

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE	PAGE OF PAGES	
			J	1	2
2. AMENDMENT/MODIFICATION NO. 0002	3. EFFECTIVE DATE 02-Jul-2004	4. REQUISITION/PURCHASE REQ. NO. W68MD9-4013-7819		5. PROJECT NO.(If applicable)	
6. ISSUED BY USA ENGINEER DISTRICT, SEATTLE ATTN: CENWS-CT 4735 EAST MARGINAL WAY SOUTH SEATTLE WA 98134-2329	CODE W912DW	7. ADMINISTERED BY (If other than item 6) <b>See Item 6</b>		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)			X	9A. AMENDMENT OF SOLICITATION NO. W912DW-04-R-0015	
			X	9B. DATED (SEE ITEM 11) 16-Jun-2004	
				10A. MOD. OF CONTRACT/ORDER NO.	
				10B. DATED (SEE ITEM 13)	
CODE			FACILITY CODE		
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS					
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended.					
Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
12. ACCOUNTING AND APPROPRIATION DATA (If required)					
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.					
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.					
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).					
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:					
D. OTHER (Specify type of modification and authority)					
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.					
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) Solicitation No. W912DW-04-R-0015 Amendment No. R0002  Title: JP-8 Bulk Fuel Tanks at McChord AFB, Washington  SEE CONTINUATION PAGE					
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.					
15A. NAME AND TITLE OF SIGNER (Type or print)			16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)		
			TEL: _____ EMAIL: _____		
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
_____ (Signature of person authorized to sign)		BY _____ (Signature of Contracting Officer)		02-Jul-2004	

## SECTION SF 30 BLOCK 14 CONTINUATION PAGE

This **Amendment R0002** to Solicitation No. W912DW-04-R-0015 entitled "JP-8 Bulk Fuel Tanks at McChord Air Force Base, Washington," issued as follows.

A) The Site Visit Sign Sheet for participants attending the 24 June 2004 Pre-proposal Conference is attached for informational purposes only and in no way changes the contents of the Solicitation.

B) Answers to administrative questions regarding the Section 00110-Proposal Submission and Evaluation section of the Solicitation. The answers are provided for informational purposes only and in no way changes the contents of the Solicitation.

C) Section 00110-Proposal Submission and Evaluation has been revised and is replaced in its entirety.

D) Section 15060-Pipe, Manual Valves, Fittings and Fuel System has been revised and is replaced in its entirety. One change was made to paragraph 2.2.1 to delete use of stainless steel pipe materials.

**E) PROPOSAL DUE DATE & TIME:**

**The Proposal due date and time remain unchanged: 22 July 2004, NLT 2:00 PM Local Time.**

**F) NOTICE TO OFFEROR'S:**

Offerors must acknowledge receipt of this amendment by number and date on Standard Form 1442 block 19 submitted with proposal or by telegram.

G) The attached revised specification sections supersede and replace the corresponding specification sections. Specification changes are generally identified, for convenience, by strikeout for deletions, and underlining of text for additions. All portions of the revised or new pages shall apply whether or not changes have been indicated.

H) All other terms and conditions of the solicitation remain unchanged.

Enclosures:

- 1) Site Visit Sign in Sheet
- 2) Questions/Answers to Section 00110 inquiry.
- 3) Revised Section 00110-Proposal Submission and Evaluation
- 4) Revised Section 15060-Pipe, Manual Valves, Fittings and Fuel System



DEPARTMENT OF THE ARMY  
SEATTLE DISTRICT, CORPS OF ENGINEERS  
NORTHWEST AREA OFFICE  
P.O. BOX 92146  
TILLCUM, WASHINGTON 98492-0146

REPLY TO  
ATTENTION OF

24 June 2004

CENWS-EC-NW-FL

MEMORANDUM FOR RECORD

SUBJECT: JP-8 Bulk Fuel Tanks, McChord AFB, Washington

1. Those in attendance, PLEASE PRINT the following information:

NAME	COMPANY	ADDRESS	PHONE NUMBER
AL EPPER	BMW CONSTRUCTORS	8201 S. 216 <sup>TH</sup> KENT	425-251-9091
Darrell Lehmann	T Bailey, Inc	1244 Bardshean	AWCOFFICES 360-293-0682
GEAN LALK	B.M.T.	22 SHAPIRA WA	425-333-6691
DYON ZARATIAN	UNDERGROUND CONSTRUCTION	545 FLD. WAY - BENICIA, CA	707-590-7001
DANA PEDEY	GARCO CONST.	4114 BERRY SPokane, WA	509-466-5899
Jeff Murray	Thunderbird Electric	2911 5 <sup>TH</sup> ST, Tacoma WA 98405	253-229-9621
Scott Hotsinbauer	SENOHALL ELEC	12316 134 <sup>TH</sup> CT NE, REDMOND, WA 98052	425-814-6000
Rick Vroom	HOLLANDER CONSTRUCTION	1061 INDUSTRIAL WAY LONGVIEW WA 98652	(360) 429-4050 (360) 425-6362 - FAX

2. Buildings and/or specific areas visited were: JP-8 Bulk Fuel Storage  
located adjacent to 1<sup>st</sup> street NW and railroad intersection.

3. Additional comments/questions/concerns raised by prospective bidders:  
Bidders were advised to refer to paragraph SP-6 in specifications.

Mike Berge

CC: CENWS-EC  
CENWS-CT

CENWS-EC-NW-FL

24 June 2004

SUBJECT: Jp-8 Bulk Fuel Tanks, McChord AFB, Washington

1. Those in attendance, PLEASE PRINT the following information:

NAME	COMPANY	ADDRESS	PHONE NUMBER
EARL COVINGTON	GCES/CEEM	McChord AFB, WA Anch. AK 99511	253-982-3538
Tom Helms	Rockford Corp.	P.O. Box 111706 RICHMOND CA	907-344-4551
FRED THOMAS	MILTON WATTS CONSTRUCTORS	94601	510-215-5200
BENCE FABERT	MORSE CONST GRP INC	8500 S FIRST AVE EVERETT WA 98203	425-258-2731
Dale Hoover	General Mechanical Inc	2701 S. J. TACOMA WA 98409	253-627-9755 (PH.) 253-272-2755 (Fax)
JUSTIN WALSH	PST	10025 TACOMA WAY NE TACOMA WA 98498	(253) 587-1800
KURT FASHINPAUR	NATIVE AMERICAN SERVICE		(208) 783-036
BOB LEMON	MATRIX SERVICE		(360) 676-490
BRADLEY McTIGUE	MATRIX SERVICE		360/815-5500
Joseph Kessler	GCES/CECC	McChord AFB	982-5656
TANA BAILON	PEASE CONST.	LAKEWOOD	584-6606
Dwight Lucas	TALAN INDUSTRIES	Arlington, TX	817-265-5511
DEJINIS P. HEMINGWAY	KINLEY CONSTRUCTION	ARLINGTON TX	817-461-2100
DAVID BOYINGTON	MARCO 2 Contractors	Sartin Airm 18538 HEND AVENUE	F 714-564-1144 P-714-564-1130
BRANDON NIELSEN	MAJOR ELECTRIC, INC.	WESTVILLE, WA 98072	(425) 488-2677 (425) 402-9708
MARVIN ASTRAND	CTSC	PMB 197 SILVERDALE WA 98385	360-697-4016

DAVID BOYINGTON MARIO E. JACOBSON Santa Ana, CA F 714-564-1144  
P. 714-564-1130

BRANDON AELSETH MAJTR ELECTRIC, INC. 18538 142ND AVENUE (425) 403-2677  
WOODRIDGE, WA 98072 (425) 402-9708

MARVIN AHSTRAND CTSI PMB 197  
SILVADO WA 98315 360-697-4016

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**1) Question:**

603997 Re: Spec Section 00110, page 7, Paragraph 4.3.3 If an offeror does not have past performance available in CCASS & end of this section.

Q: Are previously completed evaluations from clients satisfactory for submission in lieu of asking those clients to fill out the Customer Satisfaction Survey form supplied in this solicitation, as long as it contains all the required information? These evaluations were acceptable for submission on other recent US Govt/military solicitations, recognizing the burden placed on the clients to complete the same information on numerous occasions.

**Answer:**

The Customer Satisfaction Survey Form specific to this Solicitation and provided at the end of Section 00110 must be used. **Remember all Customer Satisfaction Surveys must be submitted to the Government from the customer or agency that is providing the information/evaluation.**

**2) Question:**

607608 Re: Spec Section 00110, Subsection 2.2 -1. Proposed Construction Contractor Team

Q-1: Does the definition of “construction contractor team” mean the prime contractor & key subcontractors? If so, for Section 00110, Subsection 4. Technical Proposal, 4.3.1 Proposed Contractor Team Experience, do we submit 3 relevant projects for the prime and each key subcontractor, or three in total for the team.

Q-2: Should a binding teaming agreement be submitted for each key subcontractor to insure that the proposing firm does not change its subcontractors after award?

**Answer:**

1. Yes the makeup Construction Contractor Team includes the Prime Contractor and Key Subcontractors.

2. A binding teaming agreement is not necessary however please review the revised Section 00110, Subsection 4.3.1 - **Absolutely no changes in to the makeup of the Proposed Construction Contractor Team shall be allowed without the express written consent of the Contracting Officer** and Subsection 4.3.2 - **Absolutely no changes to the Proposed Key Personnel for this project shall be allowed without the express written consent of the Contracting Officer.**

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## SECTION 00110 – PROPOSAL SUBMISSION AND EVALUATION

### 1. INTRODUCTION:

1.1 Your firm is invited to submit a proposal in response to Request for Proposals (RFP) No. **W912DW-04-R-0015** entitled **Construct JP-8 Bulk Fuel Tanks at McChord Air Force Base, Washington**. This RFP establishes project requirements and provides procedures, format, and other data to assist offerors in preparing their proposals. **It is the intent of the Government to make award based upon initial offers, without further discussions or additional information.** A contract will be awarded to the firm submitting the proposal that conforms to the RFP, is considered to provide the most advantageous offer in terms of the evaluation factors, including price, and is determined to be in the best interest of the Government.

1.2 This project consists of the construction of two JP-8 Jet Fuel Storage tanks. Each new tank will have a capacity of 80,000 barrel (bbl) on reinforced concrete, with rigid roof, floating internal pan, automatic tank gauging, associated dikes, fencing, access road, and supporting facilities. Pump house is to include fire detection, electrical and mechanical systems, and pre-wiring to accommodate required information and communication services. Work also includes product recovery tank, distribution piping, utility connections (jack-and-bore under railroad tracks), cathodic protection, emergency generator, exterior lighting and demolition of pavements, tank A-1 and associated secondary containment. Period of Performance for this project is 540 calendar days. Proposed procurement will result in award of a Firm Fixed Price (FFP) Contract.

### 2. EVALUATION FACTORS:

2.1 Proposals will be evaluated on the basis of two criteria, **TECHNICAL** and **PRICE**. Award will be based upon evaluation of the technical criteria listed below, and price proposals.

2.2 **TECHNICAL EVALUATION CRITERIA:** The technical criteria, listed in **descending order of importance**, are as follows:

1. Proposed Construction Contractor Team Experience
2. Key Personnel Qualifications and Construction Experience
3. Past Performance of the Prime
4. Project Schedule
5. Extent of Small Business Participation

2.3 **RELATIVE IMPORTANCE DEFINITIONS:** For this evaluation, the following terms will be used to establish the relative importance of the technical criteria:

- **More Important:** The criterion is (two) times more important in value to the Government than another criterion.

