

UNITED STATES COAST GUARD
MAINTENANCE AND LOGISTICS COMMAND PACIFIC

CIVIL ENGINEERING UNIT HONOLULU
HONOLULU, HAWAII

SPECIFICATIONS
FOR
FUEL PUMP
AT
CG AIRSTA BARBERS POINT
KAPOLEI, HAWAII

JULY 2008

PROJECT NO. 537200

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SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

1.1.1 Project Description

The work includes demolition, hot work, installation of new fuel pump, air-eliminator, filter-separator, piping, valves, fittings, controls, electrical, miscellaneous appurtenances, flushing and testing, system demonstration and acceptance, and incidental related work, complete and ready for use. Existing painted surfaces are lead containing paint. The facility provides storage, loading, and unloading of JP-5 fuel for aircraft.

1.1.2 Location

The work shall be located at the Aircraft Fueling Facility, U.S. Coast Guard Air Station Barbers Point, Kapolei, Hawaii.

1.2 CONTRACT DRAWINGS

DRAWING NO.	SHEETS	TITLE
H0376	11	FUEL PUMP

1.3 WORKMANSHIP

Work shall be performed by or under the direct supervision of journey-level workers in their respective trades.

1.4 SITE VISIT

Bidders are encouraged to visit the site to verify existing conditions and to determine the extent of the work. Contact the U.S. Coast Guard Civil Engineering Unit Honolulu, Contracting Officer to arrange for a site visit.

1.5 WORKING DIRECTIVES

- a. It is the Contractor's responsibility to cover surfaces that may be damaged during the work. Any damage as a result of the Contractor's negligence will remain the Contractor's to correct.
- b. The Contractor shall be responsible for keeping the dust down to a minimum. Litter, debris, and removed construction material shall be removed from the construction site at the end of each work day. Health and safety cannot be stressed enough.
- c. The Contractor shall work within a five-day (Monday through Friday) work week with no work occurring on Federal holidays or weekends. Work hours shall be from 7:00 am to 3:30 pm. Any deviations from the work schedule must have the prior approval of the Contracting Officer.
- d. The Contractor shall notify the Contracting Officer in writing five

days in advance of any utility shutdowns. Shutdowns must be within the eight-hour work day, and utility services must be restored at the end of each work day.

PART 2 PRODUCTS

New equipment and components shall match existing equipment and components in size, material, and manufacturer and model, to the maximum extent possible. The goal is to standardize equipment and components and minimize stock of equipment, components, and parts.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01130
SPECIAL CONDITIONS

PART 1 GENERAL

1.1 SCOPE

This section contains pertinent information such as regulations and the Contractor's responsibilities. Coordinate work with the Contracting Officer's Representative (COR) and the Facilities Engineering Officer to minimize any disruption to normal station operations.

1.2 REFERENCES

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A10.6 (1990; R 1998) Safety Requirements for Demolition Operations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2003) Safety -- Safety and Health Requirements

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910 Occupational Safety and Health Standards
29 CFR 1910.252 General Requirements
29 CFR 1910.261 Pulp, Paper, and Paperboard Mills
29 CFR 1910.1025 Lead
29 CFR 1926 Safety and Health Regulations for Construction
29 CFR 1926.62 Lead
49 CFR 172 Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 173 Shipments and Packagings
49 CFR 174 Carriage by Rail
49 CFR 175 Carriage by Aircraft
49 CFR 176 Carriage by Vessel
49 CFR 177 Carriage by Public Highway

1.3 STATION AND LOCAL REGULATIONS

The Contractor shall comply with all station and local regulations concerning personnel conduct, security, and safety.

All personnel employed on site shall keep within the limits of the work, and shall not enter any restricted area unless required. The Contractor's equipment shall be conspicuously marked for identification.

The Contractor shall control his employee's traffic on the site. Parking for workers shall be at a suitable location as directed by the Contracting Officer's Representative (COR).

Prior to start of contract, the Contractor shall submit a list of all personnel expected to be employed on the site, (including full name, social security number, home address, date of birth) to the Contracting Officer on the Contractor's letterhead.

1.4 STORAGE

The Contractor shall make advance arrangements for temporary storage with the COR. The Contractor shall be responsible for the security of material, tools, and equipment brought to the work site for this project. The Government shall not be responsible for the loss of such material, tools, or equipment.

1.5 FACILITIES AND SERVICES

Restroom facilities are not available for Contractor's use. Provide temporary sewer and sanitation facilities that are self-contained units with both urinals and stool capabilities. Ventilate the units to control odors and fumes and empty and clean them at least once a week or more often if required by the Contracting Officer. The doors shall be self-closing.

Reasonable amounts of the following utilities will be made available to the Contractor at no charge: electricity and potable water. The Contractor shall pay all costs incurred in connecting, converting, and transferring the utilities to the work. The Contractor shall make connections, including providing backflow-preventing devices on connections to hydrants.

1.6 BUILDING AND SITE STORM PROTECTION

Storm Protection: When warnings of gale force winds or higher are issued, take precautions to minimize danger to persons and damage to the work and adjacent property. Precautions shall include, but not be limited to, closing openings, removing or securing loose materials, tools, equipment, scaffolding, storage containers, and other temporary work. Close openings in work when storms of lesser intensity could damage the work or Government property. Government may stop work or close the job site if weather conditions warrant.

1.7 FIELD INVESTIGATION

Prior to the start of any site work, shop drawings and material submittal preparation and submission, the Contractor shall make arrangements to meet with the Contracting Officer's Representative (COR) at the work site for the purpose of field investigation. The field investigation shall include but

not be limited to taking actual field measurements for shop drawings and material submittals preparation to assure that the proposed materials will fit in the allocated spaces; recording actual locations and capacities of existing utilities for hookup and/or avoidance and/or protection of same; identifying and recording actual site conditions for restoration of site to condition prior to construction; etc. Field investigation shall be done sufficiently in advance to permit review and approval of the Contractor's material submittals and shop drawings.

1.8 FIRE PREVENTION DURING CONSTRUCTION

1.8.1 General

The Contractor shall comply with all pertinent fire prevention provisions of the U.S. Army Corps of Engineers Manual EM 385-1-1, "Safety and Health Requirements Manual".

1.8.2 Paints

No more than one day's supply of paint, materials, or compounds shall be allowed around the buildings, and shall be removed after each working day. No gasoline or similar low flash point flammable liquid shall be allowed within any building at the site.

1.8.3 Housekeeping

All accumulations of combustible material shall be removed from the site on a daily basis.

1.9 SAFETY/ACCIDENT PREVENTION

Contractor shall comply with federal and State of Hawaii safety and health regulations. When standards differ, the more stringent shall apply. Contract Clause FAR 52.236-13 prescribes standards for compliance. The Contractor shall also comply with all pertinent provisions of 29 CFR 1910, 29 CFR 1926, ANSI A10.6-1990 Safety Requirements for Demolition Operations, and the U.S. Army Corps of Engineers' Safety and Health Requirements Manual, EM 385-1-1. Submit a demolition plan and hazard analysis for fall protection and site-specific safety plan per U.S. Army Corps of Engineers' Safety and Health Requirements Manual, and in accordance with Section 01330. Report all accidents and property damage to the COR.

