6 bCU JUMPER.
- ⑬ BELOW GRADE BOND: EXOTHERMIC WELDMENT ABOVE GRADE BOND: FENCEPOST/STAIRS, SPLIT BOLT TANK SKID: EXOTHERMIC WELDMENT, DO NOT WELD TO TANK, TOUCH UP AND PAINT AREA AFFECTED WHEN WELD IS COMPLETE.
- ⑭ #6 BRAID TO GATE.
- ⑮ EXTEND #6 GROUND TO BARBED WIRE AND BOND AT ALL CORNERS AND WHERE SHOWN.
- ⑯ 1"C, 11#12 (3CONTROL, 5SIGNAL, H, N, G).
- ⑰ 3/4"C, 4#12 (3ESD, G).
- ⑱ #2 bCU GROUND RING BURIED MIN 30" BELOW GRADE.



**1**  
E9 **WASHETERIA/WTP FUEL TANK ELECTRICAL SITE PLAN**  
Scale: GRAPHIC

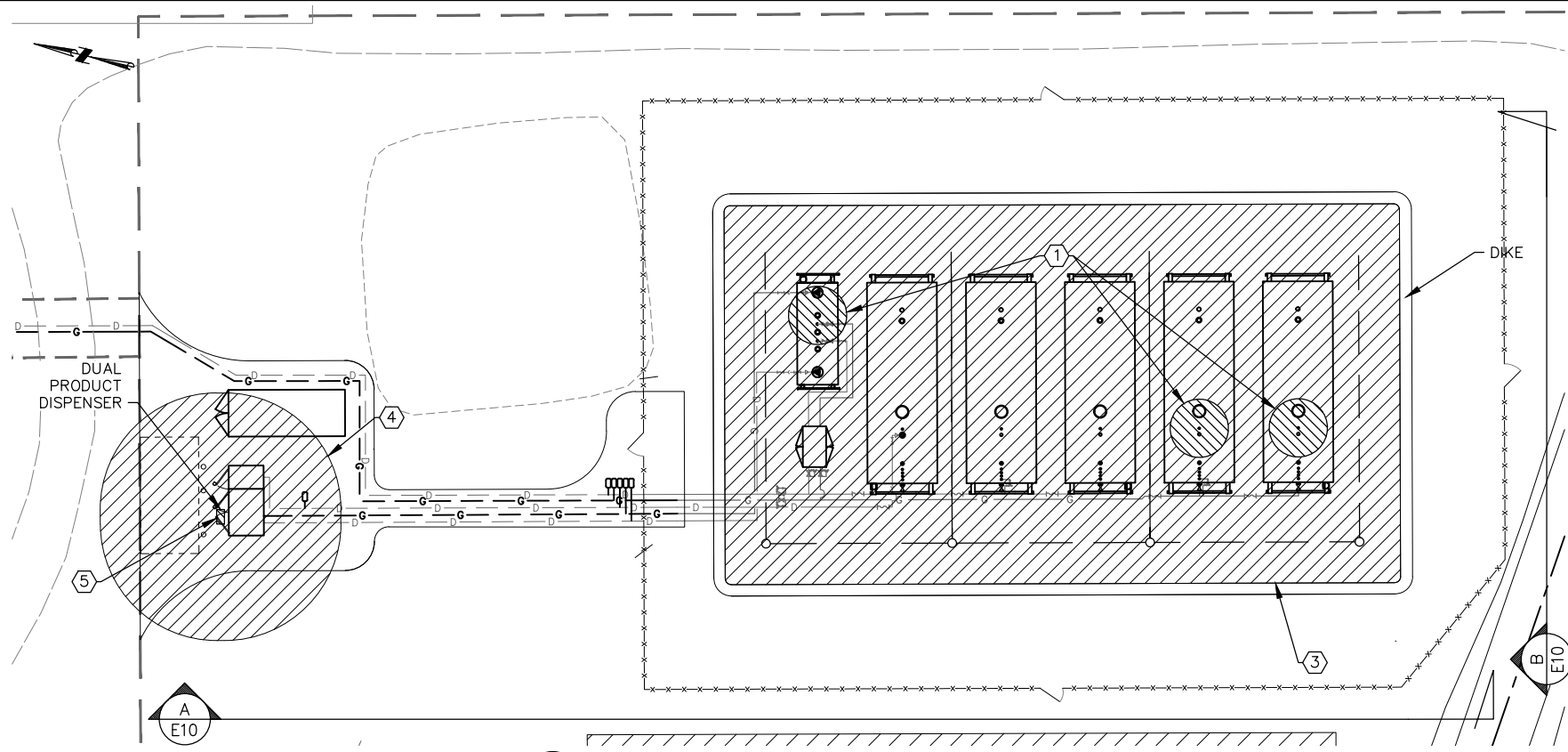


SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
WTP SITE PLAN (ADD ALT A)

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File: J:\Jobsdata\30404.12 Shishmaref BFU\00 CADD\01 Working Set\03 Electrical\30403.22-HAZARDOUS AREA PLAN.dwg



**1 TANK FARM AREA CLASSIFICATION PLAN**  
E10 Scale: NTS

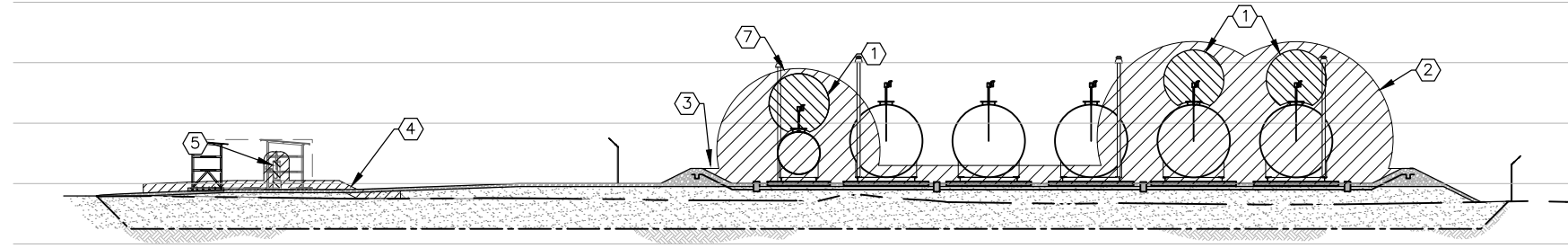
**CLASSIFICATION LEGEND**

CLASS 1, DIVISION 1

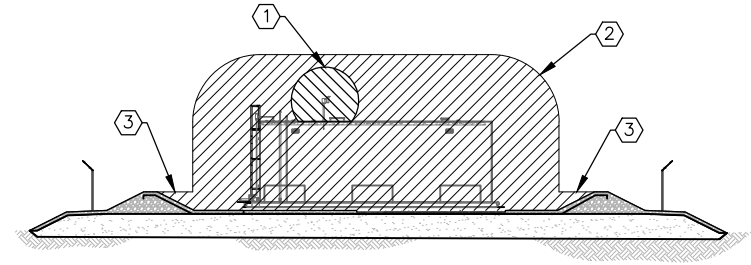
CLASS 1, DIVISION 2

- NOTES**
- CLASS 1, DIVISION 1 RATING EXTENDS 5' IN ALL DIRECTIONS AROUND GASOLINE TANK VENTS.
  - CLASS 1, DIVISION 2 RATING EXTENDS 10' IN ALL DIRECTIONS OF GASOLINE TANKS.
  - SPACE INSIDE DIKE LEVEL TO THE TOP OF THE DIKE IS RATED CLASS 1, DIVISION 2.
  - THE AREA 18" ABOVE GRADE WITHIN 20' OF DUAL DISPENSER IS CLASS 1, DIVISION 2 RATED.
  - THE AREA INSIDE THE DUAL DISPENSER AND INSIDE AND BELOW THE PAN BASIN IS CLASS 1, DIVISION 1 RATED.
  - THE AREA 18" ABOVE GRADE WITHIN 20' OF GASOLINE HEADER IS CLASS 1, DIVISION 2 RATED.
  - THE AREA WITHIN 10' OF THE GASOLINE SIDE OF THE DUAL PRODUCT DISPENSER TANK (T1A) IS A CLASS 1, DIVISION 2 LOCATION.

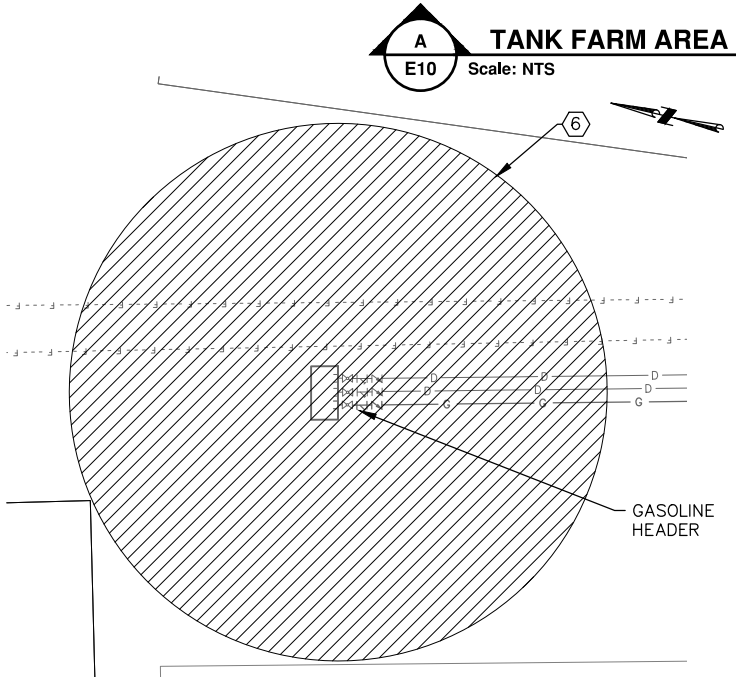
ALL WORK IN CLASSIFIED AREAS SHALL BE DONE IN STRICT COMPLIANCE WITH ARTICLES 500, 501, 514 AND 515 OF THE NATIONAL ELECTRICAL CODE. PROVIDE SEAL-OFFS ON ALL CONDUIT PENETRATING CLASSIFIED LOCATIONS AS REQUIRED BY CODE.



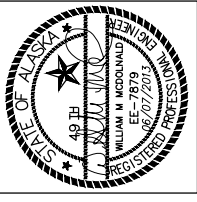
**A TANK FARM AREA CLASSIFICATION ELEVATION**  
E10 Scale: NTS