## 2.4 SUMMARY OF ORDER OF IMPORTANCE for Technical Criteria:

- Criterion 1, 2, and 3 are equal to each other and are each more important than criterion 4.
- Criterion 4 is more important than criterion 5.

2.5 **EVALUATION STANDARDS.** Evaluation criteria will be rated using the following adjectival descriptions.

**OUTSTANDING** - Information submitted demonstrates offeror's potential to significantly exceed performance or capability standards. The offeror has clearly demonstrated an understanding of all aspects of the requirements to the extent that timely and the highest quality performance are anticipated. Has exceptional strengths that will significantly benefit the Government. The offeror convincingly demonstrated that the RFP requirements have been analyzed, evaluated, and synthesized into approaches, plans, and techniques that, when implemented, should result in outstanding, effective, efficient, and economical performance under the contract. Significantly exceeds most or all solicitation requirements. **VERY HIGH PROBABILITY OF SUCCESS.**

**ABOVE AVERAGE** - Information submitted demonstrates offeror's potential to exceed performance or capability standards. Has one or more strengths that will benefit the Government. The areas in which the offeror exceeds the requirements are anticipated to result in a high level of efficiency or productivity or quality. The submittal contains excellent features that will likely produce results very beneficial to the Government. Fully meets all RFP requirements and significantly exceeds many of the RFP requirements. Disadvantages are minimal. **HIGH PROBABILITY OF SUCCESS.**

**SATISFACTORY (Neutral)** - Information submitted demonstrates offeror's potential to meet performance or capability standards. An acceptable solution is provided. Either meets all RFP requirements for the criterion or contains weaknesses in some areas that are offset by strengths in other areas. A rating of "Satisfactory" indicates that, in terms of the specific criterion (or sub-criterion), the offeror has a reasonable probability of success, as there is sufficient confidence that a fully compliant level of performance will be achieved. The proposal demonstrates an adequate understanding of the scope and depth of the RFP requirements. No significant advantages or disadvantages. Equates to neutral. **REASONABLE PROBABILITY OF SUCCESS.**

**MARGINAL** – The submittal is not adequately responsive or does not address the specific criterion. The offeror's interpretation of the Government's requirements is so superficial, incomplete, vague, incompatible, incomprehensible, or incorrect as to be considered deficient. Proposal does not meet some of the minimum requirements. The assignment of a rating within the bounds of "Marginal" indicates that mandatory corrective action would be required to prevent significant deficiencies from affecting the overall project. The offeror's plans or approach will likely result in questionable quality of performance, which represents a moderate level of risk to the Government. Low probability of success although the submittal has a reasonable chance of becoming at least acceptable. Significant disadvantages. **LOW PROBABILITY OF SUCCESS.**

**UNSATISFACTORY** – Fails to meet performance or capability standards. Unacceptable. Requirements can only be met with major changes to the submittal. There is no reasonable expectation that acceptable performance would be achieved. The proposal contains many deficiencies and/or gross omissions; fails to provide a reasonable, logical approach to fulfilling much of the Government’s requirements; and/or fails to meet most or all of the minimum requirements. Very significant disadvantages. **VERY LOW PROBABILITY OF SUCCESS.**

## 2.6 DEFINITIONS OF STRENGTH, WEAKNESS AND DEFICIENCY:

**Strength:** A substantive aspect, attribute, or specific item in the proposal that exceeds the solicitation requirements and enhances the probability of successful contract performance.

**Weakness:** A flaw in the proposal that increases the risk of unsuccessful contract performance (i.e., meets the RFP requirements, but may have an impact on schedule or quality requirements). A *weakness need not be corrected* for a proposal to be considered for award, but *may* affect the offeror’s rating.

**Deficiency:** A material failure of a proposal to meet the Government requirement or a combination of significant weaknesses in a proposal that increases the risk of contract performance at an unacceptable level. A deficiency *must be corrected* for a proposal to be considered for award.

**3. PROPOSAL CONTENTS:** Proposals shall be submitted in two parts: (a) Technical proposal and (b) Price proposal. Each part shall be submitted in a separate envelope/package, with the type of proposal (i.e., Technical or Price) clearly printed on the outside of the envelope/package. **For ease of evaluation, submit the proposal following the same organization and title format as specified in paragraph 4.3.6 SUMMARY OF TECHNICAL PROPOSAL FORMAT (for the technical proposal) and paragraph 5.1 SUMMARY OF PRICE PROPOSAL FORMAT (for the price proposal).**

## 4. TECHNICAL PROPOSAL:

4.1 A **COVER LETTER** should be the **first page** of the technical proposal and should include **(do not put this in the price proposal):**

- (a) Solicitation number.
- (b) Name, address, and telephone and facsimile numbers of the firm signing the SF 1442 (and electronic address).

(c) Names, titles and telephone and facsimile numbers (and electronic addresses) of persons authorized to negotiate on the firm's behalf with the Government in connection with this solicitation.

(d) Name, title, and signature of the person authorized to sign the proposal.

(e) A statement specifying agreement with all terms, conditions, and provisions included in the solicitation and agreement to furnish any and all items upon which prices are offered at the proposed item prices.

(f) **FINAL PROPOSAL REVISION:** If required to submit a Final Proposal Revision, the accompanying cover letter must identify all changes made to the firm's initial proposal.

**4.2 GENERAL TECHNICAL PROPOSAL REQUIREMENTS:** Offerors submitting proposals for this project should limit submissions to data essential for evaluation of proposals so that a minimum of time and monies will have been expended in preparing information required herein. Elaborate artwork, expensive paper and bindings, and expensive/extensive visual and other presentation aids are unnecessary. However, in order to be effectively and equitably evaluated, the proposals must include information sufficiently detailed to clearly describe the offeror's experience and management capabilities to successfully complete the project. Any deviations from requirements should be clearly noted and justified in the proposal. The requirements specified in the solicitation are considered minimum requirements. Proposal clarity, organization (as defined in this solicitation) and cross referencing are mandatory. Submitted material incorporated by reference will not be evaluated. The offeror should submit in the proposal the requested information specified below.

#### **4.3 MINIMUM SUBMITTAL REQUIREMENTS FOR TECHNICAL PROPOSAL:**

##### **4.3.1 Proposed Construction Contractor Team Experience**

**Submittal Requirements:** Provide three (3) projects for the Proposed Construction Contractor Team demonstrating relevant experience in the range of \$5,000,000 to \$10,000,000 or higher. "Relevant experience" is defined as experience constructing facilities similar to the project in this solicitation in nature, scope, complexity, magnitude and dollar value, such as hydrant fuel construction on a completed system and successful start-up of a military or civilian ~~Hydrant Fueling System Aircraft Fuel Storage System~~ with features such as a ~~2400-gpm pumphouse, hydrant control pits, and an 55,000 BBL or larger~~ aboveground fuel storage tank with fixed roof and floating pans. Only relevant projects currently in progress (~~after successful start-up at least 75% complete~~) or completed within the past five (5) years shall be ~~given more considerations submitted~~. Start with the most recent and relevant projects and work backwards in time. The projects selected should clearly demonstrate the construction capabilities of the Team in one or more of the areas described in this paragraph. ~~Absolutely no changes in to the makeup of the Proposed Construction Contractor Team shall be allowed without the express written consent of the Contracting Officer.~~ Include the following information:

Project Title & Location
Project Type (e.g., design-build (DB), design (D), construction (C))
Dollar Value (design \$; construction \$)
Start & Completion Dates (Month/Year)
Role of Firm(s) (e.g., prime, sub) (address type of work performed and percentage of work by the proposed team, as applicable)
Brief Description of Project (address how this relates to solicitation project)
Customer Point of Contact (i.e., name, relationship to project, agency/firm affiliation, city, state, current phone no.)
Awards or recognition received (if applicable)
Firms on the proposed team that performed this project

**Evaluation Method:** This criterion will be evaluated for the quantity and quality of experience demonstrated by the proposed team. The greater the relevance and the more recent the prior project experience, the higher the rating assigned during evaluations. Demonstration of experience in completing projects that had the unique characteristics of the proposed project will be evaluated favorably. Projects involving construction and completed start-up ~~of a pressurized aircraft fueling system~~ with attributes similar to those specified above will be evaluated favorably. Projects involving the construction of bulk fuel tanks 55,000 BBL equal to or larger in size and/or volume to those in this solicitation that have been in satisfactory operation for at least two (2) years may be given more consideration. Prior Government or Corps of Engineers project experience is not required to meet the minimum requirements of this criteria, however, it will be favorably considered.

**4.3.2 Key Personnel Qualifications and Construction Experience:**

**Submittal Requirements:** The Offeror must demonstrate specific project experience (minimum of one completed project, similar to this project, within the last 5 years) of each of its Key Personnel (Construction Project Manager, Project Superintendent and Contractor Quality Control (CQC) System Manager) that are assigned to this project. The offeror should submit the names and resumes for key construction personnel that will be assigned to this project and time period associated with the project. In addition, provide a summary of the duties and responsibilities of these individuals that clearly indicate separate duties and responsibilities for each individual. Note that each of the listed personnel must have separate and distinct responsibilities – no single person shall be designated as performing the duties of more than one position. The proposal should clearly present the credentials of each person and show that each meets the requirements listed below. Absolutely no changes to the Proposed Key Personnel for this project shall be allowed without the express written consent of the Contracting Officer. Each resume should include examples of project experience (including what capacity the individual served on each project), as well as the dates (month and year) employed on each project in that capacity, and the monetary size of each project cited as experience. Resumes should be listed in reverse chronological order, with the latest experience listed first, and all time gaps on each resume fully explained. In addition, the educational qualifications of the proposed personnel should be

submitted. Resumes should be no more than two (2) pages per individual and submitted in a format similar to the one below and a minimum, the following information showing similar experience of its Key Personnel for each project shall be provided:

**RESUME FORMAT**

*Name and Title*

*1. Proposed Duties/Functions for this project*

*2. Firm Affiliation and Years Affiliated*

*3. Years of Experience performing duties/functions as proposed for this project.*

*4. Education – School attended, Degree, Certification, Year, and Specialization*

*5. List Active Registrations (Professional or Technical Licenses/Certifications)*

*6. Describe Specific Qualifications for this project*

*7. List Projects worked on to Include:*

*Project Title & Location*

*Scope, Size and Complexity*

*Duties/Functions*

*Date of project*

*8. Demonstrate how each project submitted is relevant to the project to be constructed under this solicitation*

*9. Current primary POC for the customer (name, relationship to project, agency/firm affiliation, city and state, and phone number).*

Offerors must provide documentation that demonstrates compliance with required qualifications of the proposed Construction Project Manager, Project Superintendent, and Contractor Quality Control (CQC) System Manager. This documentation may include resumes or other statements demonstrating the experience of these individuals. For project experience, listed under qualifications, provide the same information as described in 4.3.1 above.

**a. Construction Project Manager.**

The proposed Construction Project Manager shall possess a Bachelor's Degree in Engineering or Sciences, with a minimum of 5 years experience in Construction Project Management. A minimum of 2 of those 5 years as experience, as a Construction Project Manager, in construction and installation of ~~Hydrant Fueling System~~ Aircraft Fuel Storage System for completed systems.