1.10 MATERIAL SAFETY DATA SHEETS

Submit Material Safety Data Sheets (MSDS) for all hazardous materials to be brought to the work site. This includes, but is not limited to, paints, solvents, welding rods and fluxes, petroleum products, caulking, and sealant. This submittal shall also include a list showing the quantities of hazardous materials to be stored on-site.

1.11 UNFORESEEN HAZARDOUS OR REGULATED MATERIAL

If material that is not indicated in the contract documents is encountered that may be dangerous to human health upon disturbance during construction operations, stop that portion of work and notify the Contracting Officer immediately. The intent is to identify materials such as PCB, lead paint, mercury, petroleum products, and friable and nonfriable asbestos. Within 14 calendar days the Government will determine if the material is hazardous. If the material is not hazardous or poses no danger, the

Government will direct the Contractor to proceed without change. If the material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

1.12 GENERAL REQUIREMENTS FOR ASBESTOS CONTAINING MATERIAL

If any asbestos containing material is found, follow U.S. Army Corps of Engineers Manual EM 385-1-1, section 06.B.05 guidelines. All asbestos containing material must be double wrapped in plastic while wet, labeled as asbestos containing material and disposed of in an approved asbestos landfill. Verification of proper handling and disposal shall be required. Transportation requirements for hazardous materials found in 49 CFR 172, 49 CFR 173, 49 CFR 174, 49 CFR 175, 49 CFR 176, and 49 CFR 177 shall be strictly followed.

1.13 GENERAL LEAD PAINT REQUIREMENTS

The paint on all exposed and covered surfaces included in the contract work contains lead. The requirements of Section 13282 LEAD IN CONSTRUCTION apply.

The general safety requirements for work dealing with lead paint or other lead coatings for the construction industry are found in 29 CFR 1926.62. All other safety requirements for work with lead paint or other lead containing products can be found in 29 CFR 1910.252, 29 CFR 1910.261, and 29 CFR 1910.1025. All lead work shall be conducted in accordance with EPA and OSHA standards.

Metal items with lead containing paint shall be disposed of at a metal recycler. Contractor shall obtain and submit metal recycler receipt to the Contracting Officer.

Transportation requirements for hazardous materials found in 49 CFR 172-177 shall be strictly followed.

1.14 RECORDS REQUIRED OF THE CONTRACTOR

In addition to other records required under the contract, the Contractor shall maintain at the job site two sets of full size drawings, marking them in red to show all variations between the construction actually provided and that indicated or specified in the contract documents, including buried or concealed construction. Where a choice of materials or methods is permitted herein, or where variations in scope or character of work differs from that of the original contract are authorized, mark the drawings to define the construction actually provided. Show on the drawings the size, manufacturer's name, model number, and power input or output characteristics of the equipment installed. The representations of such changes shall conform to standard drafting practice and shall include such supplementary notes, legends, and details as necessary to clearly portray the as-built construction. Update drawings on a daily basis. Monthly and final payments to the Contractor shall be subject to prior approval of the drawings by the Contracting Officer. On completion of the work, both sets of marked-up, as-built drawings, shall be delivered to the Contracting Officer and shall be subject to approval before acceptance.

1.15 SUBMITTALS

The following shall be submitted in accordance with Section 01330 SUBMITTAL

PROCEDURES:

1.15.1 SD-01 Preconstruction Submittals

Material Safety Data Sheets

Demolition plan

Hazard analysis for fall protection

Site-specific safety plan

1.15.2 SD-11 Closeout Submittals

As-Built Drawings

Metal recycler receipt

1.16 EXISTING WORK

In addition to "FAR 52.236-9, Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements":

a. Remove or alter existing work in such a manner as to prevent injury or damage to any portions of the existing work which is to remain.

b. Repair or replace portions of existing work which have been altered or damaged during construction operations to match existing or adjoining work, as approved by the Contracting Officer. At the completion of operations, existing work shall be in a condition equal to or better than that which existed before new work started.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

1.1.1 Government-Furnished Information

Submittal register is attached at the end of this Section. Register will have the following fields completed, to the extent that will be required by the Government during subsequent usage.

Column (c): Lists specification section in which submittal is required.

Column (d): Lists each submittal description (SD No. and type, e.g. SD-04 Drawings) required in each specification section.

Column (e): Lists one principal paragraph in specification section where a material or product is specified. This listing is only to facilitate locating submitted requirements. Do not consider entries in column (e) as limiting project requirements.

Column (f): Ignore this column. All submittals shall be approved by the Contracting Officer.

1.2 DEFINITIONS

1.2.1 Submittal

Shop drawings, product data, samples, and administrative submittals presented for review and approval. Contract Clauses "FAR 52.236-5, Material and Workmanship," paragraph (b) and "FAR 52.236-21, Specifications and Drawings for Construction," paragraphs (d), (e), and (f) apply to all "submittals."

1.2.2 Types of Submittals

All submittals are classified as indicated in paragraph "Submittal Descriptions (SD)". Submittals also are grouped as follows:

- a. Shop drawings: As used in this section, drawings, schedules, diagrams, and other data prepared specifically for this contract, by contractor or through contractor by way of subcontractor, manufacturer, supplier, distributor, or other lower tier contractor, to illustrate portion of work.
- b. Product data: Preprinted material such as illustrations, standard schedules, performance charts, instructions, brochures, diagrams, manufacturer's descriptive literature, catalog data, and other data to illustrate portion of work, but not prepared exclusively for this contract.
- c. Samples: Physical examples of products, materials, equipment, assemblies, or workmanship that are physically identical to portion of work, illustrating portion of work or establishing

standards for evaluating appearance of finished work or both.

- d. Administrative submittals: Data presented for reviews and approval to ensure that administrative requirements of project are adequately met but not to ensure directly that work is in accordance with design concept and in compliance with contract documents.

1.2.3 Submittal Descriptions (SD)

SD-01 Preconstruction Submittals

- Certificates of insurance
- Surety bonds
- List of proposed subcontractors
- List of proposed products
- Construction Progress Schedule
- Submittal schedule
- Schedule of values
- Health and safety plan
- Work plan
- Quality control plan
- Environmental protection plan

SD-02 Shop Drawings

Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.

Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the contractor for integrating the product or system into the project.

Drawings prepared by or for the contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials or equipment for some portion of the work.

Samples of warranty language when the contract requires extended product warranties.

SD-04 Samples

Physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged.

Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project.

Field samples and mock-ups constructed on the project site establish standards by which the ensuring work can be judged. Includes assemblies or portions of assemblies which are to be incorporated into the project and those which will be removed at conclusion of the work.

SD-05 Design Data

Calculations, mix designs, analyses or other data pertaining to a part of work.

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)

Report which includes findings of a test required to be performed by the contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports

Daily checklists

Final acceptance test and operational test procedure

SD-07 Certificates

Statements signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.

Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.

Confined space entry permits.

SD-08 Manufacturer's Instructions

Preprinted material describing installation of a product, system or material, including special notices and Material Safety Data sheets concerning impedances, hazards and safety precautions.

SD-09 Manufacturer's Field Reports

Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

Factory test reports.

SD-10 Operation and Maintenance Data

Data intended to be incorporated in operations and maintenance manuals.

SD-11 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

As-built drawings

Special warranties

Posted operating instructions

Training plan

1.2.4 Approving Authority

Person authorized to approve submittal.

1.2.5 Work

As used in this section, on- and off-site construction required by contract documents, including labor necessary to produce construction and materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.3 SUBMITTALS

Submit the following in accordance with the requirements of this section.

SD-11 Closeout Submittals

Submittal register

1.4 USE OF SUBMITTAL REGISTER

Prepare and maintain submittal register, as the work progresses. Do not change data which is output in columns (c), (d), and (e) as delivered by government; retain data which is output in columns (a), (g), (h), and (i) as approved.

1.4.1 Submittal Register

Submit submittal register. Do not change data in columns (c), (d), and (e) and as delivered by the government. Verify that all submittals required for project are listed and add missing submittals. Complete the following on the register:

Column (a) Activity Number: Activity number from the project schedule.

Column (g) Contractor Submit Date: Scheduled date for approving authority to receive submittals.

Column (h) Contractor Approval Date: Date contractor needs approval of submittal.

Column (i) Contractor Material: Date that contractor needs material delivered to contractor control.

1.4.2 Contractor Use of Submittal Register

Update the following fields.

Column (b) Transmittal Number: Contractor assigned list of consecutive numbers.

Column (j) Action Code (k): Date of action used to record contractor's review when forwarding submittals to the Contracting Officer.

Column (l) List date of submittal transmission.

Column (q) List date approval received.

1.4.3 Government Use of Submittal Register

Update the following fields.

Column (b).

Column (l) List date of submittal receipt.

Column (m) through (p).

Column (q) List date returned to contractor.

1.4.4 Contractor Action Code and Action Code

Entries used will be as follows (others may be prescribed by Transmittal Form):

NR - Not Received

AN - Approved as noted

A - Approved

RR - Disapproved, Revise, and Resubmit

1.4.5 Copies Delivered to the Government

Deliver one copy of submittal register updated by contractor to government with each invoice request.

1.5 PROCEDURES FOR SUBMITTALS

1.5.1 Reviewing, Certifying, Approving Authority

The Government's Project Manager shall be responsible for reviewing and certifying that the Submittals are in compliance with contract requirements. The Approving Authority on submittals is the Contracting Officer.

1.5.2 Constraints

- a. Submittals listed or specified in this contract shall conform to provisions of this section, unless explicitly stated otherwise.
- b. Submittals shall be complete for each definable feature of work;

components of definable feature interrelated as a system shall be submitted at same time.

- c. When acceptability of a submittal is dependent on conditions, items, or materials included in separate subsequent submittals, submittal will be returned without review.
- d. Approval of a separate material, product, or component does not imply approval of assembly in which item functions.

1.5.3 Scheduling

- a. Coordinate scheduling, sequencing, preparing and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow for potential requirements to resubmit.
- b. Except as specified otherwise, allow review period, beginning with receipt by approving authority, that includes at least 10 working days for submittals. Period of review for each resubmittal is the same as for initial submittal.

1.5.4 Variations

Variations from contract requirements require Government approval pursuant to contract Clause entitled "FAR 52.236-21, Specifications and Drawings for Construction" and will be considered where advantageous to Government.

1.5.4.1 Considering Variations

Discussion with contracting officer prior to submission, will help ensure functional and quality requirements are met and minimize rejections and resubmittals. When contemplating a variation which results in lower cost, consider submission of the variation as a Value Engineering Change Proposal (VECP).

1.5.4.2 Proposing Variations

When proposing variation, deliver written request to the contracting officer, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to government. If lower cost is a benefit, also include an estimate of the cost saving. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

1.5.4.3 Warranting That Variation Are Compatible

When delivering a variation for approval, contractor warrants that this contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of work.

1.5.4.4 Review Schedule Is Modified

In addition to normal submittal review period, a period of 10 working days will be allowed for consideration by the Government of submittals with variations.

1.5.5 Contractor's Responsibilities

- a. Determine and verify field measurements, materials, field construction criteria; review each submittal; and check and coordinate each submittal with requirements of the work and contract documents.
- b. Transmit submittals to the Government in accordance with schedule on approved Submittal Register, and to prevent delays in the work, delays to Government, or delays to separate contractors.
- c. Advise contracting officer of variation, as required by paragraph entitled "Variations."
- d. Correct and resubmit submittal as directed by approving authority. When resubmitting disapproved transmittals or transmittals noted for resubmittal, the Contractor shall provide copy of that previously submitted transmittal including all reviewer comments for use by the Government. Direct specific attention in writing or on resubmitted submittal, to revisions not requested by approving authority on previous submissions.
- e. Furnish additional copies of submittal when requested by contracting officer, to a limit of 20 copies per submittal.
- f. Complete work which must be accomplished as basis of a submittal in time to allow submittal to occur as scheduled.
- g. Ensure no work has begun until submittals for that work have been returned as "approved," or "approved as noted", except to the extent that a portion of work must be accomplished as basis of submittal.

1.5.6 Government's Responsibilities

- a. Note date on which submittal was received.
- b. Review submittals for approval within scheduling period specified and only for conformance with project design concepts and compliance with Contract documents.
- c. Identify returned submittals with one of the actions defined in paragraph entitled "Actions Possible" and with markings appropriate for action indicated.

1.5.7 Actions Possible

Submittals will be returned with one of the following notations:

- a. Submittals marked "not reviewed" will indicate submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and approved by contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by contractor or for being incomplete, with appropriate action, coordination, or change.
- b. Submittals marked "approved" "approved as submitted" authorize contractor to proceed with work covered.

- c. Submittals marked "approved as noted" authorize contractor to proceed with work as noted provided contractor takes no exception to the notations.
- d. Submittals marked "revise and resubmit" or "disapproved" indicate submittal is incomplete or does not comply with design concept or requirements of the contract documents and shall be resubmitted with appropriate changes. No work shall proceed for this item until resubmittal is approved.

1.6 FORMAT OF SUBMITTALS

1.6.1 Transmittal Form

Transmit each submittal, except sample installations and sample panels, to the Contracting Officer. Transmit submittals with "Shop Drawing/Material Approval Requests", Form CEU-4A, Rev. 3/98 attached. Contractor shall make enough copies of this form to satisfy his requirements for submittals. The transmittal form shall identify the Contractor, indicate date of submittal, and include information prescribed by transmittal form and required in paragraph entitled "Identifying Submittals." Process transmittal forms to record actions regarding sample panels and sample installations.