**B GASOLINE TANK CLASSIFICATION ELEVATION**  
E10 Scale: NTS



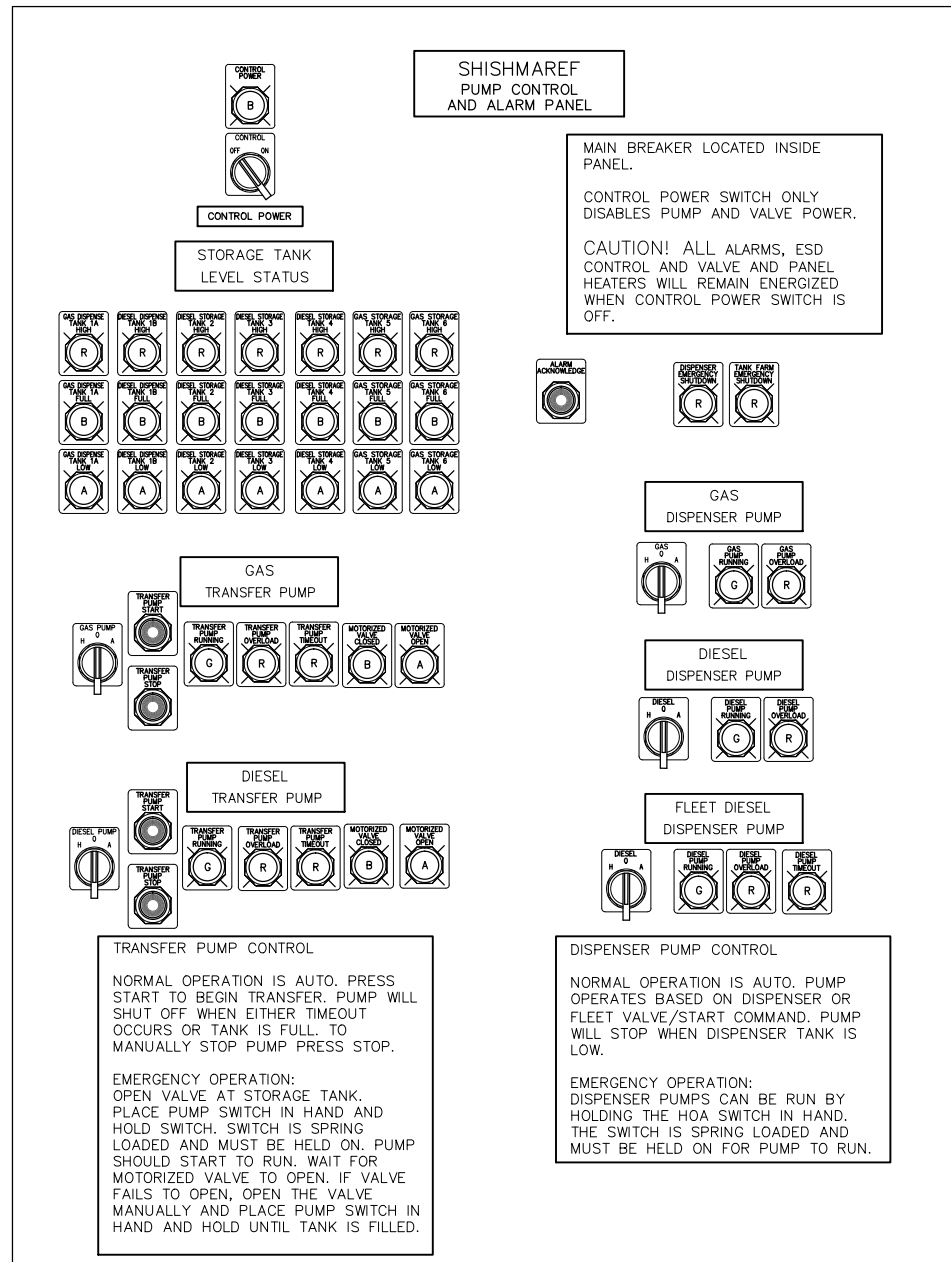
**2 HEADER AREA CLASSIFICATION PLAN**  
E10 Scale: NTS



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
AREA CLASSIFICATION

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**1 TANK FARM PANEL CP-1 LAYOUT**  
E11 Scale: NTS

**2 FLEET DISPENSING CONTROL LAYOUT**  
E11 Scale: NTS

### ALARM AND PUMP CONTROL NARRATIVE

The control panel provides critical high alarms for 5 bulk fuel tanks, the two product dispensing tank, controls the transfer of fuel from the bulk tanks to the gasoline and diesel dispensing tanks, operates the gasoline and diesel retail dispensing pumps, the Fleet hose reel pump and provides emergency shutdown for the entire fuel system.

#### ALARMS

Each storage tank is equipped with a CRITICAL HIGH (LSHA - XX) Level Float switch that, when fuel reaches its level, opens a circuit (fails safe) and causes an alarm horn/strobe to signal a CRITICAL HIGH Level has been reached. The CRITICAL HIGH Level condition is indicated on the front of the panel as well, identifying the tank(s) with high level(s).

The operator can acknowledge the alarm by pressing the ALARM ACKNOWLEDGE button on the control panel. This extinguishes the strobe and silences the horn, but the front panel light will remain illuminated until sufficient fuel is drained from the tank to drop its fuel level below the CRITICAL HIGH float's sensing point. At that time the front panel light will extinguish.

The control logic for alarms is set up so that each new alarm condition will cause the audible and visual alarms to annunciate, regardless of any existing (acknowledged) alarm conditions.

In addition to the storage tank alarms, the dispensing tanks are equipped with CRITICAL HIGH level float switches and alarms as well. These alarms function the same as the bulk fuel alarms.

The Emergency shutdown system, when engaged, will cause the alarm horn/strobe to be energized. There are three emergency shutdown stations; one by the dispensers, one by the spill control equipment building and one at the fuel tank farm. The alarm is enabled by pushing the ESD button and is extinguished by pulling the Emergency push button "out", clearing the signal. When an ESD button is pushed, all powered conductors to the dispensers are disconnected and all pumps are shut down. The motorized valves are all sent a CLOSE signal and after a brief time delay to allow them to close they too will be disconnected from all current carrying conductors. Lighting and alarms are NOT de-energized and will remain active.

#### FUEL TRANSFER

The fuel transfer between the bulk and dispensing tanks can be either manual or semi-automatic. The following applies to both the Gasoline and Diesel systems.

##### Manual operation

By placing (and holding) the HOA switch in the HAND position, the transfer pump will start and run. Its RUN light will be illuminated confirming the pump is powered. The pump will continue running until either it experiences an overload condition where the motor starter control is opened internally, the CRITICAL HIGH level float is reached or the operator releases the HOA switch. If an overload causes the shutdown, a pilot light on the panel front will be energized (no other indication will be given, other than the pump stopping). The HOA switch is spring loaded so that upon release it will return to OFF from the HAND position. The HAND or manual mode is provided for maintenance and testing however it could be used to fill the dispensing tank should automatic controls fail. The manual fill operation would require two people to perform safely.

When ever a transfer pump is started, an "Open" signal is also sent to its associated motorized valve which opens. When the pump is shut down, the motorized valve receives a "Close" signal and it closes. OPEN and CLOSED status is displayed on the panel.

NOTE: See ALARMS section above for Emergency Shutdown

##### SEMI-Automatic operation

AUTO mode is the intended continuous mode for these controls. In AUTO, the operation of the transfer pump is controlled by a pushbutton on the control panel and the LSH and LSHA floats in the dispensing tank. When fuel level drops to below the LSL float's level a panel mounted pilot light, GAS/DIESEL DISPENSING TANK LOW is energized. The operator must press the PUMP START pushbutton to begin transfer. If pumping is successful, the low level light will extinguish after a few minutes. Internal controls linked to the LSH float keep the pump running until the LSH float level is attained or pumping lasts for more than 15 minutes. (NOTE: There is a timer that starts when the pump starts and is set for 15 minute timeout. A pilot light on the front panel will be energized, indicating PUMP TIMEOUT has occurred. If timeout is the cause of shutdown, the HOA switch must be turned OFF then back to AUTO for the transfer operation to resume.)

Should pumping be completed before timeout, a pilot light on the front panel will be energized once the LSH float level is reached (GAS/DIESEL DISPENSING TANK FULL). When no tank level pilot lights are on, the tank level lies somewhere between low level and full. Should the pump continue to run after the HIGH float was reached, and fuel levels increase the LSHA float will also attempt to shut the pump down as well as sounding the alarm and enabling its pilot light on the front panel (GAS/DIESEL DISPENSING TANK HIGH).

##### DISPENSING PUMPS

The dispenser pumps can be either manual or automatic. The following applies to both the Gas and Diesel systems.

Normal operation is for the pumps to operate in AUTO mode. The dispensing tanks are equipped with Low Level Floats (LSL). If tank fuel level drops below the float, the associated pump will stop until transfer is completed.

##### Manual operation

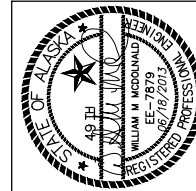
By placing (and holding) the HOA switch in the HAND position, the dispenser pump will start and run. Its RUN light will turn on and the pump will continue running until either it experiences an overload condition where either the panel mounted motor starter control is opened internally, or an internal temperature sensor in the motor detects an overheat condition or the operator releases the HOA switch. If a panel-based overload causes the shutdown, a pilot light on the panel front will be energized (no other indication will be given, other than the pump stopping). A RESET pushbutton on the pump motor starter located inside the panel must be pressed to clear the overload relay in order to allow the pump to restart. The HOA switch is spring loaded so that upon release it will return to OFF from the HAND position. The HAND or manual mode is provided for maintenance and testing however it could be used to operate the Fleet Dispensing system in the event of control failure.

##### Automatic operation

AUTO mode is the intended continuous mode for these controls. In AUTO, the operation of the gas and diesel dispenser pumps is controlled by the dispenser. Other operating parameters are identical to the manual mode.

The Fleet dispensing STOP START remote operates the pump associated with the Fleet dispensing pump.

When the Fleet dispenser pump is running a timer is activated and when the preset time has elapsed the pump is shut down. The timer resets the pump controls only - it does not affect the operation of the integral fuel meter valve that allows a preset amount of fuel to flow before closing. Should the timer shut the pump down before the required amount of fuel is provided, pushing the START button would cause the timing to reset allowing the pump to resume operation.