**b. Contractor Quality Control (CQC) System Manager.**

The CQC System Manager must be either:

Possess a Bachelor's Degree in Engineering or Sciences and also must have a minimum of 2 years experience as a Construction CQC. The CQC experience must be specifically in the construction and installation of ~~Hydrant Fueling Systems~~ Aircraft Fuel Storage Systems;

or

Have a minimum of 8 years total construction experience as a Construction CQC and/or Superintendent, with a minimum of 2 years experience as a Construction CQC specifically in the construction and installation of Hydrant Fueling Systems Aircraft Fuel Storage Systems.

**c. On-Site Project Superintendent.**

The proposed On-Site Project Superintendent shall have a minimum of 5 years construction related experience as a superintendent on industrial construction projects with a minimum of 2 of those 5 years as experience, as a Construction Superintendent, with the construction of the installation of Hydrant Fueling Systems.

**Evaluation Method:** The more recent, and the greater the extent and relevance, of the team members' qualifications, prior project experience, and active registrations, the higher the rating assigned for this criterion during evaluations. Only one individual for each of the key personnel categories listed above will be evaluated. The overall evaluation will be based on the least qualified individual proposed for each key personnel category listed above. In addition, the proposed personnel will be reviewed to ensure the requirements for the position identified are met. Evaluation ratings may be reduced for those not meeting the requirements identified above for this factor, and for resumes not providing the information requested. Prior experience on military construction projects and projects of this type and size is preferred and will be evaluated more favorably.

**4.3.3 Past Performance of the Prime**

**Submittal Requirements:** The Government will utilize performance evaluations contained in the Construction Contract Administration Support System (CCASS) to evaluate this criterion. All performance ratings for the past five (5) years shall be considered. If an offeror does not have past performance available in CCASS or wishes to augment the CCASS system ratings, the offeror may ask customers to submit the Customer Satisfaction Survey form found at the end of this section.

For each project constructed for Private Industry, provide a completed Customer Satisfaction Survey for each applicable project that is currently under construction (after successful start-up at least 75% complete) or that was completed within the last five (5) years. No more than five (5) customer satisfaction surveys will be considered for the prime firm for work not listed in the CCASS system. All Customer Satisfaction Surveys must be submitted to the Government from the customer or agency that is providing the information. Further instructions are found on the Customer Satisfaction Survey.

**Submit a list of all customers (including current Point of Contact, phone number, and electronic address) who were requested to provide Customer Satisfaction Surveys.**

Should offerors want to review the performance evaluation ratings contained in the Corps of Engineers CCASS Database, they may request the information by fax on company letterhead at the following number: (503) 808-4596.

**Evaluation Method.** The Government will evaluate the relative merits of each offeror's

past performance. The Government reserves the right to consider all aspects of an offeror's performance history but will first evaluate the performance of those projects listed in 4.3.1 and 4.3.2. Projects involving ~~the construction of bulk fuel tanks 55,000 BBL eo-firing (simultaneous natural gas and coal) and stoker applications combustion control installations (Bailey/ABB INFI-90) on boilers of equal~~ or larger size to those in this solicitation that have been in satisfactory operation for two (2) years may be given more consideration. The Government reserves the right to contact the evaluators on previous Government or Private Sector work to verify the offeror's construction experience. In the case of an offeror without a record of past performance or for whom information on past performance is not available, the offeror **may not be evaluated as favorable or unfavorable** on past performance (See FAR 15.305(a)(2)(iv)).

#### **4.3.4 Project Schedule**

**Submittal Requirements:** The contractor shall provide an outline of the plan for construction in the form of milestone scaled (Gantt Chart) summary network diagram and shall graphically indicate sequences proposed to accomplish each milestone work operation and appropriate interdependencies between various milestone events. The chart shall be prepared in different color codes or graphic symbologies to differentiate base and option events. Identify critical elements of construction that could delay the entire project. The chart shall show the starting and completion times of all major events on a linear horizontal time scale beginning with the notice to proceed with the base contract items and indicating calendar days to completion of all options. **The offeror must state the total number of calendar days proposed from receipt of initial notice to proceed through completion of construction of all options.** Offerors should base their schedule on the information provided in the following Sections of the RFP: Section 00800, SC-1 Commencement, Prosecution and Completion of Work. Limit the activities to those critical to timely overall completion of the project

**Evaluation Method:** Consideration will be given for a schedule that identifies all critical elements that could delay the entire project. A schedule that is complete, reasonable, and realistic for this project may be given more consideration.

#### **4.3.5 Extent of Small Business**

**Submittal Requirements:** No submittal is required for this criterion. The Government will utilize performance evaluations contained in the CCAS System to evaluate this criterion.

**Evaluation Method:** Firms will be evaluated for the success and extent of their small business participation in their subcontracting with small and disadvantaged business concerns. Firms will be evaluated based on the ratings received for item entitled "Implementation of Subcontracting Plan" on their past performance evaluations retrieved from the CCAS System. Firms without any evaluations in CCASS, or for which this item was not evaluated (i.e., N/A), will be assigned a neutral rating of satisfactory. Firms that receive a rating below satisfactory for this item in one or more CCASS evaluations will receive a rating of marginal for this criterion.

**4.3.6 SUMMARY OF TECHNICAL PROPOSAL FORMAT:** As a minimum, each copy of the technical proposal should contain the following general format for the volumes specified in the table below. It is preferred that pages be numbered consecutively throughout the technical

proposal. However, giving each page a unique identifier within sections is acceptable (i.e., A-1 through A-5, then B-1 through B-5, etc).

**Technical Proposal Format (original and 6 copies required)**

- Technical Proposal Cover Letter
- Table of Contents. (List all sections of the technical proposal)
- Relevant Experience of the Prime
- Qualifications of Key Team Members
- Past Performance of the Prime
- Project Schedule

**5. PRICE PROPOSAL**

**5.1 SUMMARY OF PRICE PROPOSAL FORMAT:**

**Price Proposal Format (original and (1) copy required)**

- Standard Form 1442 front and back
- Corporate Certificate (use the certificate for joint venture if applicable)
- Pricing Schedule (all pages)
- Section 00600, Representations and Certifications
- Bank and Bonding Points of Contact
- 20% Bid Bond
- Small and Small Disadvantaged Business Subcontracting Plan (large businesses only)
- Joint Venture Information (if applicable)

NOTE: Price proposal and bonds are DUE AT SAME TIME as technical proposals.

5.2 The price proposal must be signed by an official authorized to bind the organization. Prices must be provided for all line items on the pricing schedule. Note that the Standard Form 1442, Block 13D, states the minimum number of calendar days after the date offers are due for Government acceptance of the offer. All amendments must be acknowledged on Standard Form 1442 BACK by date and number in Block 19 or by telegram.

5.3 Provide the name, point of contact, phone number, and address for bank and bonding company of firm signing the SF 1442.

5.4 **Bid Bonds** must be accompanied by a **Power of Attorney containing an original signature from the surety**, which must be affixed to the Power of Attorney after the Power of Attorney has been generated. Computer generated and signed Powers of Attorney will only be accepted if accompanied by an original certification from a current officer of the surety attesting to its authenticity and continuing validity. Performance and payment bonds have the same requirement.

**5.5 Small Business Subcontracting. Large businesses are required to submit a subcontracting plan** (See FAR Clause 52.219-9 Alt II, Small Business Subcontracting Plan, Jan 2002) with initial price proposals. Award will not be made under this solicitation without an approved subcontracting plan. See the "Notice to Large Business Firms" located in the front of this solicitation.

**5.6 Joint Ventures.** No contract may be awarded to a joint venture that is not registered in the Central Contractor Register (CCR). Joint ventures may register in the following way:

(a) The firm that will be the recipient of payments should be registered in the CCR and have a DUNS number. This firm is considered in the CCR to be the "mother firm." If no money is to go to any other firm in the joint venture, the mother firm may make the other firm in the joint venture a "child." This child will be assigned the mother firm's CCR number with an additional four (4) numbers attached. Since the child firm is not receiving any payments, they do not need to get a DUNS number. HOWEVER, in order to cover all possibilities, it might be advisable to have each firm registered in the CCR.

(b) Call the CCR at 1-888-227-2423, choose option "0" to get the mother-child relationship set up. DUN & Bradstreet phone number is 1-800-333-0505.

(c) If the joint venture has a newly created name, then it must have its own DUNS number and register as such in the CCR.

5.6.1 In the cover letter of your proposal, provide the complete names, addresses, and phone and fax numbers of the two firms in the joint venture.

5.6.2 Signature requirements: SF 1442, SOLICITATION, OFFER, AND AWARD (pages 00010-1 and 00010-2), Block 20 requires that the name and title of the person authorized to sign the offer for the joint venture be provided.

5.6.3 Corporate certificate: Ensure that joint-venture portion is completed by both firms.

5.6.4 In the case of a joint venture, the following is required: A contract with joint venturers may involve any combination of individuals, partnerships, or corporations. The contract shall be signed by each participant in the joint venture in the manner prescribed below for each type of participant. When a corporation is participating, the Contracting Officer shall verify that the corporation is authorized to participate in the joint venture.

**(a) Individuals. A contract with an individual shall be signed by that individual. A contract with an individual doing business as a firm shall be signed by that individual, and the signature shall be followed by the individual's types, stamped, or printed name and the words "an individual doing business as ....." [insert name of firm].**

(b) Partnerships. A contract with a partnership shall be signed in the partnership name. Before signing for the Government, the Contracting Officer shall obtain a list of all partners and ensure that the individual(s) signing for the partnership have authority to bind the partnership.

(c) Corporations. A contract with a corporation shall be signed in the corporate name, followed by the word “by” and the signature and title of the person authorized to sign. The Contracting Officer shall ensure that the person signing for the corporation has authority to bind the corporation.

5.6.5 In addition to the requirements stated above, and to assure a single point of contact for resolution of contractual matters and payments, the Contracting Officer shall obtain a certificate signed by each participant in the joint venture as follows: In the proposal include the following statement:

“The parties hereto expressly understand and agree as follows:

a. **(name, title, and company)** is the principal representative of the joint venture. As such, all communications regarding the administration of the contract and the performance of the work thereunder may be directed to him or her. In the absence of **(same name, title, and company)**, **(enter name, title, and company of alternate)** is the alternate principal representative of the joint venture.

b. Direction, approvals, required notices, and all other communications from the Government to the joint venture, including transmittal of payments by the Government, shall be directed to **(enter name, title, and company of principal)**, principal representative of the joint venture.”

5.6.6 The bid bond form, Block “Principal” requires that the name and title of the person authorized to sign for the joint venture be included.

5.6.7 After award, the performance and payment bonds, and the insurance certificate(s) provided shall be in the name of the joint venture.

**6. MAGNITUDE OF CONSTRUCTION AND SERVICES:** The dollar magnitude of the construction portion of this solicitation is between **(\$5 million and \$10 million.)**

## **7. EVALUATION PROCEDURES**

7.1 **TECHNICAL EVALUATION:** Technical proposals will be evaluated by a Technical Evaluation Team (TET) comprised of representatives of the Corps of Engineers and the Using Agency. Pricing data will not be considered during this evaluation. Criteria for the technical evaluation are set forth elsewhere in the solicitation and will be the sole basis for determining the technical merit of proposals. The TET shall utilize the relative importance definitions and technical merit ratings described earlier in this section of the solicitation to perform their technical evaluation. To be considered for award, proposals must conform to the terms and conditions contained in the RFP. No proposal will be accepted that does not address all criteria specified in this solicitation or which includes stipulations or qualifying conditions unacceptable to the Government.