1.6.2 Identifying Submittals

Identify submittals, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:

- a. Project title and location.
- b. Construction contract number.
- c. Section number of the specification section by which submittal is required.
- d. Submittal description (SD) number of each component of submittal.
- e. When a resubmission, alphabetic suffix on submittal description, for example, SD-10A, to indicate resubmission.
- f. Name, address, and telephone number of subcontractor, supplier, manufacturer and any other second tier contractor associated with submittal.
- g. Product identification and location in project.

1.6.3 Format for Product Data

- a. Present product data submittals for each section as a complete, bound volume. Include table of contents, listing page and catalog item numbers for product data.
- b. Indicate, by prominent notation, each product which is being submitted; indicate specification section number and paragraph number to which it pertains.

- c. Supplement product data with material prepared for project to satisfy submittal requirements for which product data does not exist. Identify this material as developed specifically for project.

1.6.4 Format for Shop Drawings

- a. Shop drawings shall not be less than 8 1/2 by 11 inches nor more than 30 by 42 inches.
- b. Present 8 1/2 by 11 inches sized shop drawings as part of the bound volume for submittals required by section. Present larger drawings in sets.
- c. Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph entitled "Identifying Submittals."
- d. Dimension drawings, except diagrams and schematic drawings; prepare drawings demonstrating interface with other trades to scale. Shop drawing dimensions shall be the same unit of measure as indicated on the contract drawings. Identify materials and products for work shown.

1.6.5 Format of Samples

- a. Furnish samples in sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately same size as specified:
 - (1) Sample of Equipment or Device: Full size.
 - (2) Sample of Materials Less Than 2 by 3 inches: Built up to 8 1/2 by 11 inches.
 - (3) Sample of Materials Exceeding 8 1/2 by 11 inches: Cut down to 8 1/2 by 11 inches and adequate to indicate color, texture, and material variations.
 - (4) Sample of Linear Devices or Materials: 10 inch length or length to be supplied, if less than 10 inches. Examples of linear devices or materials are conduit and handrails.
 - (5) Sample of Non-Solid Materials: Pint. Examples of non-solid materials are sand and paint.
 - (6) Color Selection Samples: 2 by 4 inches.
 - (7) Sample Panel: 4 by 4 feet.
 - (8) Sample Installation: 100 square feet.
- b. Samples Showing Range of Variation: Where variations are unavoidable due to nature of the materials, submit sets of samples of not less than three units showing extremes and middle of range.
- c. Reusable Samples: Incorporate returned samples into work only if so specified or indicated. Incorporated samples shall be in undamaged condition at time of use.

- d. Recording of Sample Installation: Note and preserve the notation of area constituting sample installation but remove notation at final clean up of project.
- e. When color, texture or pattern is specified by naming a particular manufacturer and style, include one sample of that manufacturer and style, for comparison.

1.6.6 Format of Administrative Submittals

- a. When submittal includes a document which is to be used in project or become part of project record, other than as a submittal, do not apply contractor's approval stamp to document, but to a separate sheet accompanying document.
- b. Operation and Maintenance Manual Data: Submit in accordance with Section 01781, "Operation and Maintenance Data." Include components required in that section and the various technical sections.

1.7 QUANTITY OF SUBMITTALS

1.7.1 Number of Copies of Product Data

- a. Submit one original and four copies of submittals of product data requiring review and approval. Submit three copies of submittals of product data for operation and maintenance manuals.

1.7.2 Number of Copies of Shop Drawings

Submit three copies of shop drawings.

1.7.3 Number of Samples

- a. Submit two samples, or sets of samples showing range of variation, of each required item. One approved sample or set of samples will be retained by the Government and one will be returned to Contractor.
- b. Submit one sample panel. Include components listed in technical section or as directed.
- c. Submit one sample installation, where directed.
- d. Submit one sample of non-solid materials.

1.7.4 Number of Copies of Administrative Submittals

- a. Unless otherwise specified, submit administrative submittals compliance with quantity requirements specified for product data.
- b. Submit administrative submittals required under "SD-10 Operation and Maintenance Data" to conform to Section 01781, "Operation and Maintenance Data."

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION

CG AIRSTA BARBERS POINT-FUEL PUMP

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH#	CLASSIFICATION	GOVT OR A/E REVIEW	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY			REMARKS	
							APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION	DATE FWD TO APPR AUTH/	DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION	DATE OF ACTION		DATE RCD FRM APPR AUTH
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
	01130		SD-01 Preconstruction Submittals														
			Material Safety Data Sheets	1.10													
			Demolition plan	1.9													
			Hazard analysis for fall protection	1.9													
			Site-specific safety plan	1.9													
			SD-11 Closeout Submittals														
			As-Built Drawings	1.14													
			Metal recycler receipt	1.13													
	01330		SD-11 Closeout Submittals														
			Submittal register	1.4.1													
	01575		SD-01 Preconstruction Submittals														
			Environmental protection plan	1.8													
			SD-06 Test Reports														
			Laboratory analysis	1.4													
			Laboratory analysis	1.5.3													
			SD-11 Closeout Submittals														
			Preconstruction survey	1.5.1													
			Solid waste disposal permit	1.5.2													
			Waste determination documentation	1.5.3													
			Waste determination documentation	3.2.1													
			Disposal documentation for hazardous and regulated waste	1.5.4													
			Contractor 40 CFR employee training records	1.5.5													

SUBMITTAL REGISTER

CONTRACT NO.

CONTRACTOR

TITLE AND LOCATION

CG AIRSTA BARBERS POINT-FUEL PUMP

(a)	(b)	(c)	(d)	(e)	(f)	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY			REMARKS		
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION	DATE OF ACTION	DATE FWD TO APPR AUTH/	DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER		DATE OF ACTION	DATE RCD FROM APPR AUTH
			TRANSACTIVITY NO														
			DESCRIPTION ITEM SUBMITTED														
	01575		Regulatory notification	1.5.6													
			Solid waste disposal report	1.5.7													
	09900		SD-03 Product Data														
			Coating	2.1													
			Coating	2.1													
			Manufacturer's Technical Data Sheets	2.1													
			SD-07 Certificates														
			Applicator's qualifications	1.3													
			SD-08 Manufacturer's Instructions														
			Mixing	3.4.2													
			Manufacturer's Material Safety Data Sheets	1.6.2													
	13282		SD-01 Preconstruction Submittals														
			Occupational and Environmental Assessment Data Report	1.5.2.3													
			Lead Compliance Plan	1.5.2.2													
			Competent Person	1.5.1.1													
			Training Certification	1.5.1.2													
			lead waste management plan	1.5.2.8													
			written evidence	3.5.2.1													
			Medical Examinations	1.5.2.4													
			SD-06 Test Reports														
			sampling results	1.5.2.3													
			Occupational and Environmental Assessment Data Report	1.5.2.3													