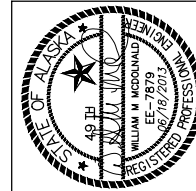
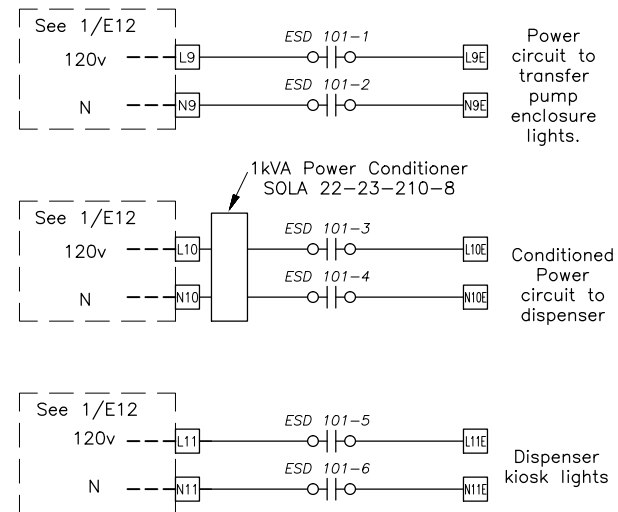
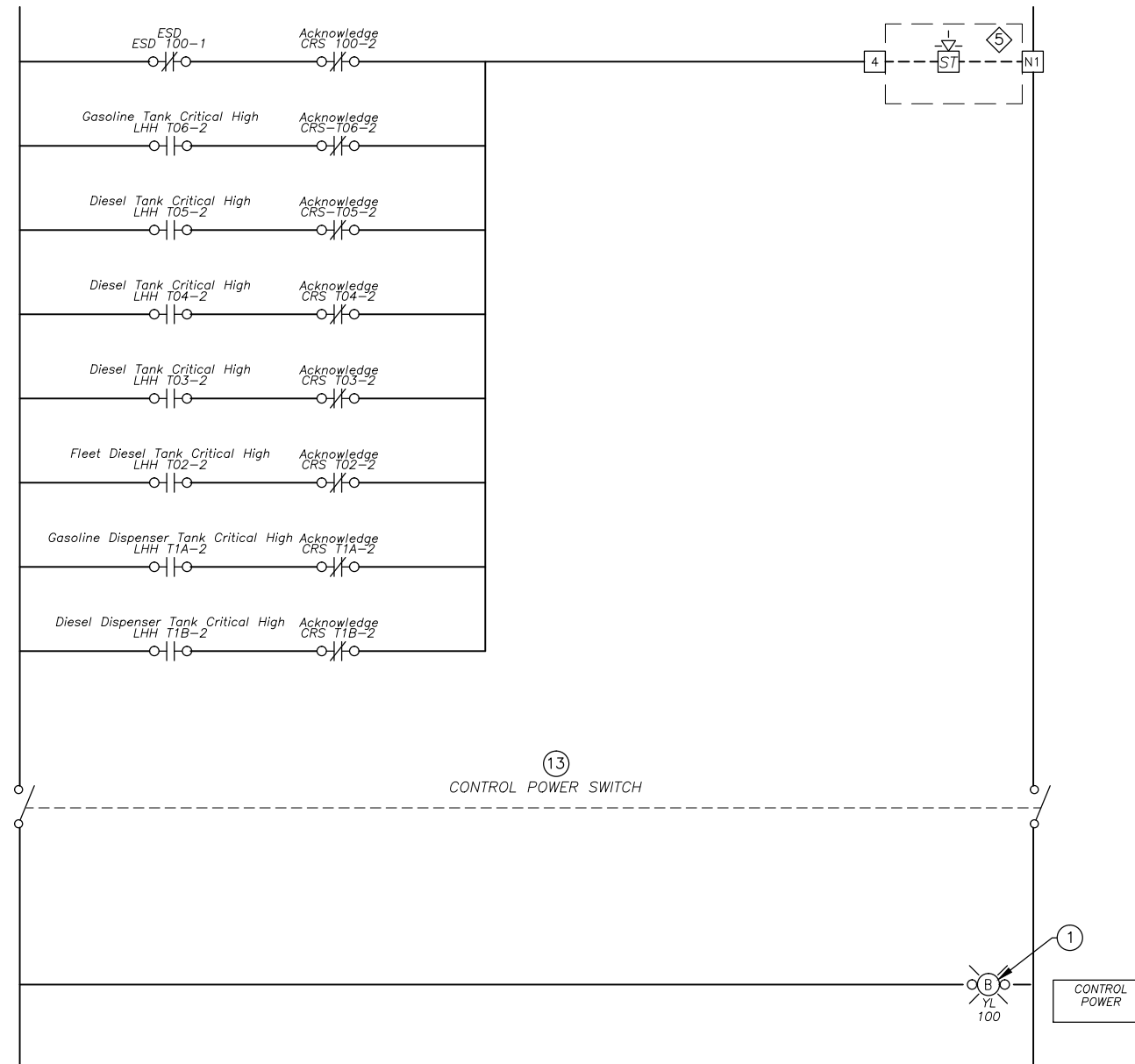
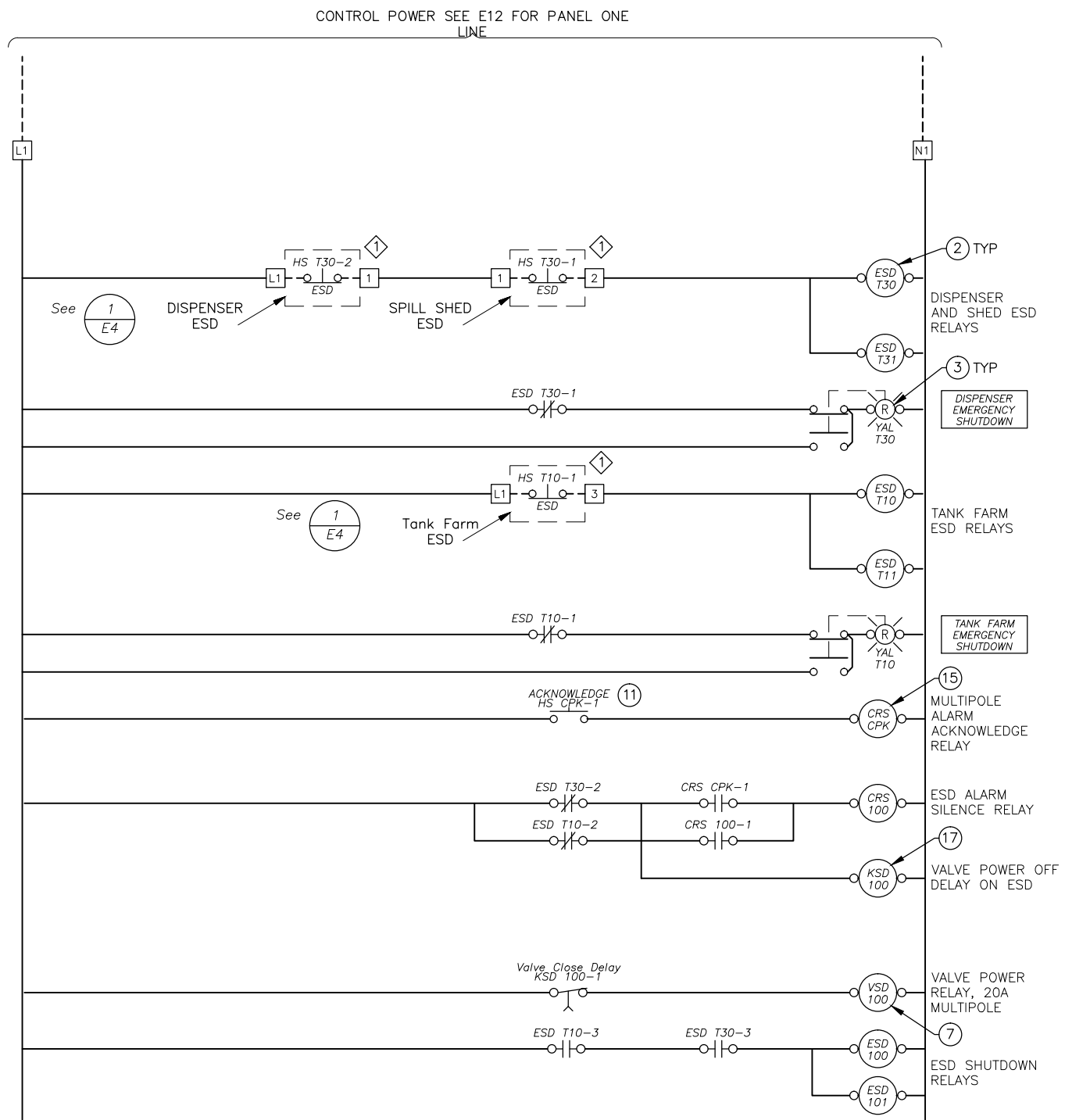
SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
TANK FARM PANEL CP-1 LAYOUT

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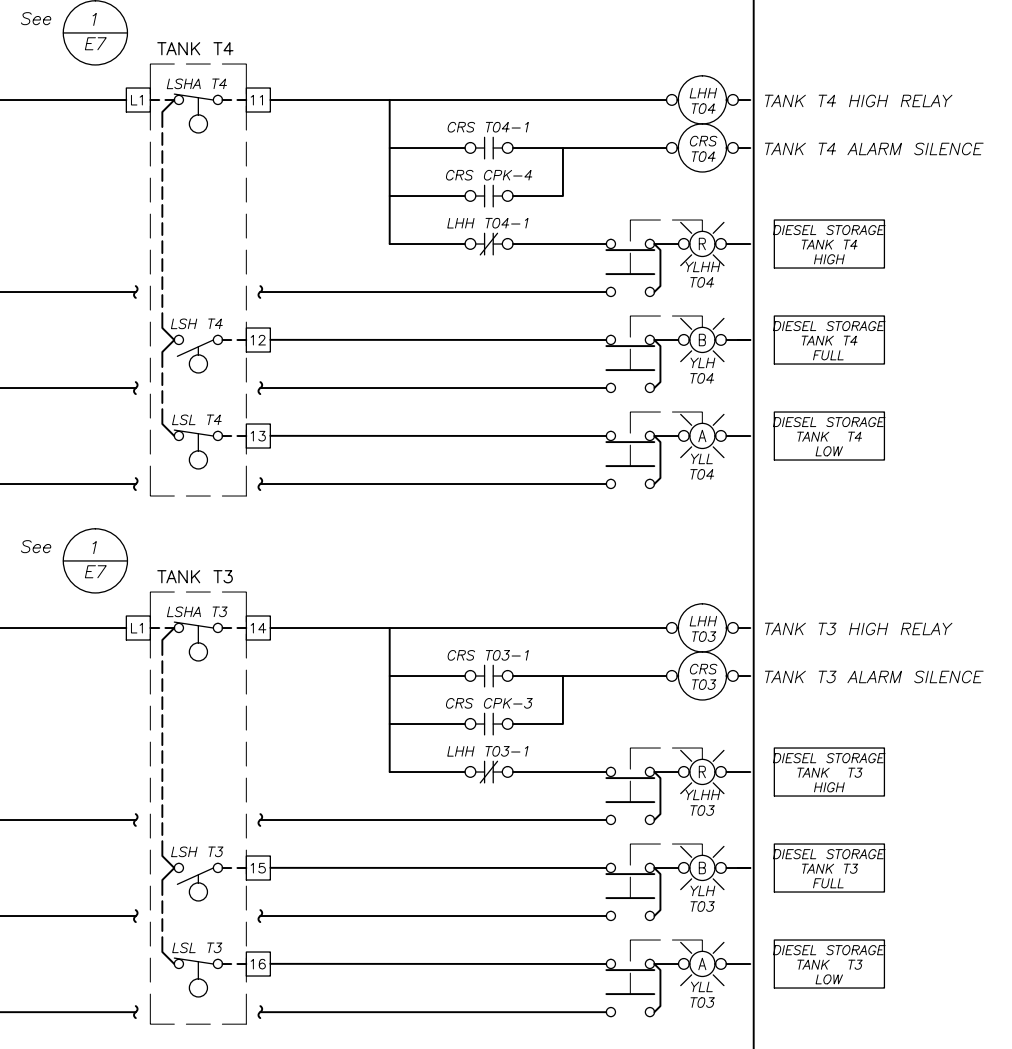
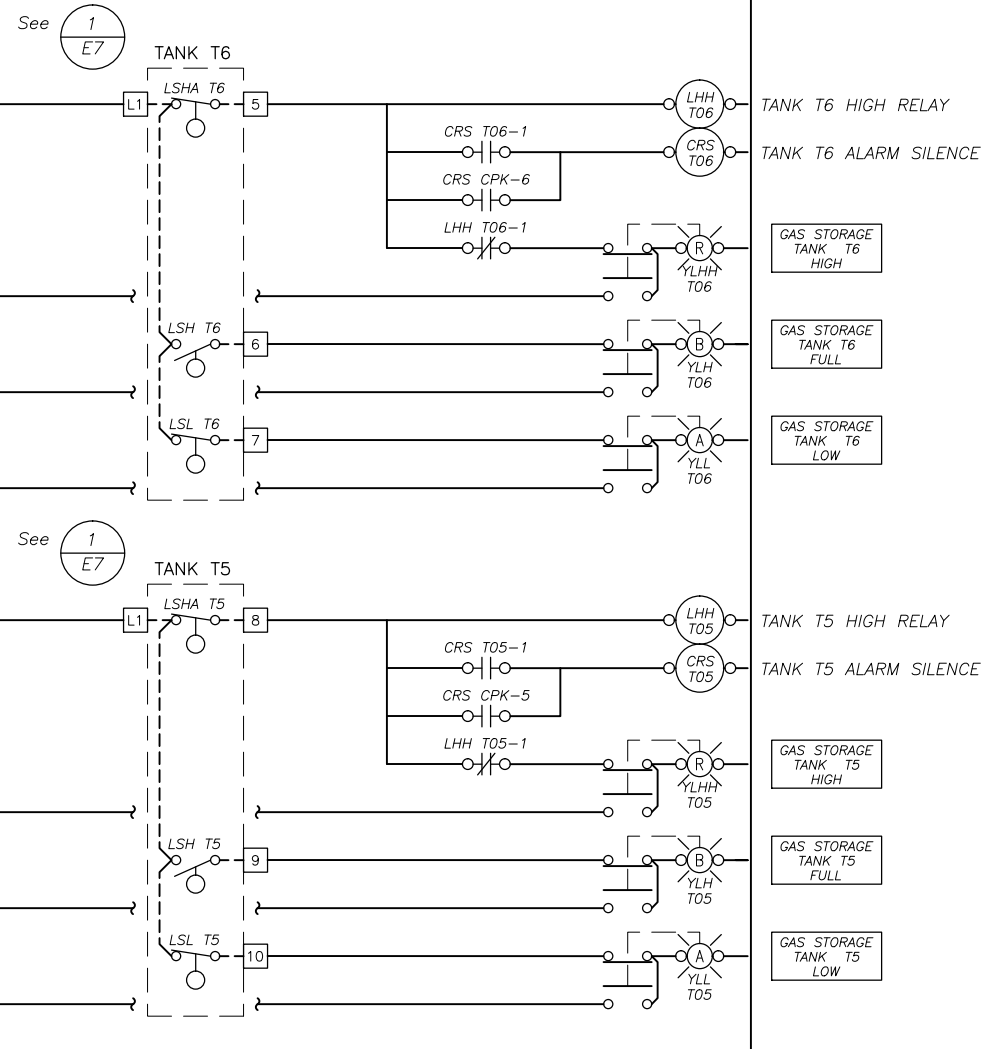
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SHISHMAREF BFU PROJECT  
CP-1 LADDER (1 OF 6)