**7.2 PRICE EVALUATION:** Price is of secondary importance to the technical criteria. Pricing will be independently evaluated to determine reasonableness and to aid in the determination of the firm's understanding of the work and ability to perform the contract. Financial capacity and bonding ability will be verified.

**8. SELECTION AND AWARD:** Subject to provisions contained herein, award of a firm fixed-price contract shall be made to a single firm. The Government will select the best-value offer based on technical merit and price.

**8.3.1 BEST VALUE ANALYSIS.** The Government is more concerned with obtaining superior technical features than with making award at the lowest overall cost to the Government. In determining the best value to the Government, the tradeoff process of evaluation will be utilized. The tradeoff process permits tradeoffs among price and technical factors, and allows the Government to consider award to other than the lowest priced offeror or other than the highest technically rated offeror. You are advised that greater consideration will be given to the evaluation of technical proposals rather than price. It is pointed out, however, that should technical competence between offerors be considered approximately the same, the cost or price could become more important in determining award.

**8.3.2 SELECTION AND AWARD WITHOUT DISCUSSIONS:** It is the intent of the Government to make award based upon initial offers, without further discussions or additional information Therefore, initial proposals should be submitted based on the most favorable terms from a price and technical standpoint. Do not assume there will be an opportunity to clarify, discuss or revise proposals. If award is not made on initial offers, a competitive range will be established and discussions conducted as described below.

**8.3.3 COMPETITIVE RANGE:** If it is not in the Government's best interest to make award on initial offers, the Contracting Officer will establish a competitive range of one or more offers and conduct discussions with those firms. When determining the competitive range, the Contracting Officer will consider the technical ratings and prices offered.

**8.3.4 DISCUSSIONS:** Discussions are usually conducted in writing, but may also be by telephone or in person. Discussions are tailored to each offeror's proposal and are only conducted with offeror(s) in the competitive range. The primary objective of discussions is to maximize the Government's ability to obtain the best value, based on the requirement and the evaluation criteria set forth in this solicitation. If a firm's proposal is eliminated or otherwise removed from consideration for award during discussions, no further revisions to that firm's proposal will be accepted or considered. Discussions will culminate in a request for Final Proposal Revision the date and time of which will be common to all remaining firms.

**8.3.5 AFTER DISCUSSIONS:** Revisions to the proposals submitted during discussions, if any, will be evaluated by the TET and, if warranted, an adjustment made to the rating previously assigned. The Contracting Officer will then perform a best value analysis based on the final prices and technical proposals. Selection will be made on the basis of the responsive,

responsible firm whose proposal conforms to the RFP and represents the most advantageous offer to the Government, subject to availability of funds.

**8.3.6 DEBRIEFINGS:** Upon written request, unsuccessful firms will be debriefed and furnished the basis for the selection decision and contract award in accordance with FAR 15.505 and FAR 15.506.

**8.3.7 PROPOSAL EXPENSES AND PRECONTRACT COSTS:** This solicitation does not commit the Government to pay costs incurred in preparation and submission of initial and subsequent proposals or for other costs incurred prior to award of a formal contract.

**8.3.8 RELEASE OF INFORMATION:** After receipt of proposals and until contract award, source selection information will not be furnished to any firm.

END OF SECTION 00110

**CUSTOMER SATISFACTION SURVEY (PAGE 1 OF 2)**

**W912DW-04-R-0015, Construct JP-8 Bulk Fuel Tanks McChord Air Force Base, Washington**

**SECTION 1 -- TO BE COMPLETED BY OFFEROR AND PROVIDED TO REFERENCE**

**Name of Firm Being Evaluated:** \_\_\_\_\_

**Project Title & Location:** \_\_\_\_\_

**Project Dollar Value:** \_\_\_\_\_

**Year Completed:** \_\_\_\_\_ **Project Manager:** \_\_\_\_\_

**SECTION 2 -- TO BE COMPLETED BY THE CUSTOMER REFERENCE AND MAILED, EMAILED, FAXED OR HAND-DELIVERED DIRECTLY TO:**

**U.S. Army Corps of Engineers, Seattle District**  
**Attn: CENWS-CT-CB-CU Attn: Kevin Mulvihill**  
**P.O. Box 3755**  
**Seattle, WA 98124-3755**

**FAX: (206) 764-6817**  
**Street Address:**  
**4735 E. Marginal Way S.**  
**Seattle WA 98134-2329**

**Forms submitted by other than the customer (i.e., by the offeror), may not be considered.**

OVERVIEW: The firm shown above has selected you as a customer reference to provide information on the firm's past performance. Your input is important to this firm and responses are required no later than the time and date proposals are due for inclusion in our evaluation.

**Name of Individual completing survey:** \_\_\_\_\_

**Firm Name:** \_\_\_\_\_ **Phone Number:** \_\_\_\_\_

**Relationship to this Project:** \_\_\_\_\_

The chart below depicts ratings to be used to evaluate this contractor's performance.

O	AA	S	M	U
<b>Outstanding</b>	<b>Above Average</b>	<b>Satisfactory</b>	<b>Marginal</b>	<b>Unsatisfactory</b>
Performance met all contract requirements and exceeded expectations. Problems, if any, were negligible, and were resolved in a timely and highly effective manner.	Performance met all contract requirements and exceeded some. There were a few minor problems which the contractor resolved in a timely, effective manner.	Performance met contract requirements. There were some minor problems, and corrective actions taken by the contractor were satisfactory.	Performance did not meet some contractual requirements. There were problems, some of a serious nature, for which corrective action was only marginally effective.	Performance did not meet contractual requirements. There were serious problems, and the contractor's corrective actions were ineffective.

**CUSTOMER SATISFACTION SURVEY (PAGE 2 OF 2)**

**W912DW-04-R-0015, Construct JP-8 Bulk Fuel Tanks McChord Air Force Base, Washington**

**In the following blocks, please indicate your overall level of satisfaction with the work performed by the firm shown in Section 1. Reference the chart outlined on page 1 of this survey.**

**For any marginal or unsatisfactory rating, please provide explanatory narratives in the remarks block. These narratives need not be lengthy; just detailed. If a question is not applicable, circle N/A. If more space is needed, then go to the end of the questionnaire or attach additional pages. Be sure to identify your continued narration with the respect line number, your name and project name.**

	<b>Quality of Work</b>	<b>Circle the appropriate rating using the chart on page 1</b>
A.	Quality of Service	<b>O AA S M U N/A</b>
B.	Quality Control	<b>O AA S M U N/A</b>
C.	Adequacy of Submittals/Reporting	<b>O AA S M U N/A</b>
D.	Identification/correction of deficient work in a timely manner	<b>O AA S M U N/A</b>
E.	Displayed flexibility in responding to your needs	<b>O AA S M U N/A</b>
F.	Organizational structure/functional relationships of the team including subcontractors	<b>O AA S M U N/A</b>
G.	Response time to your requirements	<b>O AA S M U N/A</b>
H.	Extent of participation of small business concerns as subcontractors under this contract	<b>O AA S M U N/A</b>
I.	Overall rating for this project	<b>O AA S M U N/A</b>
J.	How well did the contractor & subcontractors adhere to schedule?	<b>O AA S M U N/A</b>
K.	Would you select this contractor again for future projects?	<b>Yes or No (circle one)</b>

**REMARKS: (Discuss strengths and weaknesses of the firm)**

**Thank you for completing this form. Your assistance in providing this information is appreciated.**

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## SECTION 15060

## PIPE, MANUAL VALVES, AND FITTINGS, FUELING SYSTEM

## PART 1 GENERAL

## 1.1 REFERENCES

Waiver to Use MilStds and MilSpecs in Air Force Fuel Projects,  
HQ AFCESA/CESM (01/29/96).

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

## AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z49.1 (1988) Safety in Welding and Cutting

## AMERICAN PETROLEUM INSTITUTE (API)

API SPEC 5L (2000) Line Pipe

API SPEC 6D (1994) Pipeline Valves (Gate, Plug, Ball, and Check Valves)

API STD 607 (1993) Fire Test for Soft-Seated Quarter-Turn Valves

API STD 608 (1995) Ball Valves

API RP 1110 (1997) Pressure Testing of Liquid Petroleum Pipeline

## AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME-16 (1998) Boiler and Pressure Vessel Code; Section VIII, Pressure Vessels DIVISION 1

ASME-17 (1995) Boiler and Pressure Vessel Code; Section IX, Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators

ASME B1.1 (1989) Unified Inch Screw Threads (UN and UNR Thread Form)

ASME B16.5 (1996) Pipe Flanges and Flanged Fittings

ASME B16.9 (1993) Factory-Made Wrought Steel Buttwelding Fittings

ASME B16.11 (1996) Forged Fittings, Socket-Welding and Threaded

ASME B16.21 (1992) Nonmetallic Flat Gaskets for Pipe Flanges

ASME B18.2.1 (1996) Square and Hex Bolts and Screws Inch Series

ASME B18.2.2 (1987) Square and Hex Nuts (Inch Series)

ASME B31.1 (1998) Power Piping

ASME B31.3 (1996) Process Piping / with Addenda

## AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)

ASTM A 53/A 53M (1999b) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless

ASTM A 105/A 105M (1998) Carbon Steel Forgings for Piping Applications

ASTM A 181/A 181M (1995b) Carbon Steel Forgings, for General Purpose Piping

ASTM A 182/A 182M (2000b) Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service

ASTM A 193/A 193M (2000e1) Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service

ASTM A 194/A 194M (2000) Carbon and Alloy Steel Nuts for Bolts for High-Pressure or High-Temperature Service, or Both

ASTM A 234/A 234M (2000) Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperature Service

ASTM A269 (2000) Seamless and Welded Austenitic Stainless Steel Tubing for General Service

ASTM A 312/A 312M (2000b) Seamless and Welded Austenitic Stainless Steel Pipe

ASTM A 358/A 358M (2000) Electric-Fission-Welded Austenitic Chromium-Nickel Alloy Steel Pipe for High-Temperature Service

ASTM A 403/A 403M (2000a) Wrought Austenitic Stainless Steel Piping Fittings

ASTM D 229 (1996) Rigid Sheet and Plate Materials Used for Electrical Insulation

ASTM E 94 (2000) Radiographic Testing

ASTM F 436 (1993) Hardened Steel Washers

## AMERICAN WELDING SOCIETY (AWS)

AWS A2.4 (1998) Symbols for Welding, Brazing and  
Nondestructive Examination

AWS A3.0 (1994) Standard Welding Terms and  
Definitions

AWS A5.1 (1991) Carbon Steel Electrodes for  
Shielded Metal Arc Welding

AWS A5.4 (1992) Specification for Stainless Steel  
Electrodes for Shielded Metal Arc Welding

AWS A5.5 (1981) Low-Alloy Steel Covered Arc Welding  
Electrodes

## U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FS L-C-530 (Rev. C) Coating, Pipe, Thermoplastic Resin

FS L-T-1512 (Rev A; Reinst) Tape, Pressure Sensitive  
Adhesive, Pipe Wrapping

## INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C62.41 (1991) Surge Voltages in Low-Voltage AC  
Power Circuits

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS  
INDUSTRY (MSS)

MSS SP-58 (1993) Pipe Hangers and  
Supports-Materials, Design and Manufacture

MSS SP-69 (1996) Pipe Hangers and Supports-Selection  
and Application

## U.S. DEPARTMENT OF DEFENSE (DOD)

MIL-PRF-4556 (Rev. F; Am 1) Coating Kit, Epoxy, for  
Interior of Steel Fuel Tanks

MIL-V-12003 (Rev F; Am 1) Valves Plug: Cast Iron or  
Steel, Manually Operated

MIL-PRF-13789 (Rev E) Strainers, Sediment: Pipeline,  
Basket Type

MIL-P-24441/GEN (Rev B; Am 1, Supple 1) Paint,  
Epoxy-Polyamide

## U.S. DEPARTMENT OF DEFENSE (DOD)

MIL-STD-161 (Rev. F, Notice 2) Identification Methods  
for Bulk Petroleum Products Systems  
Including Hydrocarbon Missile Fuels

MIL-STD-271 (Rev F) Nondestructive Testing Methods

MIL-STD-24484 (Rev J) Adapter, Pressure Fuel Servicing,  
Nominal 2.5 inch diameter

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 30 (2000) Flammable and Combustible Liquids  
Code

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE J 514 (1999) Hydraulic Tube Fittings, Standard

STEEL STRUCTURES PAINTING COUNCIL (SSPC)

SSPC SP 3 (1982; Rev. Sep 2000) Power Tool Cleaning

SSPC SP 5 (2000) White Metal Blast Cleaning

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

### SD-03 Product Data

Piping; G-AE.