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION		CONTRACTOR										CONTRACTOR ACTION		APPROVING AUTHORITY		MAILED TO CONTR/ DATE RCD FRM APPR AUTH	
ACTIVITY NO	TRANSMITTAL NO	SPEC DESCRIPTION ITEM SUBMITTED	PARAGRAPH	CLASSIFICATION	GOVERNOR	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY		DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM APPR AUTH	REMARKS	
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH	DATE RCD FROM OTH REVIEWER					DATE OF ACTION
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
	13282		SD-07 Certificates														
			Testing laboratory	1.5.1.3													
			SD-11 Closeout Submittals														
			hazardous waste manifest	3.5.2.1													
			turn-in documents or weight tickets	3.5.2.1													
	15194		SD-02 Shop Drawings														
			shop drawings	2.5.1													
			SD-03 Product Data														
			Pipe	2.6.1													
			Valves	2.13													
			Float control valve	2.15.2.2													
			Air eliminator unit	2.15.3													
			Basket Strainer	2.15.4													
			Fuel transfer pump	2.15.5													
			Fuel sample connector	2.15.2.8													
			Protective coatings	2.17													
			Fittings	2.7													
			Spare Parts Data	1.7.3													
			Fuel Supply	1.7.2													
			Tests	3.6.1													
			Demonstrations	3.8.5.1													
			SD-04 Samples														
			System Flushing	3.7.2													
			Flushing Acceptance	3.7.2.2													
			Cleaning Acceptance	3.7.3.2													

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION

CG AIRSTA BARBERS POINT-FUEL PUMP

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC DESCRIPTION ITEM SUBMITTED	PARAGRAPH	CLASSIFICATION	GOVERNOR	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY			REMARKS		
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	DATE OF ACTION	DATE FWD TO OTHER REVIEWER	DATE FWD TO APPR AUTH/ CONTR	DATE FWD TO OTHER REVIEWER	DATE FWD TO APPR AUTH	DATE OF ACTION		DATE RCD FROM APPR AUTH	M A I L E D T O C O N T R I
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
	15194	Experience		1.4.1													
		SD-08 Manufacturer's Instructions															
		Solenoid control valve		2.13.8													
		Float control valve		2.15.2.2													
		Filter separator unit		2.15.2													
		Air Eliminator unit		2.15.3													
		Basket Strainer		2.15.4													
		Protective coatings		2.17													
		SD-10 Operation and Maintenance															
		Data															
		Solenoid control valve		2.13.8													
		Float control valve		2.15.2.2													
		Fuel transfer pump		2.15.5													
		Filter separator unit		2.15.2													
		Air Eliminator Unit		2.15.3													
		operation and maintenance data		3.8.5.1													

SECTION 01575

TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.1 REFERENCES

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

CODE OF FEDERAL REGULATIONS (CFR)

40 CFR 61	National Emission Standards for Hazardous Air Pollutants
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 264	Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standard for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 273	Standards For Universal Waste Management
40 CFR 279	Used Oil Regulations
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
40 CFR 372-SUBPART D	EPA Toxic Chemical Release Reporting Regulations
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce and Use Prohibitions
49 CFR 173	Shipments and Packagings

HAWAII ADMINISTRATIVE RULES (HAR)

HAR 11-46	Hawaii Administrative Rules, Title 11, Chapter 46, Community Noise Control
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HAR 11-261	Hawaii Administrative Rules, Title 11, Chapter 261 (including appendices), Hazardous Waste Management Identification and Listing of Hazardous Waste
HAR 11-262	Hawaii Administrative Rules, Title 11, Chapter 262 (including appendices), Hazardous Waste Management Standards Applicable to Generators of Hazardous Waste
HAR 11-263	Hawaii Administrative Rules, Title 11, Chapter 263, Hazardous Waste Management Standards Applicable to Transporters of Hazardous Waste
HAR 11-264	Hawaii Administrative Rules, Title 11, Chapter 264 (including appendices), Hazardous Waste Management Standards for Owners and Operators of Hazardous Waste Treatment, Storage, & Disposal Facilities
HAR 11-265	Hawaii Administrative Rules, Title 11, Chapter 265 (including appendices), Hazardous Waste Management Interim Status Standards for Owners & Operators of Hazardous Waste Treatment, Storage, & Disposal Facilities

1.2 DEFINITIONS

1.2.1 Solid Waste

Garbage, refuse, debris, sludge, or other discharged material (except hazardous waste as defined in paragraph entitled "Hazardous Waste" or hazardous debris as defined in paragraph entitled "Hazardous Debris"), including solid, liquid, semisolid, or contained gaseous materials resulting from domestic, industrial, commercial, mining, or agricultural operations. Material not regulated as solid waste are: nuclear source or byproduct materials regulated under the Federal Atomic Energy Act of 1954 as amended; suspended or dissolved materials in domestic sewage effluent or irrigation return flows, or other regulated point source discharges; regulated air emissions; and fluids or wastes associated with natural gas or crude oil exploration or production.

- a. Inert construction and demolition debris: Broken or removed concrete, masonry, and rock asphalt paving; ceramics; roofing paper and shingles. Inert materials may be re-enforced with or contain ferrous wire, rods, accessories and weldments.
- b. Wood: Dimension and non-dimension lumber, plywood, chipboard, hardboard. Treated and/or painted wood that meets the definition of lead contaminated or lead based contaminated paint is not included.
- c. Scrap metal: Scrap and excess ferrous and non-ferrous metals such as re-inforcing steel, structural shapes, pipe and wire that are recovered or collected and disposed of as scrap. Scrap metal

meeting the definition of hazardous material or hazardous waste is not included.

- d. Paint cans: Metal cans that are empty of paints, solvents, thinners and adhesives. If permitted by the paint can label, a thin dry film may remain in the can. Empty paint cans are considered scrap metal.
- e. Recyclables: Materials, equipment and assemblies such as doors, windows, door and window frames, plumbing fixtures, glazing and mirrors that are recovered and sold as recyclable. Metal meeting the definition of lead contaminated or lead based paint contaminated may be included as recyclable if sold to a scrap metal company. Paint cans may be included as recyclable if sold to a scrap metal company in accordance with State requirements.

1.2.2 Debris

Non-hazardous solid material generated during the construction, demolition, or renovation of a structure which exceeds 2.5 inch particle size that is: a manufactured object; plant or animal matter; or natural geologic material (e.g. cobbles and boulders). A mixture of debris and other material such as soil or sludge is also subject to regulation as debris if the mixture is comprised primarily of debris by volume, based on visual inspection.

1.2.3 Hazardous Debris

As defined in paragraph entitled "Debris" of this section, debris that contains listed hazardous waste (either on the debris surface, or in its interstices, such as pore structure) per 40 CFR 261 and HAR 11-261; or debris that exhibits a characteristic of hazardous waste per 40 CFR 261 and HAR 11-261.

1.2.4 Chemical Wastes

This includes salts, acids, alkalies, herbicides, pesticides, and organic chemicals.

1.2.5 Hazardous Waste

Hazardous waste as defined in 40 CFR 261 and HAR 11-261 or as defined by applicable State and local regulations.

1.2.6 Oily Waste

Petroleum products and bituminous materials.