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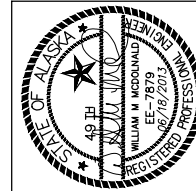
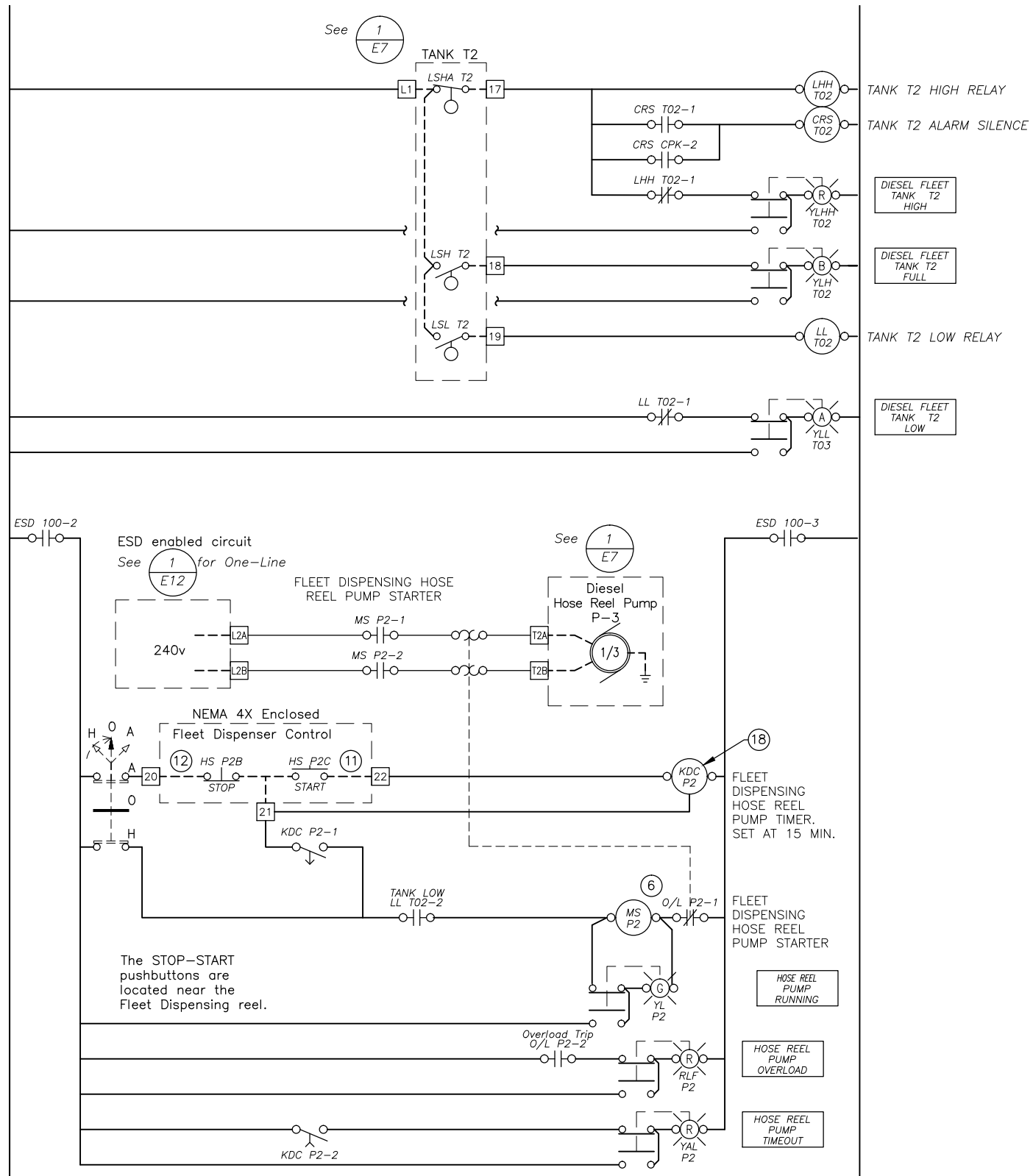
Plot Date: 4/26/16  
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Drawn: JU  
Approved: WMM



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
CP-1 LADDER (2 OF 6)

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	BM	4/18/16

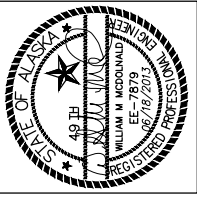
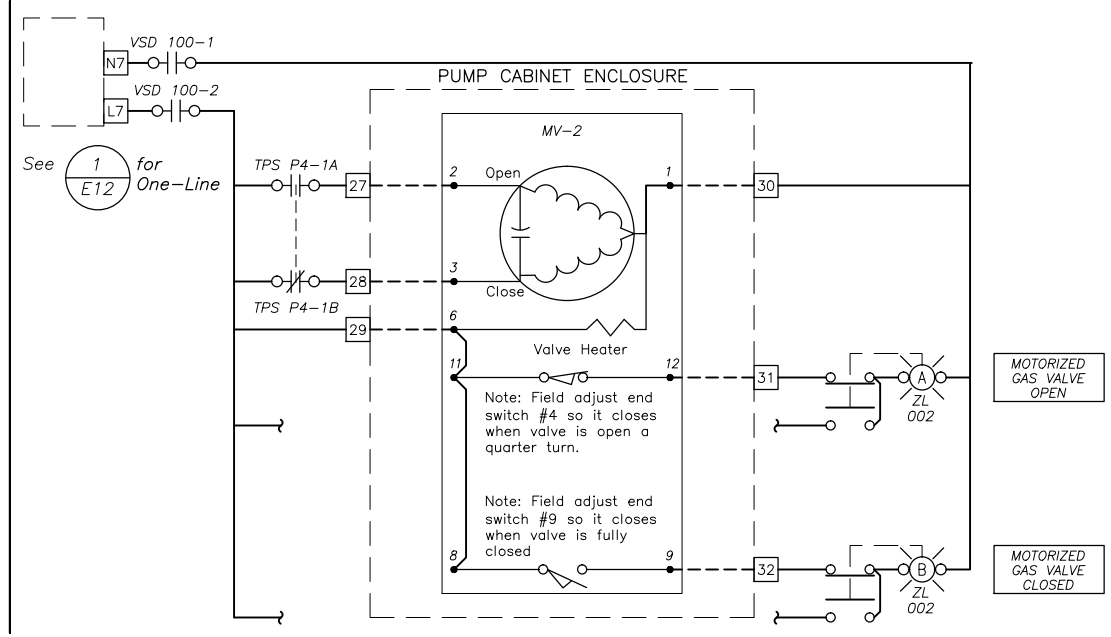
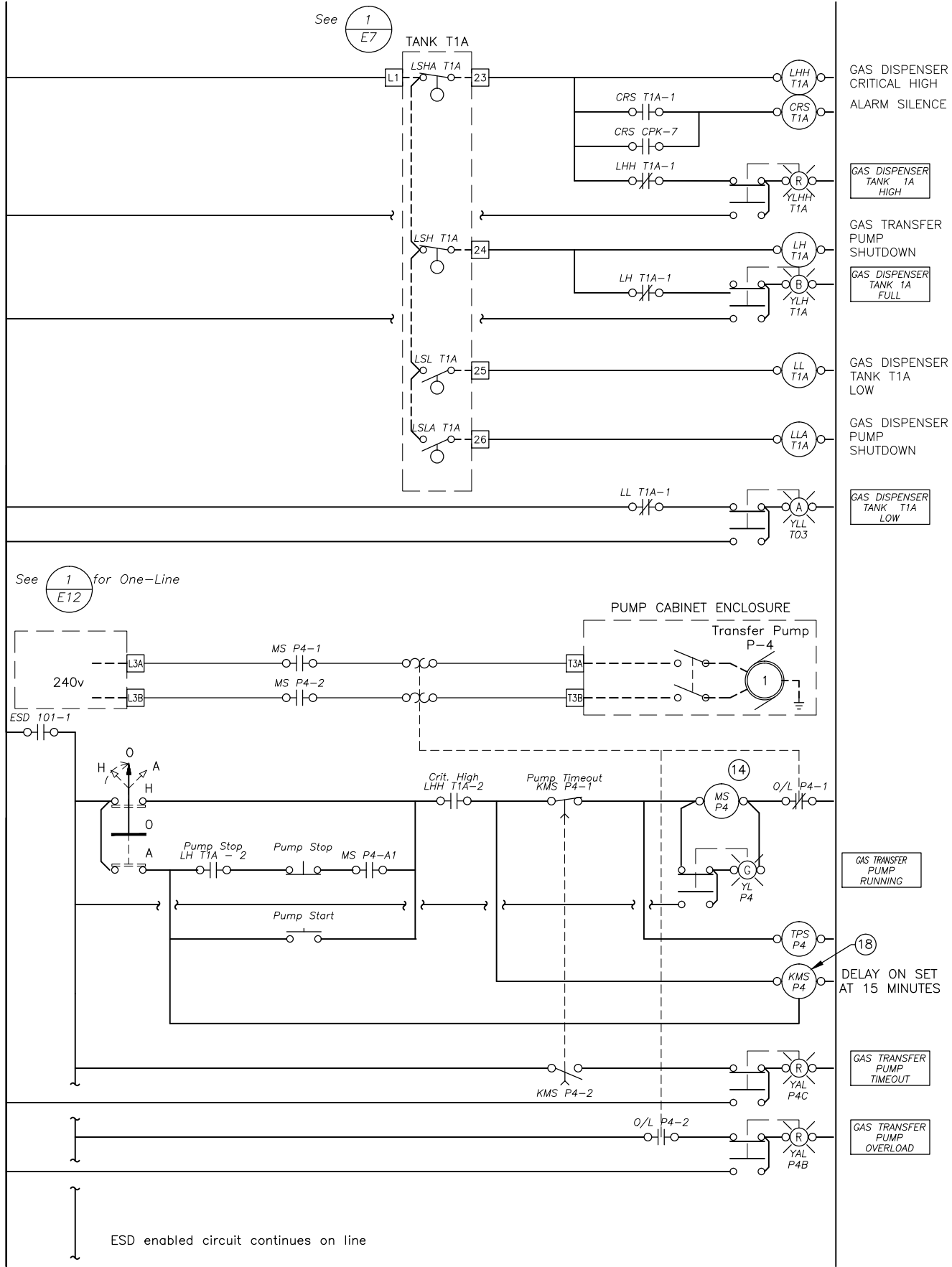
Plot Date	4/26/16
Designed	JJ
Drawn	JJ
Approved	WMM



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
CP-1 LADDER (3 OF 6)