Fittings; G-AE.

Valves; G-AE.

Flexible Ball Joints; G-AE.

Strainers; G-AE.

Flexible Hoses; G-AE.

Lightning Surge Arrester; G-AE.

Protective Coatings; G-AE.

Sample Connections; G-AE.

Isolating Gasket Kits; G-AE.

Gaskets; G-AE.

Purge Blocks; G-AE.

Manufacturer's Catalog Data

### SD-06 Test Reports

Pneumatic Test; .

Hydrostatic Test; .

SD-07 Certificates

Qualifications of Welders; .

Pipe; .

Fittings; .

Valves; .

Pipe Weld Radiograph Inspector's Certification;  
(for field welds).

Isolating Gasket Kits; .

Survey of final elevation of buried fuel pipe; .

Survey giving elevation at each joint, elbow, and tee.

SD-10 Operation and Maintenance Data

Operation and Maintenance Manuals; G-AE.

Operation and maintenance information shall be submitted for the equipment items or systems listed below. Refer to Section 01730 FACILITY OPERATION AND MAINTENANCE MANUAL for the information to be submitted for various type of equipment and systems.

Manual Valves  
Flexible Ball Joints  
Strainers  
Protective Coatings  
Sample Connections  
Isolating Gasket Kits  
Gaskets  
Flexible Hoses

PART 2 PRODUCTS

2.1 DESIGN CONDITIONS

Design conditions shall be as specified in Section 15050 MECHANICAL EQUIPMENT, FUELING SYSTEM.

2.2 MATERIALS

2.2.1 General

Pipe and fittings in contact with fuel shall be ~~stainless steel, carbon steel as indicated on the drawings~~. No zinc coated metals, brass, bronze or other copper bearing alloys shall be used in contact with the fuel. All carbon steel and stainless steel underground piping shall have a protective coating and shall be cathodically protected in accordance with Section 13112A CATHODIC PROTECTION SYSTEM (IMPRESSED CURRENT). Identification of piping shall be in accordance with MIL-STD-161 unless specified otherwise. Material for manual valves shall be as specified hereinafter.

### 2.2.2 Carbon Steel Piping

Each length of pipe shall be subjected to factory hydrostatic testing and ultrasonic testing in accordance with their respective pipe specification.

a. Piping 12-Inches and Larger: Seamless, ASTM A 53/A 53M Grade B having a wall thickness of 0.375-inch.

b. Piping 2 1/2-Inches through 10-Inches: Seamless, Schedule 40 API SPEC 5L Grade B or ASTM A 53/A 53M Grade B.

c. Piping Two-Inches and Smaller: Seamless, Schedule 80 API SPEC 5L Grade B or ASTM A 53/A 53M Grade B.

d. Welding Electrodes: E70XX low hydrogen electrodes conforming to AWS A5.1 or AWS A5.5.

### 2.2.3 Protective Coatings for Aboveground Carbon Steel Piping

Provide coating of aboveground piping, piping in pits, pipe supports, filter separators, and miscellaneous metal and equipment in accordance with MIL-P-24441/GEN, Type III, and the instructions that follow. Color of finish coat shall be white. Do not paint stainless steel or aluminum surfaces. Surfaces including those that have been shop coated, shall be solvent cleaned. Surfaces that contain loose rust, loose mill scale, and other foreign substances shall be cleaned mechanically with power tools according to SSPC SP 3. Cleaning shall be performed in sections or blocks small enough to permit application of the epoxy-polyamide prime coat during the same work shift. Shop-coated surfaces shall be protected from corrosion by treating and touching up corroded areas immediately upon detection.

#### 2.2.3.1 Coating Description

Epoxy-polyamide coatings consist of a two component system that includes a pigmented polyamide resin portion (A component) and an epoxy resin portion (B component). Once they are mixed together and applied as a paint film, the coating cures to a hard film by chemical reaction between the epoxy and polyamide resins. Epoxy-polyamide coating (MIL-P-24441/GEN) consists of individual formulations, for example, Formula 150 is for green primer, and Formula 152 is for white topcoat.

#### 2.2.3.2 Mixing Epoxy-Polyamide Coatings

Epoxy-polyamide coatings are supplied in measured amounts that must be mixed together in exact proportions to ensure the correct and complete chemical reaction. Mix no more paint than can be applied in the same day. The estimated pot life is 3-4 hours for 5 gallons at 70-80° F. Discard any mixed paint remaining at the end of the day.

a. Mixing Ratio. The mixing ratio of the MIL-P-24441/GEN coatings (except Formula 159) are all 1:1 by volume, for example, 5 gallons of component A to 5 gallons of component B. The mixing ratio of MIL-P-24441/GEN for formula 159 is 1:4 by volume.

b. Mixing Procedures. Each component shall be thoroughly stirred prior to mixing the components together. After mixing equal volumes of the two components, this mixture shall again be thoroughly stirred until well blended. The induction time shall be adhered to, to ensure complete chemical reactions. Induction time is defined as the time immediately following the mixing together of components A and B during which the critical chemical reaction period of these components is initiated until the mixture is ready for application. This reaction period is essential to ensure the complete curing of the coating. Volumetric mixing spray equipment with in-line heaters set at 70 to 80° F (21 to 28° C) may be used without an induction period.

#### 2.2.3.3 Induction Times

The temperature of the paint components in storage should be measured to determine induction time and pot life. Pot life is the usable life of the mixed paint. It is dependent upon the temperature and the volume of the mixed paint. The pot life of a five gallon mixture of the MIL-P-24441/GEN paints at 70-80°F is approximately 4 hours. The job site application temperature will affect the time required for the paint to cure, and must be considered in estimating induction time, cure time, and the effect of batch size on these functions. At 40 to 60° F a 1 hour induction time shall be used. Volumetric mixing spray equipment with in-line heaters set at 70 to 80° F may be used without an induction period. To ensure that the reaction proceeds uniformly, the paint should be manually stirred periodically during its induction period. This prevents localized overheating or hot spots within the paint mixture.

#### 2.2.3.4 Epoxy-Polyamide Coating Application

Epoxy-polyamide coatings, MIL-P-24441/GEN, may be applied by brushing or spraying.

a. Thinning Application. Ordinarily, MIL-P-24441/GEN coatings are not thinned. If necessary, up to one pint of epoxy thinner for each gallon of mixed paint may be added if paint has thickened appreciably during cold temperature application or if necessary to improve application characteristics. When applied at the proper thickness, without thinning, these paints will have no tendency to sag.

b. Application Thickness. Unless otherwise specified, apply each coat of paint to produce approximately 3 mils dry film thickness (DFT). Application which yields in excess of 4.0 mils DFT should be avoided to prevent sagging.

c. Spray Application. MIL-P-24441/GEN paints should be sprayed with conventional spray guns and normal spray-pot pressures. The spray gun should be equipped with a middle-size (D) needle, and nozzle setup. Both conventional and airless spray equipment are suitable for use with or without volumetric mixing capability.

#### 2.2.3.5 Equipment Cleanup

The mixed paint should not be allowed to remain in spray equipment for an extended period, especially in the sun of a warm area. The paint cures more rapidly at higher temperatures. When components A and B are mixed

together, the pot life of the mixture (including the induction time is 6 hours at 70° F (21° C). Pot life is longer at lower temperatures and shorter at temperatures above 70° F (21° C). Spray equipment should be cleaned after using by flushing and washing with epoxy thinner or aromatic hydrocarbon thinners (xylene or high flash aromatic naphtha). General cleanup is also done by using these solvents. Brushes and rollers should be given a final cleaning in warm soapy water, rinsed clean with warm fresh water and hung to dry.

#### 2.2.4 Protective Coatings for Buried Steel Piping

Provide pipe with FS L-C-530 coating system of factory-applied adhesive undercoat and continuously extruded plastic resin coating; minimum thickness of plastic resin shall be 36 mils for pipe sizes 6 inches and larger. Fittings, couplings, irregular surfaces, damaged areas of pipe coating, and existing piping affected by the Contractor's operations shall be clean, dry, grease free, and primed before application of tape. Tape shall overlap the pipe coating not less than three inches. Waterproof shrink sleeves may be provided in lieu of tape and shall overlap the pipe coating not less than six inches. Pipe coating and adhesive undercoat surfaces to be wrapped with tape shall be primed with a compatible primer prior to application of tape. Primer shall be as recommended by tape manufacturer and approved by pipe coating manufacturer.

a. Damaged Areas of Pipe Coating: Provide FS L-T-1512, 20 mils nominal thickness of tape over damaged areas. Residual material from damaged areas of pipe coating shall be pressed into the break or trimmed off. Apply tape spirally with one-third overlap as tape is applied. A double wrap of one full width of tape shall be applied at right angles to the axis to seal each end of the spiral wrapping.

b. Fittings, Couplings, and Regular Surfaces: Provide FS L-T-1512, 10 mils nominal thickness tape overlapped not less than 1.0 inch over damaged areas. Initially stretch and apply first layer of tape to conform to component's surface. Then apply and press a second layer of tape over first layer of tape.

c. Testing of Protective Coatings: Perform tests with an approved silicone rubber electric wire brush or an approved electric spring coil flaw tester. Tester shall be equipped with an operating bell, buzzer, or other audible signal which will sound when a holiday is detected at minimum testing voltage equal to 1,000 times the square root of the average coating thickness in mils. Tester shall be a type so fixed that field adjustment cannot be made. Calibration by tester manufacturer shall be required at six-month intervals or at such time as crest voltage is questionable. Certify in writing the calibration date and crest voltage setting. Maintain the battery at ample charge to produce the crest voltage during tests. Areas where arcing occurs shall be repaired by using material identical to original coating or coating used for field joints. After installation, retest the exterior surfaces, including field joints, for holidays. Promptly repair holidays.