1.2.7 Class I Ozone Depleting Substance (ODS)

Class I ODS is defined in Section 602(a) of The Clean Air Act and includes the following chemicals:

- | | |
|----------------------------------|----------------------------------|
| chlorofluorocarbon-11 (CFC-11) | chlorofluorocarbon-213 (CFC-213) |
| chlorofluorocarbon-12 (CFC-12) | chlorofluorocarbon-214 (CFC-214) |
| chlorofluorocarbon-13 (CFC-13) | chlorofluorocarbon-215 (CFC-215) |
| chlorofluorocarbon-111 (CFC-111) | chlorofluorocarbon-216 (CFC-216) |
| chlorofluorocarbon-112 (CFC-112) | chlorofluorocarbon-217 (CFC-217) |
| chlorofluorocarbon-113 (CFC-113) | halon-1211 |
| chlorofluorocarbon-114 (CFC-114) | halon-1301 |

chlorofluorocarbon-115 (CFC-115)	halon-2402
chlorofluorocarbon-211 (CFC-211)	carbon tetrachloride
chlorofluorocarbon-212 (CFC-212)	methyl chloroform

1.2.8 Universal Waste

Universal Waste means hazardous wastes that are managed under the universal waste requirements 40 CFR 273.

1.3 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-01 Preconstruction Submittals

Environmental protection plan

SD-06 Test Reports

Laboratory analysis

SD-11 Closeout Submittals

Some of the records listed below are also required as part of other submittals. For the "Records" submittal, maintain on-site a separate three-ring Environmental Records binder and submit at the completion of the project. Make separate parts to the binder corresponding to each of the applicable sub items listed below.

Preconstruction survey

Solid waste disposal permit

Waste determination documentation

Disposal documentation for hazardous and regulated waste

Contractor 40 CFR employee training records

Regulatory notification

Solid waste disposal report

1.4 LABORATORY ANALYSIS

Submit a copy of a laboratory analysis of solid waste and debris with the potential of becoming classified as a hazardous waste (i.e., abrasive/sand blasting debris, etc.). Waste stream determinations are required at the point of generation and must sufficiently document whether the waste will be a solid waste, hazardous waste, or Resource Conservation and Recovery Act (RCRA) exempt waste. Determinations must use EPA approved methods and provide written rationale for whether the waste is classified as hazardous or non-hazardous. The Contractor shall bear the cost of the waste stream determinations, and the Contracting Officer reserves the right to request waste stream determinations on questionable waste streams. Results from TCLP analysis for hazardous waste determination shall be given to the Contracting Officer within one week of being received by the Contractor.

1.5 REPORTS

1.5.1 Preconstruction Survey

Perform a preconstruction survey of the project site with the Contracting Officer, and take photographs showing existing environmental conditions in and adjacent to the site. Submit a report for the record.

1.5.2 Solid Waste Disposal Permit

Submit one copy of a State permit or license showing such agency's approval of the disposal plan before transporting wastes off Government property.

1.5.3 Waste Determination Documentation

The Contractor shall complete a Waste Determination form for all contractor derived wastes to be generated. The waste determination must be based upon either a constituent listing from the manufacturer used in conjunction with consideration of the process by which the waste was generated, EPA approved analytical data, or laboratory analysis (Material Safety Data Sheets (MSDS) by themselves are not adequate). All support documentation must be attached to the Waste Determination form. As a minimum, a Waste Determination form must be provided for the following wastes (this listing is not all inclusive): oil and latex based painting and caulking products, solvents, adhesives, aerosols, petroleum products, and all containers of the original materials.

1.5.4 Disposal Documentation for Hazardous and Regulated Waste

If hazardous waste is encountered, the Contractor shall submit to the Contracting Officer a copy of the completed hazardous waste manifest within 5 calendar days of the waste pickup. A representative from the Coast Guard (Air Station Barbers Point) facility must co-sign the manifest before any hazardous waste material is taken off of the Coast Guard facility. The Coast Guard facility will retain the generator copy of the manifest and receive the return copy from the disposal facility. The Coast Guard facility is currently a small quantity generator and may become a large quantity generator. The Contractor shall use the Coast Guard EPA ID number for all hazardous waste generated during the project.

1.5.5 Contractor 40 CFR Employee Training Records

Prepare and maintain employee training records throughout the term of the contract meeting applicable 40 CFR requirements. Submit these training records to the Contracting Officer at the conclusion of the project, unless otherwise directed.

1.5.6 Regulatory Notification and Fees

The Contractor is responsible for all regulatory notification and fee requirements in accordance with Federal, State and local regulations. The Contractor shall forward copies to the Contracting Officer prior to commencement of work activities. Typically, regulatory notifications must be provided for the following (this listing is not all inclusive): demolition, renovation, NPDES defined site work, remediation of controlled substances (asbestos, hazardous waste, lead paint). Submit State of Hawaii form, "Notification of Demolition and Renovation" to appropriate agencies.

1.5.7 Solid Waste Disposal Report

Monthly the Contractor shall submit a solid waste disposal report to the Contracting Officer. For each waste, the report shall state the classification (using the definitions provided in this section), amount, location, and name of the business receiving the solid waste. The Contractor shall include copies of the waste handling facilities' weight tickets, receipts, bills of sale, and other sales documentation. The sales documentation shall include the receiver's tax identification number and business, EPA or State registration number, along with the receiver's delivery and business addresses and telephone numbers. For each solid waste retained by the Contractor for his own use, the Contractor shall submit on the solid waste disposal report the information previously described in this paragraph. Prices paid or received shall not be reported to the Contracting Officer unless required by other provisions or specifications of this Contract or public law.

1.6 CLASS I ODS PROHIBITION

Class I ODS as defined and identified herein shall not be used in the performance of this contract, nor be provided as part of the equipment. This prohibition shall be considered to prevail over any other provision, specification, drawing, or referenced documents.

1.7 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with Federal, State, and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances, and noise pollution.

1.7.1 Facility Hazardous Waste Generator Status

Air Station Barbers Point is currently a Small Quantity Generator. All work conducted within the boundaries of this activity must meet the regulatory requirements of this generator designation. The Contractor shall comply with all provisions of Federal, State and local regulatory requirements applicable to this generator status regarding training and storage, handling, and disposal of all construction derived wastes.

1.7.2 Licenses and Permits

Obtain licenses and permits pursuant to the "Permits and Responsibilities" FAR Clause.

1.7.3 Contractor Liabilities for Environmental Protection

The Contractor is advised that this project and the station are subject to Federal, State, and local regulatory agency inspections to review compliance with environmental laws and regulations. The Contractor shall fully cooperate with any representative from any Federal, State or local regulatory agency who may visit the job site and shall provide immediate notification to the Contracting Officer, who shall accompany them on any subsequent site inspections. The Contractor shall complete, maintain, and

make available to the Contracting Officer, station, or regulatory agency personnel all documentation relating to environmental compliance under applicable Federal, State and local laws and regulations. The Contractor shall immediately notify the Contracting Officer if a Notice of Violation (NOV) is issued to the Contractor.