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	BM	4/18/16

Plot Date: 4/26/16  
Designed: JU  
Drawn: JU  
Approved: WMM

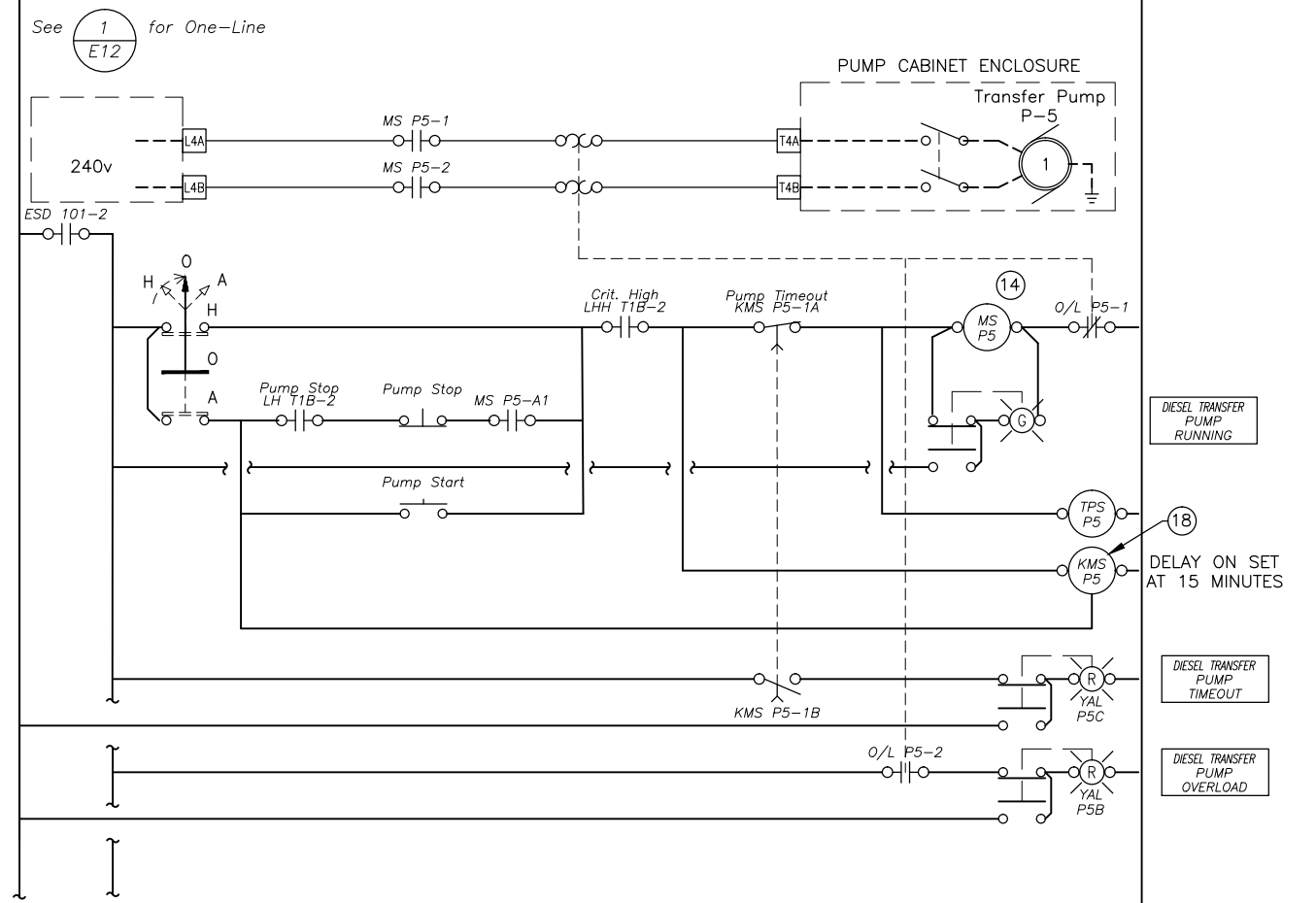
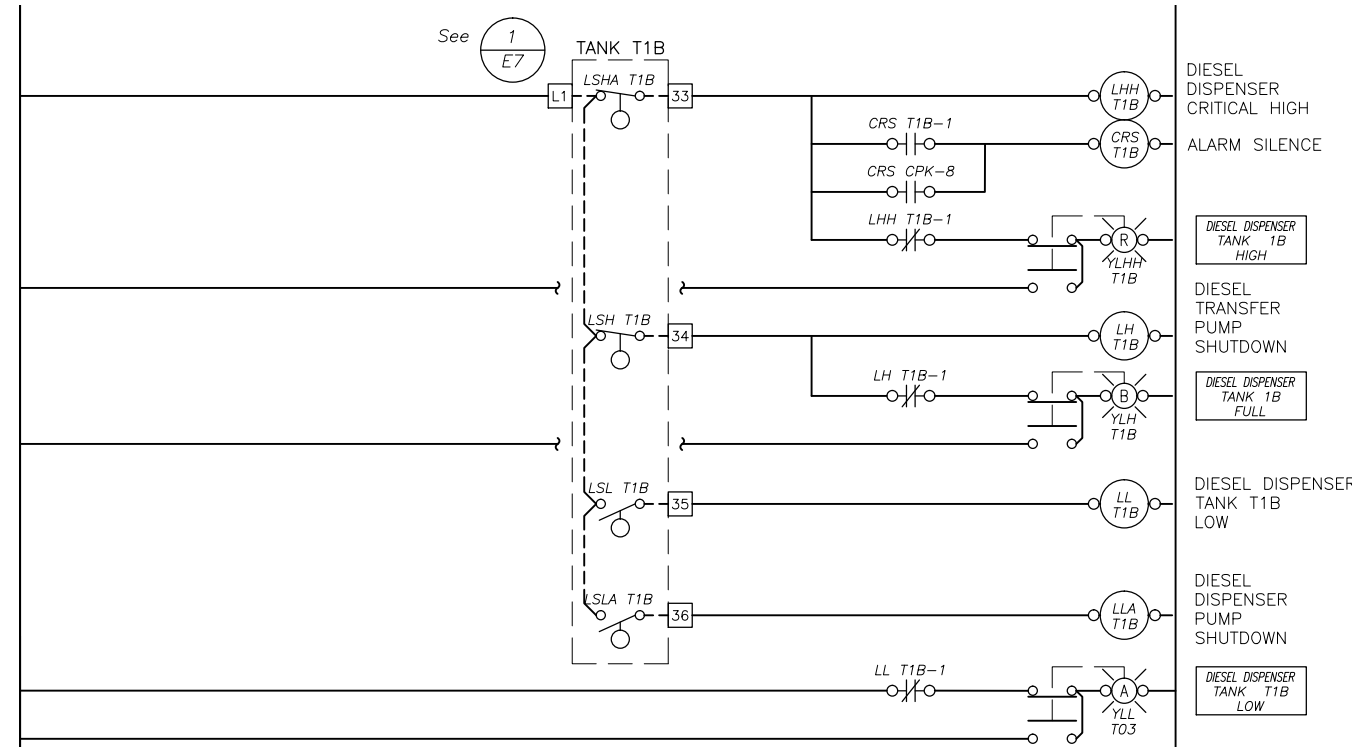


SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
CP-1 LADDER (4 OF 6)

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	BM	4/18/16

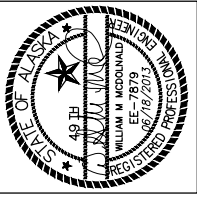
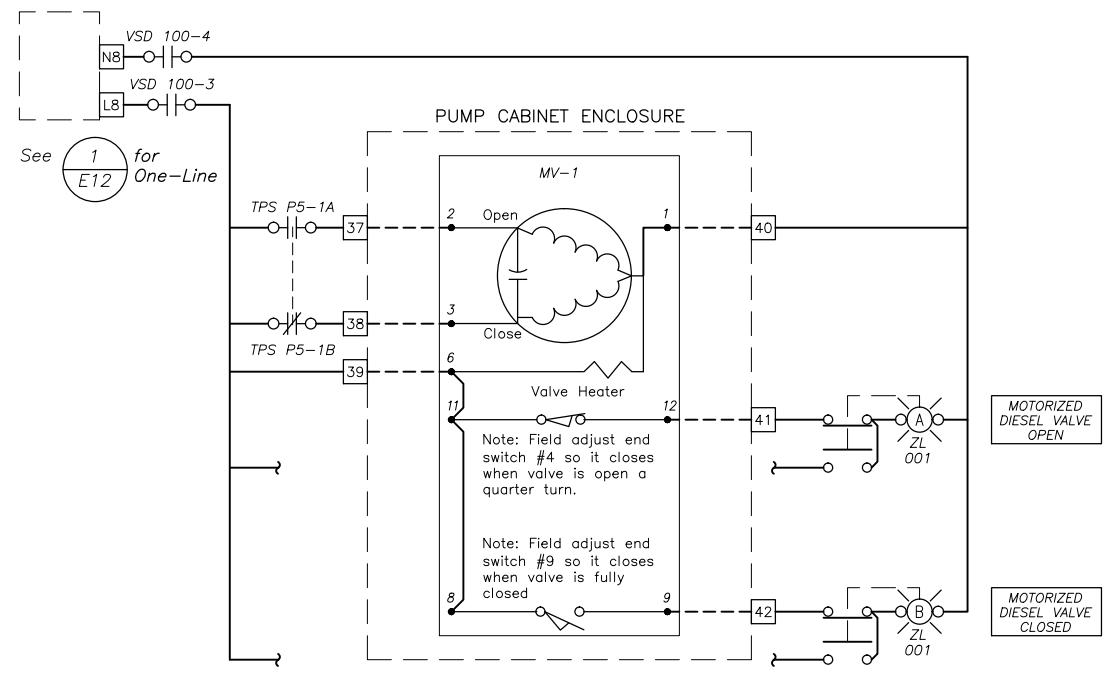
Plot Date	4/26/16
Designed	JJ
Drawn	JJ
Approved	WMM





SEE E18 FOR CONTINUATION

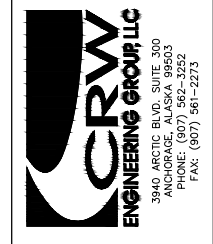
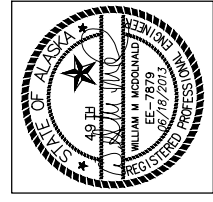
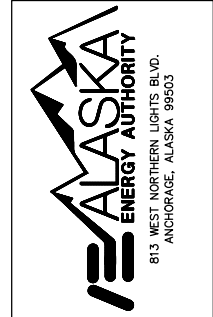
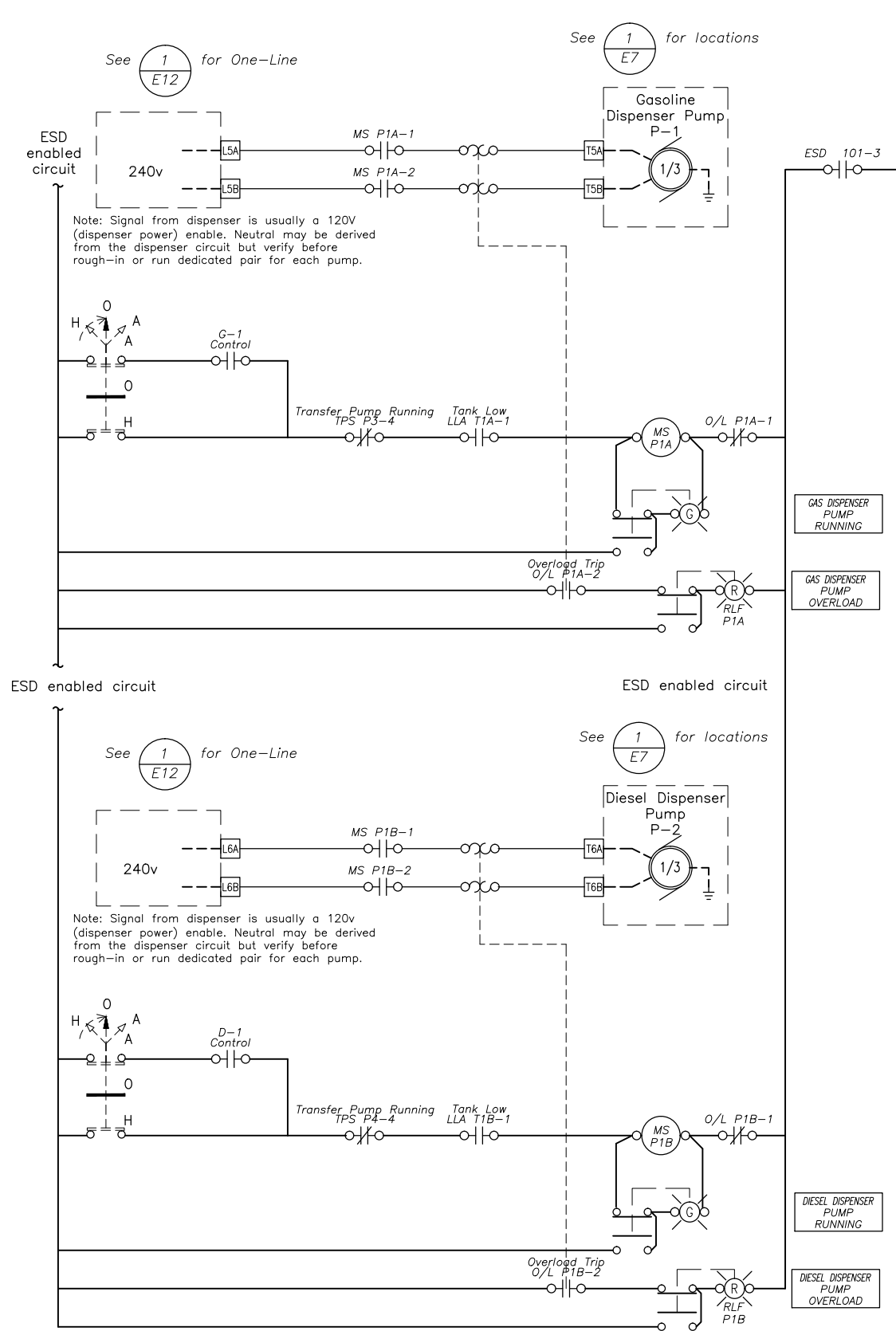
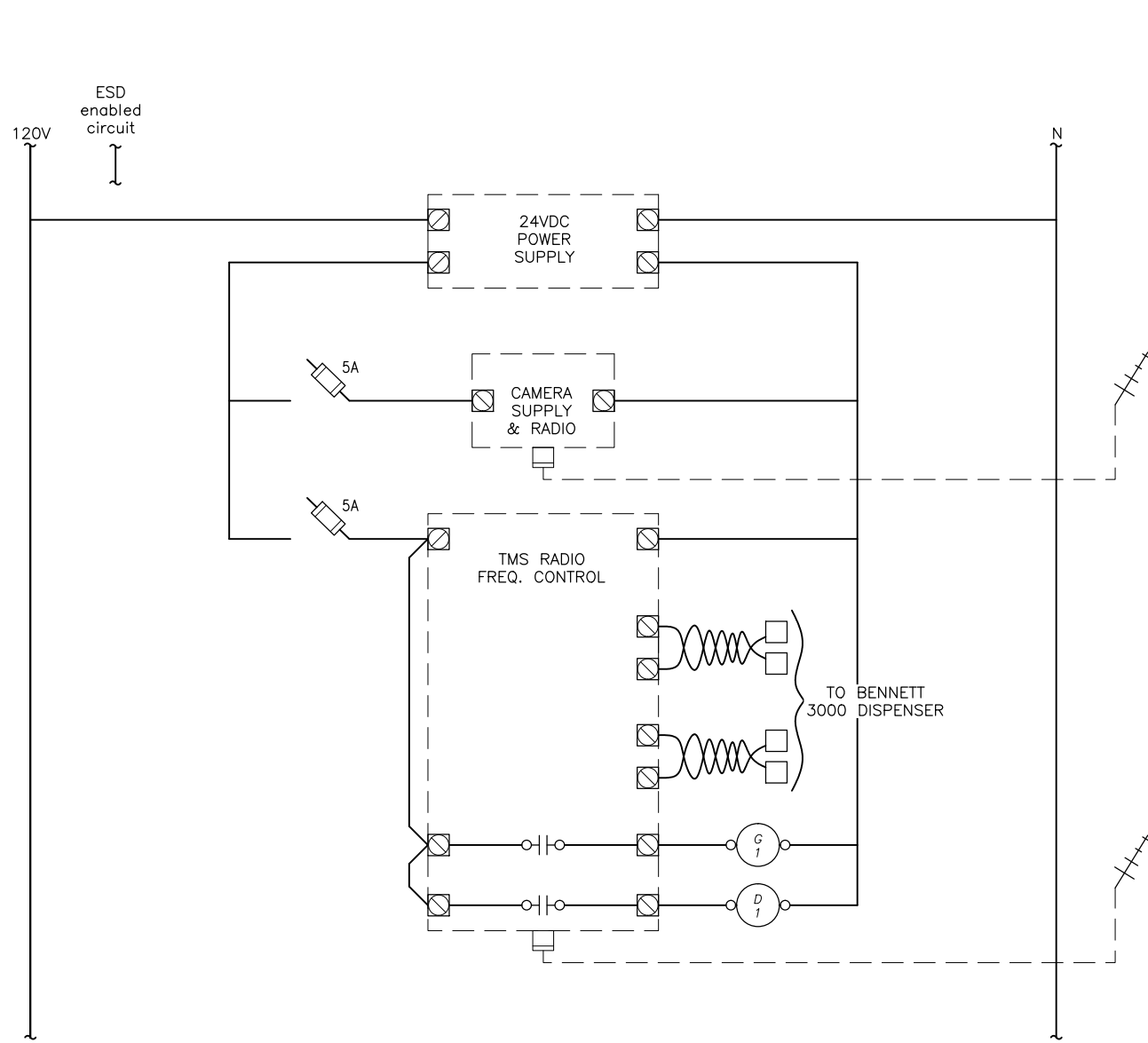
SEE E18 FOR CONTINUATION