#### 2.2.5 Fittings

##### 2.2.5.1 General

Welding ells, caps, tees, reducers, etc., to be of materials compatible for welding to the pipe line in which they are installed, and wall thickness, pressure and temperature ratings of the fittings shall be not less than the adjoining pipe line. Unless otherwise required by the conditions of installation, all elbows shall be the long radius type. Miter joints shall not be acceptable. Make odd angle offsets with pipe bends or elbows cut to the proper angle. Butt weld fittings to be factory-made wrought fittings manufactured by forging or shaping. Fabricated fittings will not be permitted. Welding branch fittings shall be insert type suitable for radiographic inspections specified herein.

#### 2.2.5.2 Carbon Steel Fittings

a. Fittings 2-1/2 Inches and Larger: Butt weld, conforming to ASTM A 234/A 234M, grade WPB and ASME B16.9 of the same wall thickness as the adjoining pipe. All welds shall be radiographically examined throughout the entire length of each weld. Each fitting shall be subjected to the Supplementary Requirements S3 and S4, Liquid Penetration examination and Magnetic-Particle Examination. Detectable flaws will not be accepted in the supplementary examinations. Fittings shall be identified to relate them to their respective radiograph.

b. Fittings 2 Inches and Smaller. Forged (socket welded or if indicated on drawings, threaded), 2,000-pound W.O.G., conforming to ASTM A 105/A 105M, Class 70, and ASME B16.11. Threaded fittings shall only be used for above grade applications. Underground low point drain pipe and high point vent pipe shall be butt welded.

c. Flanges: One-hundred-fifty-pound weld neck, forged flanges conforming to ASTM A 181/A 181M, Grade 2, and ASME B16.5. Flanges to be 1/16-inch raised face with phonographic finish, except where required otherwise to match equipment furnished. Match flange face to valves or equipment furnished. Flange face shall be machined to match valves or equipment furnished. Use of spacing rings or gaskets discs are not allowed. Flanges shall be subjected to the Supplementary Requirements S4 and S5, Liquid Penetrant Examination, and Magnetic-Particle Examination. Detectable flaws will not be accepted.

#### 2.2.5.3 Isolating Gasket Kits (Insulating) for Flanges

Provide ASTM D 229 electrical insulating material of 1,000 ohms minimum resistance; material shall be resistant to the effects of aviation hydrocarbon fuels. Provide full face insulating gaskets between flanges. Provide full surface 0.03-inch thick wall thickness, spiral-wound mylar insulating sleeves between the bolts and the holes in flanges; bolts may have reduced shanks of a diameter not less than the diameter at the root of threads. Provide 0.125-inch thick high-strength phenolic insulating washers next to flanges and provide flat circular stainless steel washers over insulating washers and under bolt heads and nuts. Provide bolts 0.5-inch longer than standard length to compensate for the thicker insulating gaskets and the washers under bolt heads and nuts. Exterior above grade flanges separated by electrically isolating gasket kits shall be provided with weatherproof lightning surge arrester devices. The surge arrester shall bolt across flanges separated by insulating gasket kits per

detail on contract drawings. The arrester shall have the following features:

- a. Weatherproof NEMA 4 enclosure.
- b. Bidirectional and bipolar protection.
- c. Constructed of solid state components, no lights, fuses or relays shall be used that will require maintenance or replacement.
- d. Withstand unlimited number of surges at 50,000 Amperes.
- e. Maximum clamping voltage of 700 Volts based on a IEEE C62.41 8x20 microsecond wave form at 50,000 Amperes peak measured at the device terminals (zero lead length).
- f. A UL listed arrester for installation in Class 1, Division 2, Group D, hazardous areas.

Install the mounting bracket and leads on the flange side of the bolt insulating sleeve and washer, and size in accordance with this schedule.

Line Size (Inches)	Bolt Size (Inches)
2	5/8
2-1/2	5/8
3	5/8
4	5/8
6	3/4
8	3/4
10	7/8
12	7/8
14	1
16	1

(Note: Allowance must be made for the 1/32-inch thickness of the insulating sleeve around the bolts when sizing the mounting lugs.)

#### 2.2.6 Bolts and Nuts

Bolts and nuts for pipe flanges, flanged fittings, valves and accessories shall conform to ASME B18.2.1 and ASME B18.2.2, except as otherwise specified. Bolts shall be of sufficient length to obtain full bearing on the nuts and shall project no more than two full threads beyond the nuts with the bolts tightened to the required torque. Bolts shall be regular hexagonal bolts conforming to ASME B18.2.1 with material conforming to ASTM A 193/A 193M, Grade B7. Bolts shall be threaded in accordance with ASME B1.1, Class 2A fit, Coarse Thread Series, for sizes one inch and smaller and Eight-Pitch Thread Series for sizes larger than one inch. Nuts shall conform to ASME B18.2.2, hexagonal, heavy series with material conforming to ASTM A 194/A 194M, Grade 7. Nuts shall be threaded in accordance with ASME B1.1, Class 2B fit, Coarse Thread Series for sizes one inch and smaller and Eight-Pitch Thread Series for sizes larger than one inch. Provide washers under bolt heads and nuts. Washers to be ASTM F 436, flat circular carbon steel. Torque wrenches shall be used to tighten all flange bolts to the torque recommended by the gasket manufacturer. Tightening pattern shall be as recommended by the gasket manufacturer. Anti-seize compound shall be used on stainless steel bolts.

#### 2.2.7 Gaskets

ASME B16.21, composition ring, using a Buna-N binder, 0.1250-inch thick. Gaskets shall be resistant to the effects of aviation hydrocarbon fuels and

manufactured of fire-resistant materials. Full-face gaskets shall be used for flat-face flanged joints. Ring gaskets shall be used for raised-face flanged joints. Gaskets shall be of one piece factory cut.

#### 2.2.8 Relief and Drain System Piping

Pressure relief valve discharge lines and drain lines shall be Schedule 40 API SPEC 5L Grade B or ASTM A 53/A 53M Grade B Carbon Steel.

##### 2.2.8.1 Gaskets

See Gaskets specified herein before.

#### 2.2.9 Relief and Drain System Protective Coating

Pipe shall be factory coated as specified herein before for steel piping.

#### 2.2.10 Field Applied Protective Coatings

The field joints and fittings of all underground piping shall be coated as herein specified.

##### 2.2.10.1 Welded Joints

Heat shrinkable radiation-cross-linked polyolefin wraparound type sleeves shall be applied to all welded joints. Joints shall not be coated until pressure testing is complete. Apply sleeves consisting of 40 mil polyolefin backing and 40 mil thermoplastic mastic adhesive in accordance with the manufacturer's instructions.

##### 2.2.10.2 Fittings

Fittings and other irregular surfaces shall be tape wrapped. The tape shall be a plastic mastic laminated tape having 6 mil plastic backing of either polyethylene or polyvinylchlorine and 29 to 44 mil of synthetic elastomer.

#### 2.2.11 Threaded Joints

Threaded joints, if indicated on the drawings, shall be made tight with manufacturer recommended teflon tape or a mixture of graphite and oil, inert filler and oil, or with a graphite compound, applied with a brush to the male threads. Not more than three threads shall show on made up joints. Threaded joints, mechanical couplings and flanges will not be permitted in buried piping. Threaded joints shall not get welded.

#### 2.2.12 Welded Joints

Welded joints in steel pipe shall be as specified in Part 3 "EXECUTION."

### 2.3 MANUAL VALVES

All portions of a valve coming in contact with fuel shall be of noncorrosive material. Valves shall be Type 304 or Type 316 stainless steel or carbon steel internally plated with chromium or nickel or internally electroless nickel plated. Stem and trim shall be stainless steel for all valves. Manually operated valves six inches and larger shall be worm-gear operated and valves smaller than six inches shall be wrench operated. Valves smaller than two inches shall have lever-type handles.

Valves installed more than seven (7) feet above finished floor shall have chain operators and a position indicators visible from ground level. Sprocket wheel for chain operator shall be aluminum.

### 2.3.1 Ball Valves

Ball valves shall be fire tested and qualified in accordance with the requirements of API STD 607 and API STD 608. Ball valves shall be nonlubricated valves that operate from fully open to fully closed with 90 degree rotation of the ball. Valves two inches and larger shall conform to applicable construction and dimension requirements of API SPEC 6D, ANSI Class 150 and shall have flanged ends. Valves smaller than 2 inches shall be ANSI class 150 valves with one piece bodies with flanged ends, unless noted otherwise. The balls in valves 10 inches full port and 12 inch regular port and larger shall have trunnion type support bearings. Except as otherwise specified, reduced port or full port valves may be provided at the Contractor's option.

#### 2.3.1.1 Materials

Ball shall be stainless steel. Ball valves shall have tetrafluoroethylene (TFE) or Viton seats, body seals and stem seals. Valves 2 inches and smaller shall have a locking mechanism.

### 2.3.2 Plug (Double Block and Bleed) Valves

API SPEC 6D, Type III, ANSI Class 150, non-lubricated, resilient, double seated, trunnion mounted, tapered lift plug capable of two-way shutoff. Valve shall have stainless steel or carbon steel body with chrome-plated interior, tapered plug of steel or ductile iron with chrome or nickel plating and plug supported on upper and lower . Sealing slips shall be steel or ductile iron, with Viton seals which are held in place by dovetail connections. Valve design shall permit sealing slips to be replaced from the bottom with the valve mounted in the piping. Valves shall operate from fully open to fully closed by rotation of the handwheel to lift and turn the plug. Valves shall have weatherproof operators with mechanical position indicators. Minimum bore size shall be not less than 65 percent of the internal cross sectional area of a pipe of the same nominal diameter unless bore height of plug equals the nominal pipe diameter and manufacturer can show equal or better flow characteristics of the reduced bore size design.

#### 2.3.2.1 General

Valves in the operating tank suction lines shall be provided with a factory-installed limit switch that is actuated by the valve closure. Each switch shall have one double pole double throw contacts, and shall be watertight and U.L. listed for Class I, Division 1, Group D hazardous areas with (T2D-419 F) temperature limitation.

#### 2.3.2.2 Valve Operation

Rotation of the handwheel toward open shall lift the plug without wiping the seals and retract the sealing slips so that during rotation of the plug clearance is maintained between the sealing slips and the valve body. Rotation of the handwheel toward closed shall lower the plug after the sealing slips are aligned with the valve body and force the sealing slips against the valve body for positive closure. When valve is closed, the slips shall form a secondary fire-safe metal-to-metal seat on both sides of

the resilient seal. Plug valves located in Isolation Valve Pits shall be provided with handwheel extensions.

#### 2.3.2.3 Relief Valves

ANSI Class 150. Provide plug valves with automatic thermal relief valves to relieve the pressure build up in the internal body cavity when the plug valve is closed. Relief valves shall open at 25 psi differential pressure and shall discharge to the throat of, and to the upstream side, of the plug valve.

#### 2.3.2.4 Bleed Valves

ANSI Class 150, stainless steel body valve. Provide manually operated bleed valves that can be opened to verify that the plug valves are not leaking when in the closed position.

#### 2.3.3 Swing Check Valves

Swing check valves shall conform to applicable requirements of API SPEC 6D, regular type, ANSI Class 150 with flanged end connections. Check valves shall be tilting disc, non-slam type with 316 stainless steel body and trim. Discs and seating rings shall be renewable without removing the valve from the line. The disc shall be guided and controlled to contact the entire seating surface.