The Contractor shall be responsible for all damages to persons or property resulting from Contractor fault or negligence as well as for the payment of any civil fines or penalties which may be assessed by any Federal, State or local regulatory agency as a result of the Contractor's or any subcontractor's violation of any applicable Federal, State or local environmental law or regulation. Should a Notice of Violation (NOV), Notice of Noncompliance (NON), Notice of Deficiency (NOD), or similar regulatory agency notice be issued to the Government as facility owner/operator on account of the actions or inactions of the Contractor or one of its subcontractors in the performance of work under this contract, the Contractor shall fully cooperate with the Government in defending against regulatory assessment of any civil fines or penalties arising out of such actions or inactions.

1.8 ENVIRONMENTAL PROTECTION PLAN

Five days after the award of contract, the Contractor shall meet with the Contracting Officer to discuss the proposed Environmental Protection Plan and develop a mutual understanding relative to the details of environmental protection, required reports, and other measures to be taken. The Environmental Protection Plan shall be submitted in the following format and shall, at a minimum, address the following elements (also refer to paragraph entitled "Protection of Natural Resources" in this section):

- a. Description of the Environmental Protection Plan
 - (1) General overview and purpose
 - (2) General site information
- e. Prevention of Releases to the Environment
 - (1) Procedures to prevent releases to the environment
 - (2) Notifications in the event of a release to the environment
- f. Protection of the Environment from Waste Derived from Contractor Operations
 - (1) Control and disposal of solid and sanitary waste
 - (2) Control and disposal of hazardous waste (Hazardous Waste Management Section)

This item shall consist of the management procedures for all hazardous waste to be generated. The elements of those procedures shall coincide with the Activity Hazardous Waste Management Plan. A copy of the Activity Hazardous Waste Management Plan will be provided by the Contracting Officer. As a minimum, include the following:

- (a) Procedures to be employed to ensure a written waste determination is made for appropriate wastes which are to be

generated;

(b) Sampling/analysis plan;

(c) Methods of hazardous waste accumulation/storage (i.e., in tanks and/or containers);

(d) Management procedures for storage, labeling, transportation, and disposal of waste (treatment of waste is not allowed unless specifically noted);

(e) Management procedures and regulatory documentation ensuring disposal of hazardous waste complies with Land Disposal Restrictions (40 CFR 268);

(f) Management procedures for recyclable hazardous materials such as lead-acid batteries, used oil, and the like;

(g) Used oil management procedures in accordance with 40 CFR 279;

(h) Pollution prevention\hazardous waste minimization procedures;

(i) Plans for the disposal of hazardous waste by permitted facilities;

(j) Procedures to be employed to ensure all required employee training records are maintained.

1.8.1 Environmental Protection Plan Review

Fourteen days after the environmental protection meeting, submit the proposed Environmental Protection Plan for further discussion, review, and approval. Commencement of work shall not begin until the environmental protection plan has been approved.

1.9 ENVIRONMENTAL MANAGER

The Contractor shall appoint in writing an Environmental Manager for the project site. The Environmental Manager shall be directly responsible for coordinating contractor compliance with Federal, State, local, and station requirements. The Environmental Manager shall ensure compliance with Hazardous Material Program requirements (including hazardous material handling, storage, manifesting, disposal, and reporting); implement the Environmental Protection Plan; ensure that all environmental permits are obtained, maintained, and closed out; and coordinate any remediation of regulated substances (lead, asbestos, PCB transformers). This can be a collateral position; however the person in this position must be trained to adequately accomplish the following duties: ensure waste segregation and storage compatibility requirements are met; inspect and manage Satellite Accumulation areas; ensure only authorized personnel add wastes to containers; ensure all Contractor personnel are trained in 40 CFR requirements in accordance with their position requirements; coordinate removal of waste containers; and maintain the Environmental Records binder and required documentation, including environmental permits compliance and close-out.

1.10 UNFORESEEN HAZARDOUS OR REGULATED MATERIAL

If material that is not indicated in the contract documents is encountered

that may be dangerous to human health upon disturbance during construction operations, stop that portion of work and notify the Contracting Officer immediately. The intent is to identify materials such as PCB, lead paint, mercury, petroleum products, and friable and nonfriable asbestos. Within 14 calendar days the Government will determine if the material is hazardous. If the material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If the material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work. Confine construction activities to within the limits of the work indicated or specified.

3.1.1 Water Resources

3.1.1.1 Oily and Hazardous Substances

Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water. For oil, fuel oil, or other hazardous substance spills, verbally notify the Contracting Officer immediately. Surround all temporary fuel oil or petroleum storage tanks with a temporary earth berm of sufficient size and strength to contain the contents of the tanks in the event of leakage or spillage.

3.2 CONTROL AND DISPOSAL OF TOXIC AND HAZARDOUS WASTES

3.2.1 Toxic and Hazardous Waste/Debris Management

The Contractor shall identify all construction activities which will generate toxic and hazardous waste/debris. The Contractor must provide a documented waste determination for all resultant waste streams. Toxic and hazardous waste/debris shall be identified, labeled, handled, stored, and disposed of in accordance with all Federal, State, and local regulations including 40 CFR 61, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, 40 CFR 268, 40 CFR 761, HAR 11-261, HAR 11-262, HAR 11-263, HAR 11-264, and HAR 11-265. Where federal, state, and local regulations differ, the more stringent shall apply. Toxic and hazardous waste shall also be managed in accordance with the approved Hazardous Waste Management Section of the Environmental Protection Plan. Store hazardous wastes in containers approved for transport in accordance with 49 CFR 173. Hazardous waste generated within the confines of Government facilities shall be identified as being generated by the Government. Prior to removal of any hazardous waste from Government property, all hazardous waste manifests must be signed by a representative from the Coast Guard facility. No hazardous waste shall be brought onto Government property. Provide to the Contracting Officer a copy of waste determination documentation for any solid waste streams that have any potential to be hazardous waste or contain any chemical constituents listed in 40 CFR 372-SUBPART D.

Transporters of hazardous waste shall have received an EPA Identification Number. Hazardous waste removed from the work site shall be handled by persons with EPA Identification Numbers or at permitted facilities. For hazardous waste spills, verbally notify the Contracting Officer and facility Environmental Protection Specialist immediately.

3.2.2 Pollution Prevention/Hazardous Waste Minimization

The Contractor shall actively pursue minimizing the use of hazardous materials and the generation of hazardous waste while on-base. The Hazardous Waste Management Section of the Environmental Protection Plan shall include the Contractor's procedures for pollution prevention/hazardous waste minimization. For preparing this part of the plan, the Contractor may consult the activity Environmental Office for suggestions and to obtain a copy of the installation's pollution prevention/hazardous waste minimization plan for reference material. If no written plan exists, the Contractor may obtain information by contacting the Contracting Officer. The Contractor shall describe the types of the hazardous materials expected to be used in the construction when requesting information.