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
CP-1 LADDER (5 OF 6)

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	BM	4/18/16

Plot Date	4/26/16
Designed	JJ
Drawn	JJ
Approved	WMM



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
CP-1 LADDER (6 OF 6)

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	BM	4/18/16

Plot Date	4/26/16
Designed	JJ
Drawn	JJ
Approved	WMM

File: J:\Jobsdata\30404.12 Shishmaref BFU\00 CADD\01 Working Set\03 Electrical\30403.22-CP2.dwg

### WTP ALARM AND PUMP CONTROL NARRATIVE

The WTP alarm and fuel pump control panel provides critical high alarms for the 10K gallon bulk tank and 500 gallon intermediate day tank, controls incoming and outgoing fuel lines for the bulk tank, operates the transfer pump and provides emergency shutdown functions. It is located on the wall near the day tank by the WTP entrance.

#### ALARMS

Both tanks are equipped with Critical High Level Float switches that, should fuel reach their level, they open a circuit and cause an alarm strobe to signal a high level has been reached. In addition to the alarm, the controls will also automatically close the related motorized valve. The Critical High Level condition is indicated on the front of the panel identifying the tank(s) with high level(s). These lights are repeated at the bulk tank site as well.

The operator acknowledges the alarm by pressing an ALARM ACKNOWLEDGE button on the panel. This extinguishes the strobe and silences the horn, but the front panel light will remain illuminated until sufficient fuel is drained from the tank to drop its fuel level below the float's sensing point. At that time the front panel light will also extinguish. In addition, the associated fill or transfer valve will also remain closed until the Critical High Level condition is removed.

The controls logic for alarms is set up so that each new alarm condition will cause the strobe and horn alarms to annunciate, regardless of any existing (acknowledged) alarm conditions.

There are two emergency shutdown stations; one by the bulk tank and one by control panel. The alarm is enabled by pushing the ESD button and is extinguished by pulling the ESD push button "out". When an ESD button is pushed, all powered conductors to the transfer pump are disconnected and the pump is shut down. After a brief time delay to allow it to close, the motorized valve is also disconnected.

#### TANK FILLING

To fill the bulk tank from the Barge, the incoming line motorized valve must be opened. This is done by pushing the FILL VALVE OPEN button on the control panel. The TANK OPEN light will confirm that the valve has opened after approximately 30 seconds.

Filling is monitored at the tank. When the level reaches 90% the TANK FULL light (located on a slaved set of pilot lights at the bulk tank site) will be energized and the operator will signal to stop pumping.

Should the pumping operation not stop, the Critical High Float switch will signal an alarm and will also send a CLOSE signal to the fill valve.

The fill valve will not be able to open (electrically) until the Critical High alarm has been shut off by lowering the fuel level in the bulk tank.

After normal filling operation is complete the operator must close the fill valve by pressing the CLOSE FILL VALVE pushbutton.

#### FUEL TRANSFER

The fuel transfer between the bulk and intermediate tanks is semi-automatic.

#### Manual operation (TESTING)

By placing (and holding) the HOA switch in the HAND position, the transfer pump will start and run. Its RUN light will turn on. The pump will continue running until either it experiences an overload condition where the motor starter control is opened internally the Critical High Level float is reached or the operator releases the HOA switch. If an overload causes the shutdown, a pilot light on the panel front will be energized (no other indication will be given, other than the pump stopping) The HOA switch is spring loaded so that upon release it will return to OFF from the HAND position. The HAND or manual mode is provided for maintenance and testing however it could be used to fill the day tank should semi-automatic controls fail. The transfer valve would have to be opened manually for transfer to take place and the HOA switch held in HAND for the duration of the transfer operation. The manual fill operation would require two people to perform safely. NOTE: The Critical High Level float in the intermediate tank will still cause the pump to shut down.

NOTE: See ALARMS section for Emergency Shutdown.

#### AUTOMATIC OPERATION

AUTO mode is the intended mode for these controls. In AUTO, the operation of the transfer pump is controlled by a pushbutton on the control panel, the LSL float in the bulk tank and the LSL, LSH and LSHA floats in the intermediate tank. When fuel level drops to below the intermediate tank's LSL float's level a panel mounted pilot light, INTERMEDIATE TANK LOW is energized. The operator will initiate transfer with the following steps:

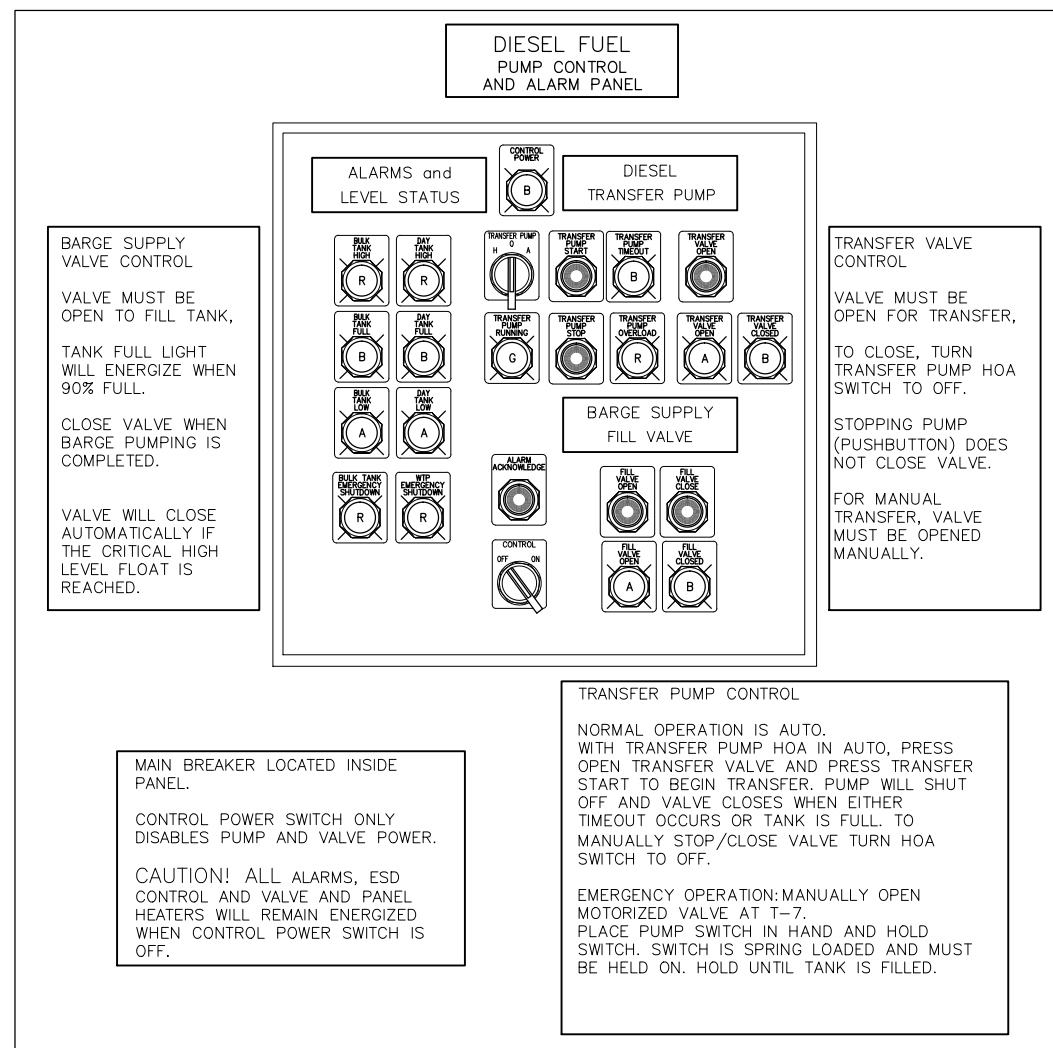
Before the transfer pump is started, an "Open" signal must be sent to the motorized valve on the bulk tank's transfer line. This is done by placing the transfer pump HOA switch in AUTO and pressing the TRANSFER VALVE OPEN pushbutton. The TRANSFER VALVE OPEN light should illuminate in about 30 seconds. When the valve is open the TRANSFER PUMP START pushbutton can be pressed and the transfer pump will start.