### 2.4 RELIEF VALVES

Relief valves shall be the fully enclosed, spring loaded, angle pattern, single port, hydraulically operated type with plain caps, and shall be labeled in accordance with ASME-16. Valve stems shall be fully guided between the closed and fully opened positions. The valves shall be factory-set to open at 150 PSI or as indicated on the drawings. Operating pressure shall be adjustable by means of an enclosed adjusting screw. The valves shall have a minimum capacity of 20 GPM at 10 percent overpressure and shall operate at rated capacity with a back pressure not exceeding 50 psi. Valves shall have a replaceable seat.

#### 2.4.1 Materials

Valves shall have carbon steel bodies and bonnets with stainless steel springs and trim. Valves shall be Class 150 flanged end connections.

#### 2.4.2 Sight Flow Indicators

Sight flow indicators shall be ANSI Class 150 and shall have flanged end connections. Sight flow indicators shall consist of a housing containing a rotating propeller that is visible through a glass observation port. The housing shall be stainless steel when installed in stainless steel lines and carbon steel when installed in carbon steel lines. The glass in the indicator shall also meet the Class 150 rating. The indicator down stream of the Pressure Control Valve (PCV) shall contain a bi-directional flapper instead of a propeller.

### 2.5 PIPING ACCESSORIES

#### 2.5.1 Flexible Ball Joints

Flexible ball joints shall be stainless steel, capable of 360-degree

rotation plus 15-degree angular flex movement, ASME B16.5, Class 150 flanged end connections. Provide pressure molded composition gaskets designed for continuous operation temperature of 275 degrees F. Joints shall be designed for minimum working pressure of ANSI Class 150.

## 2.5.2 Pipe Sleeves

Pipe sleeves shall be installed at all points where the piping passes through concrete construction. Such sleeves shall be of sufficient inside diameter to provide a minimum clear distance between the pipe and the sleeve of 1/2-inch. Sleeves through concrete pits or slabs shall be standard weight carbon steel pipe with a protective coating. Each sleeve shall extend through the respective pit wall or slab and shall be provided with a Buna-N casing seal. Sleeves where piping passes under roads or piping indicated to be double walled shall be standard weight carbon steel pipe with a protective coating as previously specified. Alignment of the sleeve and piping shall be such that the pipe is accurately centered within the sleeve by a nonconductive centering element. The sleeve shall be securely anchored to prevent dislocation. Closure of space between the pipe and the pipe sleeve shall be by means of a mechanically adjustable segmented elastomeric seal. The seal shall be installed so as to be flush.

## 2.5.3 Strainers

### 2.5.3.1 Basket Type

Strainer shall be in compliance with MIL-PRF-13789, except as specified otherwise. Strainer end connections shall be designed in accordance with ASME B16.5, Class 150. Strainers shall have stainless steel bodies, stainless steel shall be Types 304 or 316. Strainers shall have removable baskets of 60 mesh wire screen with larger wire mesh reinforcement; wire shall be stainless steel, Type 316. Pressure drop for clean strainer shall not exceed three psig at maximum design flow rate. The ratio of net effective strainer area to the area of the connecting pipe shall be not less than three to one. Each strainer shall be provided with a suitable drain at the bottom, equipped with a ball valve. Strainer shall be the single inlet, single outlet design. Strainer shall be supplied with a piston type direct reading differential pressure gage as specified in SECTION 15880 FILTER SEPARATOR.

### 2.5.3.2 Cone Type (Temporary)

Strainer shall be stainless steel type 304 or 316, 60 mesh screen with the ratio of net open area of strainer to the area of the connecting pipe shall be not less than one to one.

## 2.5.4 Pipe Hangers and Supports

### 2.5.4.1 General

Pipe hangers and supports shall conform to MSS SP-58 and MSS SP-69. Supports shall be provided at the indicated locations. Support channels for drain lines shall be epoxy coated on all surfaces or hot-dip galvanized after the channels are cut to length. Coated supports shall be coated with fusion bonded epoxy resin applied by the fluidized bed method. Thickness of the coating shall be not less than 10 mils. Surface preparation and coating application shall be in accordance with the epoxy manufacturer's instructions. The coating shall be pinhole free when tested with a low voltage holiday detector set at no more than 100 times the mil thickness of

the coating. All pinholes shall be marked, repaired and retested to ensure a pinhole free film. The coating material shall be a 100 percent solids, thermosetting, fusion-bonded, dry powder epoxy resin. The manufacturer shall certify that the material is suitable for fluidized bed application and that it is approved by the Environmental Protection Administration.

#### 2.5.4.2 Adjustable Pipe Supports

Adjustable pipe supports shall consist of a cast iron saddle and a threaded nipple connected to a carbon steel pipe by means of a special reducer conforming to MSS SP-69. The supports shall be provided with neoprene insulation strips.

#### 2.5.4.3 Low Friction Supports

Low friction supports shall be self-lubricating antifriction element composed of reinforced TFE. Units shall be factory designed and manufactured.

#### 2.5.4.4 Concrete and Grout

Concrete and grout for anchors and supports shall comply with SECTION 03300 CAST-IN-PLACE STRUCTURAL CONCRETE.

#### 2.5.5 Sample Connections

Sample connections shall be factory assembled units specifically designed for obtaining representative samples from fuel pipelines. Each connection shall include a 1/4-inch sampling probe where the probe faces upstream, ball valve and 1/4-inch quick disconnect coupling with dust plug, all assembled into a unit that is suitable for installation in a pipe nipple. The sampling probe shall extend not less than one inch into the fuel pipe. All materials in the sample connections shall be stainless steel or aluminum.

##### 2.5.5.1 Sampling Hoses

Furnish two sampling hose assemblies to the Contracting Officer at the project site. Each assembly shall consist of a six-foot length of 1/4-inch clear plastic tubing with internal bonding/grounding wire. One end of the tubing will contain a male connector that actuates flow when inserted into the quick disconnect coupler. Each end of the bonding/grounding wire shall be equipped with clips for attaching to the pipe and metal sample container.

#### 2.6 FLEXIBLE HOSES

Flexible hoses for fueling pumps shall have ANSI Class 300 flanges of stainless steel construction conforming to ASME B16.5. Flexible hoses shall be of stainless steel flexible metal hose consisting of an inner corrugated stainless steel tube with stainless steel braid cover. All components to be suitable for not less than 275 psig. Length and application of flexible hoses shall be per manufacturer's written recommendations.

### PART 3 EXECUTION

#### 3.1 WELDING

##### 3.1.1 General

All joints unless indicated otherwise, in carbon steel piping systems shall be welded. Unless otherwise approved, all girth welds shall be complete penetration groove welds made in accordance with qualified welding procedures. Welding operations, qualifications of welders and welding procedures shall comply with the provisions of ASME B31.3 and the requirements specified herein. The root pass on carbon steel pipe shall be by the GMAW or GTAW process.

a. Definitions shall be in accordance with AWS A3.0.

b. Symbols shall be in accordance with AWS A2.4 for welding and nondestructive testing, unless otherwise indicated.

c. Safety Precautions shall conform to ANSI Z49.1.

d. Weld Preparation shall comply with the requirements of ASME B31.3 and the qualified Welding Procedure Specification. The use of "rice paper" as purge blocks is not permitted. Contractor shall submit alternate method for approval.

e. Backing Rings. The use of backing rings for making or repairing welds will not be permitted.

### 3.1.2 Qualifications of Welders

Welders and welding procedures shall be qualified in accordance with requirements of ASME B31.3.

#### 3.1.2.1 Weld Identification

Each qualified welder shall be assigned an identification symbol. All welds shall be permanently marked with the symbol of the individual who made the weld.

#### 3.1.2.2 Defective Work

Welders found making defective welds shall be removed from the work or shall be required to be requalified in accordance with ASME B31.3.

### 3.1.3 Tests

All steel pipe field welds, including high point vent pipe and low point drain pipe, shall be examined by radiographic methods to determine conformance to the paragraph "Standards of Acceptance." The services of a qualified commercial or testing laboratory approved by the Contracting Officer shall be employed by the Contractor for testing of piping welds. Costs of testing, including retesting or repaired welds, shall be borne by the Contractor.

#### 3.1.3.1 Radiographic Inspection

Procedures for radiographic inspection shall be in accordance with MIL-STD-271 or ASTM E 94. Weld ripples or surface irregularities that might mask or be confused with the radiographic image of any objectional defect shall be removed by grinding or other suitable mechanical means. The weld surface shall be merged smoothly with the base metal surface.

### 3.1.4 Standards of Acceptance

Interpretation of test results and limitations on imperfections in welds shall comply with the requirements for 100 percent Radiography, per ASME B31.3, Chapter VII, Table K341.3.2A.

### 3.1.5 Corrections and Repairs

Defects shall be repaired in accordance with approved procedures. Defects discovered between passes shall be repaired before additional weld material is deposited. Whenever a defect is removed and repair by welding is not required, the affected area shall be blended into the surrounding surface so as to avoid sharp notches, crevices, or corners. After a defect is thought to have been removed, and prior to rewelding, the area shall be examined by suitable methods to insure that the defect has been eliminated.

After repairs have been made, the repaired area shall be reinspected and shall meet the standards of acceptance for the original weld. Any indication of a defect shall be regarded as a defect unless reevaluation by nondestructive methods and/or by surface conditioning shows that no defect is present.

#### 3.1.5.1 Defect Removal

Defective or unsound weld joints shall be corrected by removing and replacing the entire weld joint, or for the following defects corrections shall be made as follows:

- a. Excessive Convexity and Overlap: Reduce by removal of excess metal.
- b. Excessive Concavity of Weld, Undersized Welds, Undercutting: Clean and deposit additional weld metal.
- c. Excessive Weld Porosity, Inclusions, Lack of Fusion, Incomplete Penetration: Remove defective portions and reweld.
- d. Crack in Weld or Base Metal: Remove crack throughout its length, including sound weld metal for a distance of twice the thickness of the base metal or two inches, whichever is less, beyond each end of the crack, followed by the required rewelding. Complete removal shall be confirmed by magnetic particle inspection for carbon steel or liquid penetrant inspection for stainless steel. Inspection procedures shall comply with the requirements of ASME B31.3.
- e. Poor Fit-Up: Cut apart improperly fitted parts, and reweld.

#### 3.1.5.2 Methods of Defect Removal

The removal of weld metal or portions of the base metal shall be done preferably by chipping, grinding, sawing, machining, or other mechanical means. Defects also may be removed by thermal cutting techniques. If thermal cutting techniques are used, the cut surfaces shall be cleaned and smoothed by mechanical means. In addition, at least 1/8-inch of metal shall be removed by mechanical means from the cut surfaces of stainless steel.

#### 3.1.5.3 Rewelding

Repair welds shall be made using an electrode or filler wire preferably

smaller than that used in making the original weld. Rewelding shall be done using qualified welding procedures. The surface shall be cleaned before rewelding. Repair welds shall meet the requirements of this specification.

#### 3.1.5.4 Peening or Caulking

The use of force (peening) or foreign materials to mask, fill in, seal, or disguise any welding defects shall not be permitted.

### 3.2 INSTALLATION

#### 3.2.1 Precautions

Special care shall be taken by the Contractor to insure that the protective coating on buried pipe is not damaged during installation and that the completed system is free of rocks, sand, dirt, and foreign objects. The Contractor shall take the following steps to insure these conditions.

a. Coated pipe shall be handled only with canvas or nylon slings or padded clamps. Any coating damaged by improper handling or storage shall be repaired as specified.

b. Pipe brought to the site shall be stored on blocks or horses at least 18 inches above the ground. Padded blocks or horses shall be used for coated pipe. The method and height of storing coated pipe shall be in accordance with the coating manufacturer's instructions.

c. Visual inspection shall be made of the inside of each length of pipe to ensure that it is clear and clean prior to installation.

d. The open ends of the pipe system shall be closed at the end of each day's work or when work is not in progress and shall not be opened until the work is resumed.

e. A swab, with a leather or canvas belt disc to fit the inside diameter of pipe, shall be pulled through each length of pipe after welding in place.

f. Obstruction remaining in the pipe after completion of the system shall be removed at the expense of the Contractor.

#### 3.2.2 Protective Coatings

##### 3.2.2.1 Application of Tape Wrapping

Surfaces to receive tape shall be clean, dry, grease-free and dust-free. Extruded polyethylene coating and adhesive undercoat surfaces to be tape wrapped shall be primed with a compatible primer prior to application of the tape. The primer shall be as recommended by the tape manufacturer and approved by the extruded polyethylene coating manufacturer. Weld beads shall be wire brushed. Burrs and weld spatter shall be removed. Weld beads shall be covered with one wrap of tape prior to spiral wrapping. Fittings shall be wrapped spirally beginning with one complete wrap three inches back from each edge of the extruded polyethylene coating. For pipe less than four-inch size, one layer half-lapped shall be used. For pipe four-inch size and larger, two layers half-lapped shall be used, with the second layer wrapped opposite hand to the first. On irregular surfaces one layer shall be applied half-lapped and stretched to conform to the surface,

followed by a second layer half-lapped and applied with the tension as it comes off the roll.

#### 3.2.2.2 Inspection and Testing

The condition of factory field coated and wrapped piping shall be the responsibility of the Contractor and all damage to the protective covering during transit and handling shall be repaired by the Contractor at no additional cost to the Government. All field coating and wrapping shall be subject to approval by the Contracting Officer. The entire pipe shall be inspected as specified in sub-paragraph "Testing of Protective Coatings" under paragraph "Protective Coatings for Buried Carbon Steel and Stainless Steel Piping." The inspection for holidays shall be performed just prior to lowering the pipe into the ditch and every precaution shall be taken during lowering and backfilling to prevent damage to the protective covering.

#### 3.2.2.3 Damage Repair

Damaged areas of extruded polyethylene coating shall be repaired by tape wrapping as specified in the preceding paragraph for fittings. Residual material from the extruded polyethylene coating shall be pressed into the break or shall be trimmed off; all areas to be taped shall be primed, and the tape shall be applied half-lapped.

### 3.3 VERIFICATION OF DIMENSIONS

The Contractor shall become familiar with details of the work, shall verify dimensions in the field, and shall advise the Contracting Officer of any discrepancy before performing any work.

### 3.4 CLEANING OF PIPING

The Contractor shall keep the interior and ends of all new piping affected by the Contractor's operations thoroughly cleaned of foreign matter and water before and after being installed. Piping systems shall be kept clean during installation by means of plugs or other approved methods. When work is not in progress, open ends of piping and fittings shall be closed so that no water or other foreign substance will enter the pipes or fittings. Piping shall be inspected before placing into position. The interior of each length of pipe shall be cleaned after welding. It shall be the Contractor's responsibility for insuring that the interior of the piping is free of foreign matter when it is connected into the system.

### 3.5 TRENCHING AND BACKFILLING

Trenching and backfilling shall conform to Section 02316A EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS, and the following bedding and backfill requirements. The pipe shall be laid in a bed of sand six inches deep, compacted to the elevation of the bottom of the pipe. The full length of each section of pipe without any protective covering shall be excavated to permit installation of the protective covering. Pipe that has the grade or joint disturbed after laying, shall be taken up and relaid. Pipe shall not be laid in water or when the trench or weather conditions are unsuitable for such work. After testing and application of protective covering to joints, sand backfill shall be placed and compacted around the pipe or protective coating. The remainder of the backfill shall be the same as for other types of pipe.

### 3.6 INSTALLATION OF UNDERGROUND PIPE

Underground fuel pipelines shall be pitched as shown on the drawings. Where not indicated they shall be pitched a minimum of 2 inches per 100 feet. Branch lines to the hydrant pits shall slope up to the pit. Two-inch pipe size valved drain connections shall be provided at all low points and 1 1/2-inch pipe size valved outlet vent connections shall be provided at all high points. Vent and drain lines shall terminate in male cam-type locking end with matching female dust covers and installed in pits. The pipe shall have cover as shown on the drawings. Drain lines shall be installed at the slopes indicated.

#### 3.6.1 Pipe Assembly

Pipe shall be strung parallel and adjacent to or above a trench. The pipe shall be supported on padded skids during welding and inspection of joints. Protective coating shall be inspected and repaired prior to lowering the pipe into the trench. The pipe shall be lowered using only canvas or nylon slings. The sling shall be dug from underneath the pipe after placements and shall not be pulled from underneath the pipe while in contact with it. Care shall be taken to prevent damage to the pipe, welded joints or coating and any such damage shall be repaired as directed by the Contracting Officer. Pressure testing of the pipe shall be done after it has been placed in final position in the trench.

#### 3.6.2 Warning Tapes in Earth Trenches

For the purpose of early warning and identification of buried pipes outside of building walls during future trenching or other excavation, continuous identification tapes shall be provided in the trench. Tape shall be nonmagnetic plastic tape or aluminum foil plastic backed tape manufactured for the purpose of early warning and identification of utilities buried below the tape. Tape shall be at least three inches in width. Color of tape shall be as standard with the manufacturer with respect to the type of utility buried below the tape. Tape shall have lettering at least one inch high with not less than the following identification on the tape: BURIED JET FUEL PIPING BELOW. Tape shall be installed in accordance with the printed recommendations of the tape manufacturer, as modified herein. Tapes shall be buried at a depth of six inches from the top of the subgrade.

#### 3.6.3 Clearances

Install pipe to be clear of contact with other pipes, pipe sleeves, casings, reinforcing steel, conduits, cables, or other metallic structures. Where pipes cross other pipes or structures with a separation of less than six inches, install an insulating separator. Protect the pipe from contact with a 12-inch square by 1 inch thick bituminous-impregnated canefiber board.

#### 3.6.4 Protective Coating

When the protective coating on pipe is damaged, the Contracting Officer shall be notified and shall inspect the pipe before the coating is patched. If the damage to the pipe is deeper than 0.050-inch, the damage shall be repaired by welding in accordance with paragraph "WELDING". If the pipe is dented, out of round or damaged to the point that welding will not make it good as new, the length of pipe shall be rejected.

### 3.7 PIPING LAYOUT REQUIREMENTS

### 3.7.1 Pipe Fabrication

Fabricate piping to measurements established on the project site and position into place without springing or forcing. Make provisions for absorbing expansion and contraction without undue stress in any part of the system.

### 3.7.2 Interferences and Measurements

Provide offsets, fittings, and accessories required to eliminate interferences and to match actual equipment connection locations and arrangements. Verify measurements before commencing work. Submit discrepancies for clarification before proceeding with the installations to the Contracting Officer.

### 3.7.3 Space and Access

Keep piping, control tubing, which is not detailed close to structures and columns so as to take up a minimum amount of space. Ensure that access is provided for maintenance of equipment, valves and gauges.

### 3.7.4 Location

Do not place unions in locations that will be inaccessible after the completion of the work. Place unions on each side of equipment.

### 3.7.5 Piping and Equipment

Provide anchors where required to absorb or transmit thrust or eliminate vibration or pulsation. Provide hangers and supports near each change of direction. Select support components which do not restrict the movement of the pipe due to thermal expansion. Space hangers uniformly and arrange symmetrically.

### 3.7.6 Structural Support

Provide supplementary or intermediate steel or other structural members as required for transmission of loads to members forming part of the supporting structure.

### 3.7.7 Grade

Where profiles of piping lines are shown on the drawings, grade the line uniformly between changes in slope or direction. Maintain gradient to within  $\pm 1/4$ -inch over the entire length of pipe. When backfilling has been completed to the top of the pipe, the pipe shall be surveyed at each joint, logged by station number, and submitted to the Contracting Officer and approved before backfilling can continue.

### 3.7.8 Size Changes

Make changes in pipe size with reducing fittings. Do not use bushings. In lieu of welding reducing outlet tees for piping 2 inches and larger, welding branches suitable for 100 percent radiographic inspection may be used. Do not use weldolets unless specifically called out (labeled) on the drawings.

### 3.7.9 Direction Changes

Make changes in the horizontal direction of pipes with long radius fittings. Provide special fittings when required. Do not make miter welds. Make odd-angle offsets with pipe bends or elbows cut to the proper angle.

### 3.8 TESTING

Piping shall be tested by pneumatic and hydrostatic pressure. Testing shall comply with applicable requirements of ASME B31.3, NFPA 30 and the requirements specified herein. Hydrostatic testing shall be performed using fuel as the liquid. Water shall not be introduced into the system for testing. Pressure and hydrostatic testing shall be performed only after welding inspection has been completed.

#### 3.8.1 General

Piping to be installed underground shall not receive field applied protective covering at the joints or be covered by backfill until the piping has passed the pneumatic test described herein. To facilitate the tests, the Contractor shall isolate various sections of the piping system and test each one separately. Where such sections terminate at flanged valve points, the line shall be closed by means of blind flanges in lieu of relying on the valve. The Contractor shall furnish tapped flanges that can be attached to the end of the section of line being tested, and that will permit a direct connection between the piping and the air compressor and/or pressurizing pump. No taps in the permanent line will be permitted. The Contractor shall furnish all necessary equipment for testing; all gauges shall be subject to testing and approval of the Contracting Officer. The air used for pneumatic testing shall have a residual humidity of not over 20 percent. The Contractor shall provide dehumidifying equipment on the suction or discharge side of the air compressor used to provide air for testing. Pressurizing pump shall not exceed 10 cfm.

##### 3.8.1.1 Pneumatic Test Procedure

Special safety measures, including the wearing of face mask, shall be taken during testing under pressure. Only authorized personnel shall be permitted in the area during testing. The pneumatic test pressure shall be applied in increments. A preliminary 25 psig test shall be applied. Examine joints with soap solution. Leaks revealed by this test shall be repaired. The full test pressure shall then be applied. Unless otherwise directed by the Contracting Officer, all piping shall be tested at a pressure of 50 psig for not less than 2 hours, during which time there shall be no drop in pressure, only pressure rises with temperature. The pressure source shall be disconnected during the final test period. Any leaks revealed by the test shall be repaired and the test repeated.

##### 3.8.1.2 Hydrostatic Test Procedure

Upon completion of pneumatic testing and after backfilling, hydrostatically test each piping system with fuel at 175 psig in accordance with ASME B31.3 and API RP 1110, with no leakage or reduction in gauge pressure for four hours. The Contractor shall furnish electricity, instruments, connecting devices, and personnel for test. Fuel shall be furnished by the Government. Defects in work provided by the Contractor shall be corrected by him at his own expense, and the test repeated until the work is proven to be in compliance with the Contract requirements.

### 3.8.2 Performance Testing

The completed fuel system shall be cleaned and performance tested as specified in Section 15899 SYSTEM START UP, FUELING SYSTEM. All control valves, both manual and automatic, shall be checked for leaks (any area wetted with fuel) and proper operation and adjusted, repaired or replaced to correct any defects.

-- End of Section --