If pumping is successful, the low level light will extinguish after a few minutes. Internal controls linked to the LSH float keep the pump running until the LSH float level is attained or pumping lasts for more than 15 minutes and a timeout override shuts the pump down. (NOTE: There is a timer that starts when the pump starts and is set for 15 minute timeout. A pilot light on the front panel will be enabled indicating PUMP TIMEOUT. If timeout is the cause of shutdown, the HOA switch must be turned OFF then back to AUTO and the START pushbutton pressed for the transfer operation to resume.)

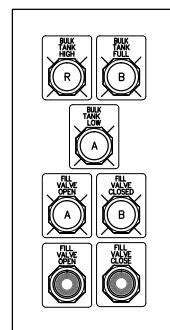
Should pumping be completed before timeout by filling the tank to the LSH float level, a pilot light on the front panel will be energized (DAY TANK FULL).

NOTE: When none of the tank level pilot lights are on, the tank level lies somewhere between low level and full.

Should the pump continue to run after the INTERMEDIATE TANK HIGH (LSH) float was reached, and fuel levels increase the CRITICAL HIGH LEVEL (LSHA) float will attempt to shut the pump down as well as sounding the alarm and enabling its pilot light on the front panel (INTERMEDIATE TANK HIGH).

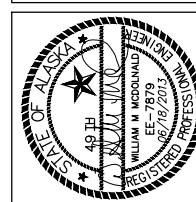


**1 WTP BULK & INTERMEDIATE CONTROL PANEL CP-2 LAYOUT**  
E19 Scale: NTS



**2 WTP BULK TANK STATUS PANEL CP-3 LAYOUT**  
E19 Scale: NTS

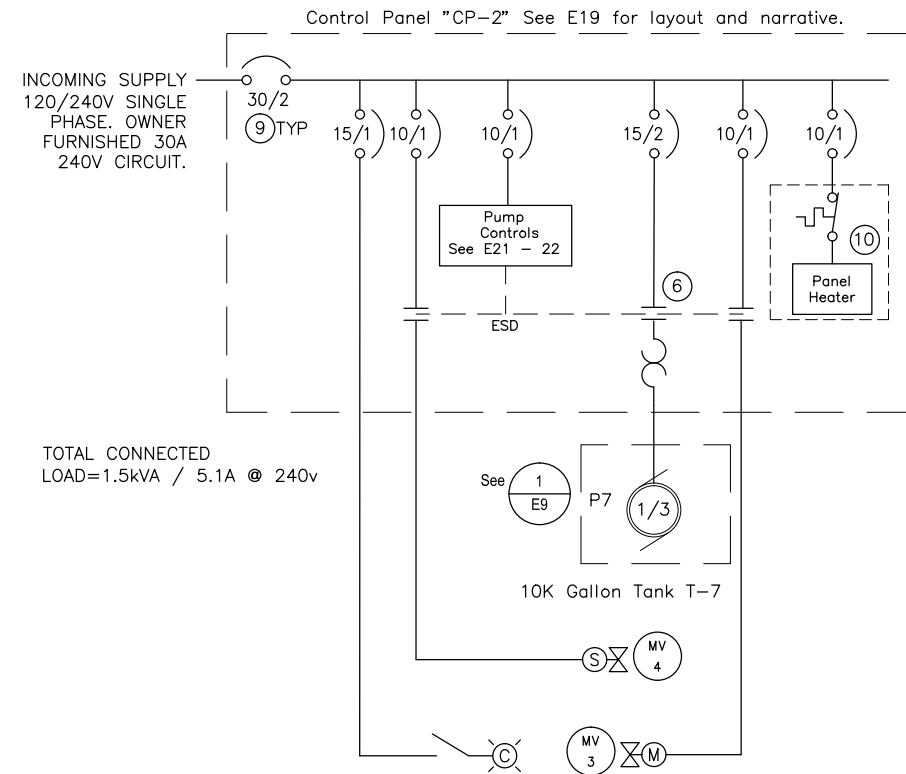
**WORK ON CP-2 SHEETS E19 THROUGH E22 TO BE PERFORMED UNDER ADDITIVE ALTERNATE "A"**



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
WTP PANEL CP-2 LAYOUT (ADD ALT A)

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	BM	4/18/16

Plot Date	4/26/16
Designed	JJ
Drawn	JJ
Approved	WMM



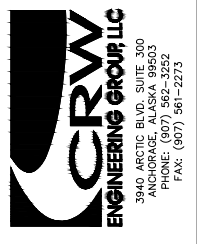
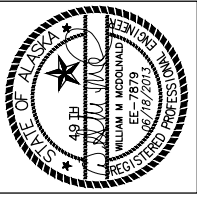
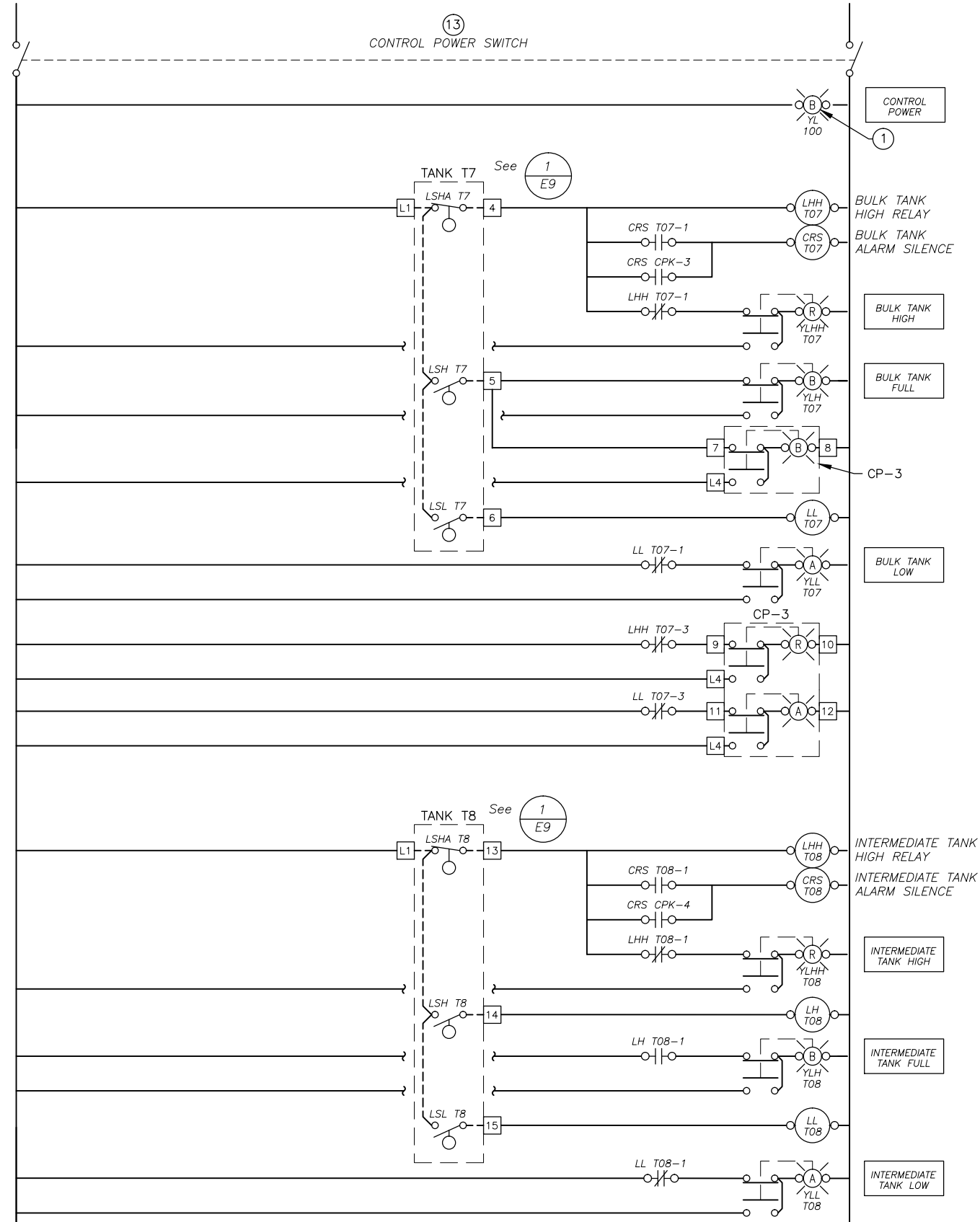
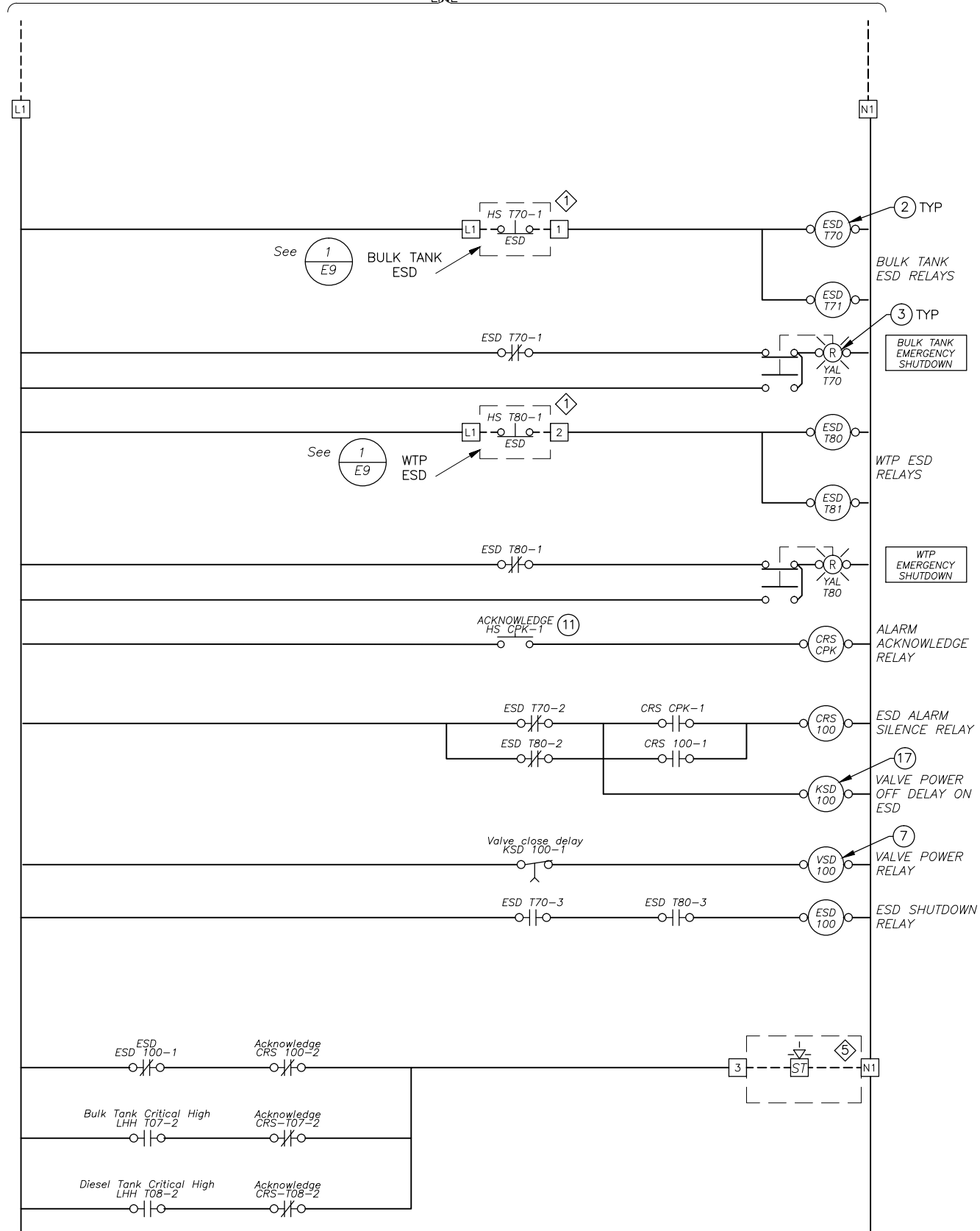
1 CP-2 AND FIELD EQUIPMENT POWER ONE-LINE  
E20 Scale: NTS

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	BM	4/18/16

NO.	TERMINAL	DESCRIPTION
1	L1	LADDER 120V
2	N1	LADDER NEUTRAL
3	L1	LADDER NEUTRAL
4	L1	L1
5	L1	L1
6	1	20/1 CIRCUIT BREAKER L1 SEE 1/E12
7	2	ALARM HORN/STROBE POWER SUPPLY NEUTRAL
8	3	ALARM HORN/STROBE POWER
9	4	HS 170-1
10	5	HS 170-1
11	6	HS 170-1
12	7	T8 FLOAT SWITCH POWER
13	8	HS 170-1
14	9	HS 170-1
15	10	ALARM HORN/STROBE
16	11	LSHA T7
17	12	LSH T7
18	13	LSL T7
19	14	CP-3 BULK TANK FULL
20	15	CP-3 BULK TANK FULL
21	16	CP-3 BULK TANK FULL
22	17	CP-3 BULK TANK HIGH
23	18	CP-3 BULK TANK HIGH
24	19	CP-3 BULK TANK HIGH
25	20	CP-3 BULK TANK LOW
26	21	CP-3 BULK TANK LOW
27	22	CP-3 BULK TANK LOW
28	23	MV-3 OPEN MV-3
29	24	MV-3 OPEN MV-3
30	25	MV-3 OPEN MV-3
31	26	MV-3 CLOSE MV-3
32	27	MV-3 HEATER
33	28	MV-3 HEATER
34	29	MV-3 HEATER
35	30	CP-3 OPEN STATUS
36	31	CP-3 CLOSE STATUS
37	32	CP-3 OPEN STATUS
38	33	CP-3 CLOSE STATUS
39	34	CP-3 OPEN STATUS
40	35	CP-3 CLOSE STATUS
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42	37	MV-4 CLOSE
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383	37	

CONTROL POWER SEE E20 FOR PANEL ONE  
LINE

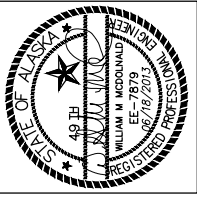
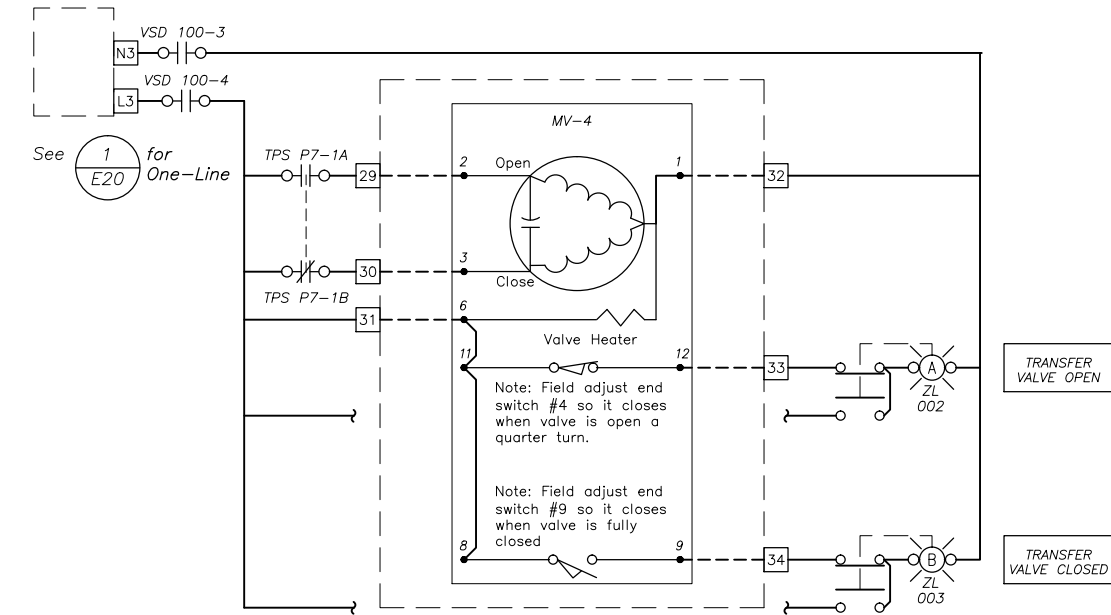
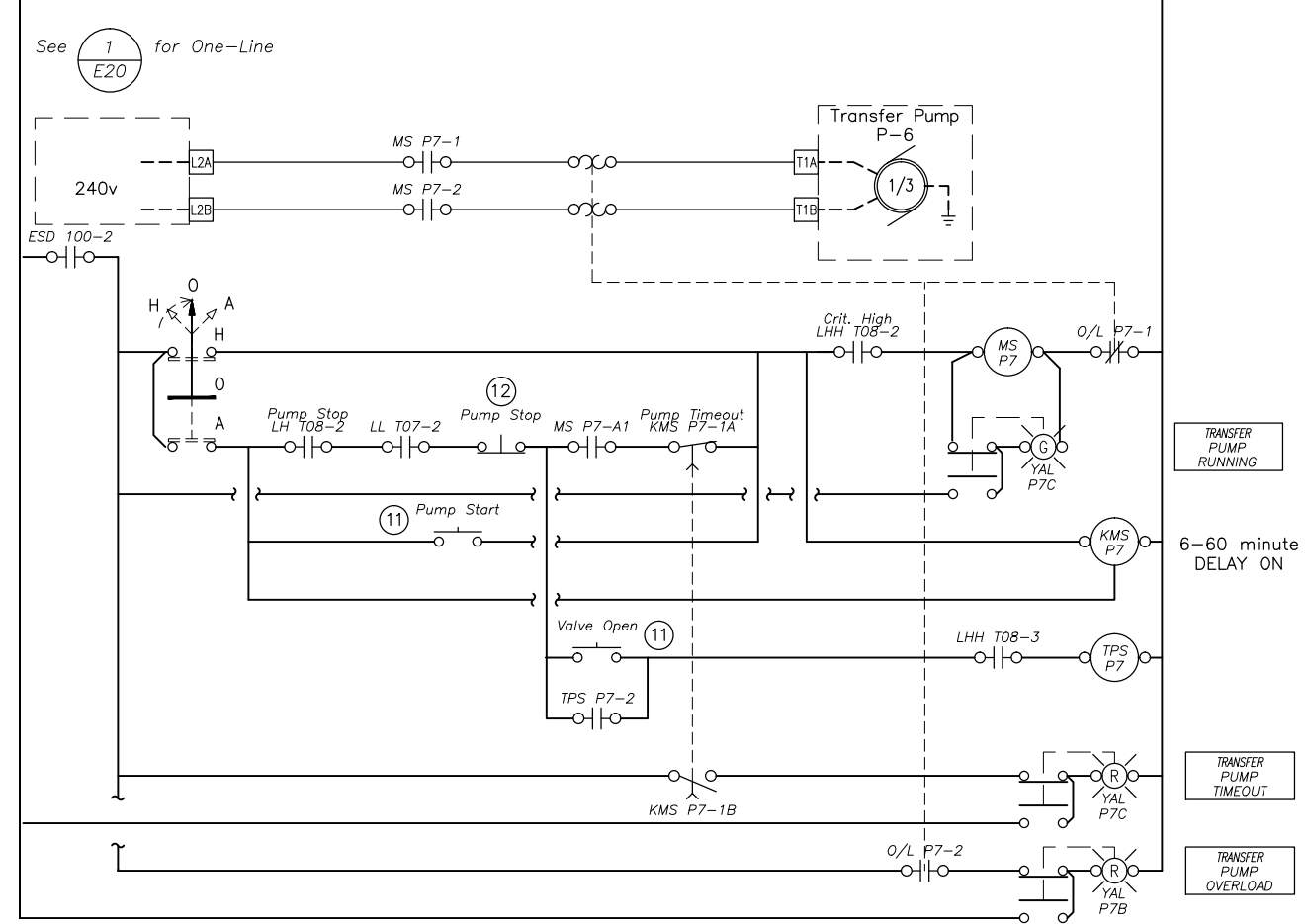
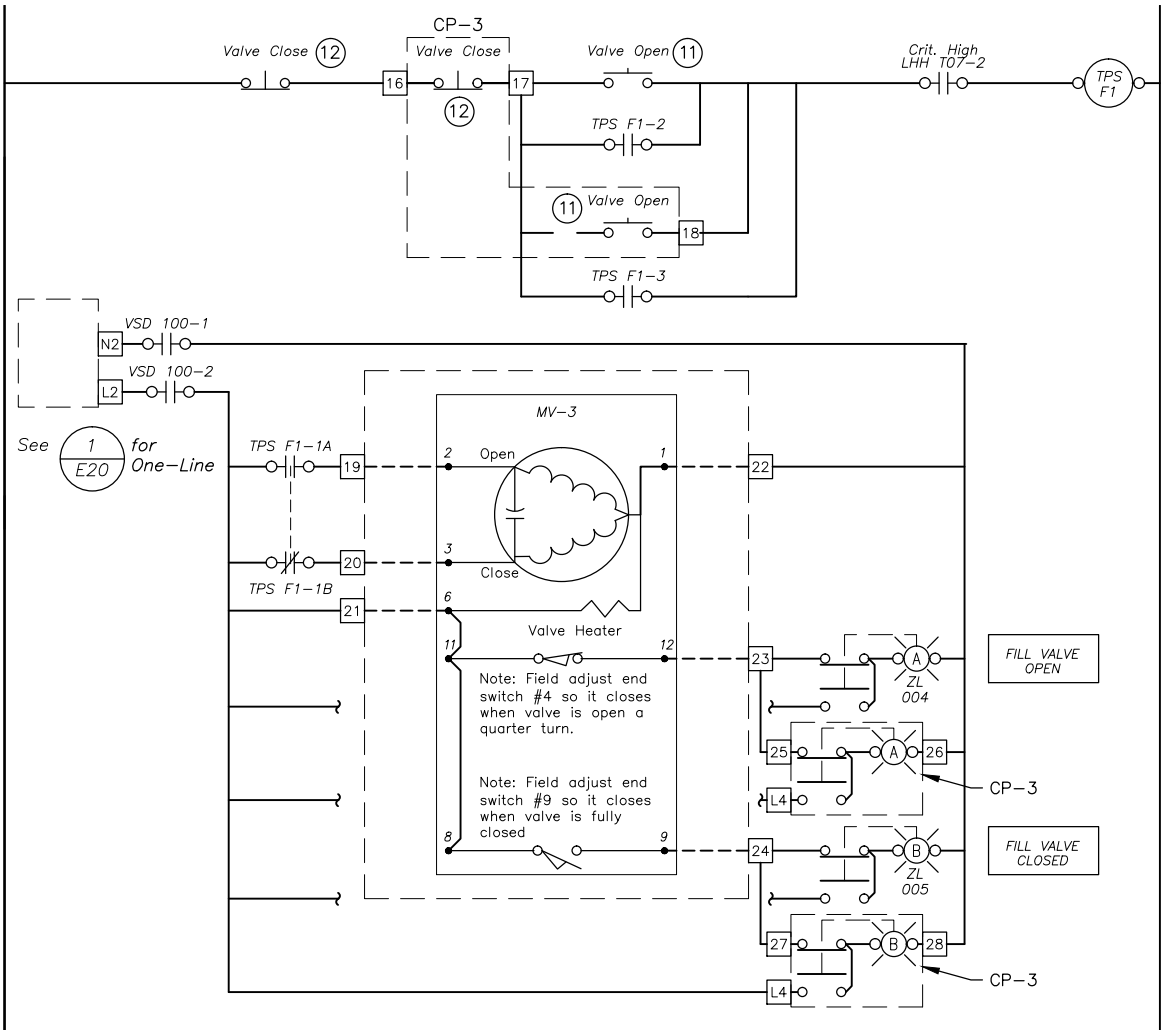


SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
CP-2 LADDER (1 OF 2) (ADD ALT A)

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	BM	4/18/16

Plot Date	4/26/16
Designed	JJ
Drawn	JJ
Approved	WMM

File: J:\Jobsdata\30404.12 Shishmaref BFU\00 CADD\01 Working Set\03 Electrical\30403.22-CP2.dwg



SHISHMAREF, ALASKA  
SHISHMAREF BFU PROJECT  
CP-2 LADDER (2 OF 2) (ADD ALT A)

NO.	REVISION	BY	DATE
1	ISSUE FOR BIDDING DRAWINGS	BM	4/18/16

Plot Date 4/26/16  
Designed JJ  
Drawn JJ  
Approved WMM