3.2.3 Hazardous Material Control

The Contractor shall include hazardous material control procedures in the Safety Plan. The procedures shall address and ensure the proper handling of hazardous materials, including the appropriate transportation requirements. The Contractor shall submit a MSDS and estimated quantities to be used for each hazardous material to the Contracting Officer prior to bringing the material on base. Typical materials requiring MSDS and quantity reporting include, but are not limited to, oil and latex based painting and caulking products, solvents, adhesives, aerosol, and petroleum products. At the end of the project, the Contractor shall provide the Contracting Officer with the maximum quantity of each material that was present at the site at any one time, the dates the material was present, the amount of each material that was used during the project, and how the material was used. The Contractor shall also ensure that hazardous materials are utilized in a manner that will minimize the amount of hazardous waste that is generated. The Contractor shall ensure that all containers of hazardous materials have NFPA labels or their equivalent. Copies of the MSDS for hazardous materials shall be kept on site at all times and provided to the Contracting Officer at the end of the project. The Contractor shall certify that all hazardous materials removed from the site are hazardous materials and do not meet the definition of hazardous waste per 40 CFR 261 and HAR 11-261.

In addition, the Contractor shall provide a copy of all these submittals, as indicated above, directly to the ASBP Environmental Office, Attention: Mr. Richard McMillan, phone 808 682-2645.

3.2.4 Petroleum Products

Conduct the fueling and lubricating of equipment and motor vehicles in a manner that protects against spills and evaporation. All used oil generated on site shall be managed in accordance with 40 CFR 279. The Contractor shall determine if any used oil generated while on-site exhibits a characteristic of hazardous waste. In addition, used oil containing 1000 parts per million of halogens will be considered a hazardous waste and disposed of at Contractor's expense. Used oil mixed with a hazardous waste will also be considered a hazardous waste. All hazardous waste will be

managed in accordance with the paragraph entitled Hazardous Waste/Debris Management of this section and shall be managed in accordance with the approved Environmental Protection Plan.

3.2.5 Spills of Oil and Hazardous Materials

Take precautions to prevent spills of oil and hazardous material. In the event of a spill, immediately notify the Contracting Officer. Spill response shall be in accordance with 40 CFR 300 and applicable State regulations.

3.3 ABRASIVE BLASTING

3.3.1 Blasting Operations

The use of silica sand is prohibited in sandblasting.

3.4 NOISE

Make the maximum use of low-noise emission products, as certified by the EPA. Conform to the requirements of HAR 11-46.

3.5 TREATED WOOD

Deliver treated wood to the landfill separated from any other items and place in locations designated by the landfill operator.

-- End of Section --

SECTION 01781

OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.1 REFERENCES

(Not Used)

1.2 SUBMISSION OF OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data specifically applicable to this contract and a complete and concise depiction of the provided equipment, product, or system, stressing and enhancing the importance of system interactions, troubleshooting, and long-term preventative maintenance and operation. The subcontractors shall compile and prepare data and deliver to the Contractor prior to the training of Government personnel. The Contractor shall compile and prepare aggregate O&M data including clarifying and updating the original sequences of operation to as-built conditions. Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Include an index preceding each submittal. Submit in accordance with this section and Section 01330 SUBMITTAL PROCEDURES.

1.2.1 Package Quality

Documents must be fully legible. Poor quality copies and material with hole punches obliterating the text or drawings will not be accepted.

1.2.2 Package Content

Data package content shall be as shown in the paragraph titled "Schedule of Operation and Maintenance Data Packages." Comply with the data package requirements specified in the individual technical sections, including the content of the packages and addressing each product, component, and system designated for data package submission, except as follows.

1.2.3 Changes to Submittals

Manufacturer-originated changes or revisions to submitted data shall be furnished by the Contractor if a component of an item is so affected subsequent to acceptance of the O&M Data. Changes, additions, or revisions required by the Contracting Officer for final acceptance of submitted data, shall be submitted by the Contractor within 30 calendar days of the notification of this change requirement.

1.3 TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES

1.3.1 Operating Instructions

Include specific instructions, procedures, and illustrations for the following phases of operation for the installed model and features of each system:

1.3.1.1 Safety Precautions

List personnel hazards and equipment or product safety precautions for all operating conditions. Provide detailed narrative for O&M personnel regarding lockout/tagout procedures including required devices, equipment, tags, and signage.

1.3.1.2 Operator Prestart

Include procedures required to install, set up, and prepare each system for use.

1.3.1.3 Startup, Shutdown, and Post-Shutdown Procedures

Provide narrative description for Startup, Shutdown and Post-shutdown operating procedures including the control sequence for each procedure.

1.3.1.4 Normal Operations

Provide narrative description of Normal Operating Procedures. Include Control Diagrams with data to explain operation and control of systems and specific equipment.

1.3.1.5 Operator Service Requirements

Include instructions for services to be performed by the operator such as lubrication, adjustment, inspection, and recording gage readings.

1.3.2 Preventive Maintenance

Include the following information for preventive and scheduled maintenance to minimize corrective maintenance and repair for the installed model and features of each system. Include potential environmental and indoor air quality impacts of recommended maintenance procedures and materials.

1.3.2.1 Lubrication Data

Include preventative maintenance lubrication data, in addition to instructions for lubrication provided under paragraph titled "Operator Service Requirements".:

- a. A table showing recommended lubricants for specific temperature ranges and applications.
- b. Charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities.
- c. A Lubrication Schedule showing service interval frequency.

1.3.2.2 Preventive Maintenance Plan and Schedule

Include manufacturer's schedule for routine preventive maintenance, inspections, tests and adjustments required to ensure proper and economical operation and to minimize corrective maintenance. Provide manufacturer's projection of preventive maintenance work-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft. For periodic calibrations, provide manufacturer's specified frequency and procedures for each separate operation.

1.3.3 Corrective Maintenance (Repair)

Include manufacturer's recommended procedures and instructions for correcting problems and making repairs for the installed model and features of each system.

1.3.3.1 Troubleshooting Guides and Diagnostic Techniques

Include step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.

1.3.3.2 Wiring Diagrams and Control Diagrams

Wiring diagrams and control diagrams shall be point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type, identically to actual installation configuration and numbering.

1.3.3.3 Maintenance and Repair Procedures

Include instructions and a list of tools required to repair or restore the product or equipment to proper condition or operating standards.

1.3.3.4 Removal and Replacement Instructions

Include step-by-step procedures and a list required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings and adjustments required. Instructions shall include a combination of text and illustrations.

1.3.3.5 Spare Parts and Supply Lists

Include lists of spare parts and supplies required for maintenance and repair to ensure continued service or operation without unreasonable delays. Special consideration is required for facilities at remote locations. List spare parts and supplies that have a long lead-time to obtain.

1.3.4 Appendices

Provide information required below and information not specified in the preceding paragraphs but pertinent to the maintenance or operation of the product or equipment. Include the following:

1.3.4.1 Product Submittal Data

Provide a copy of all SD-03 Product Data submittals required in the applicable technical sections.

1.3.4.2 Manufacturer's Instructions

Provide a copy of all SD-08 Manufacturer's Instructions submittals required

in the applicable technical sections.

1.3.4.3 O&M Submittal Data

Provide a copy of all SD-10 Operation and Maintenance Data submittals required in the applicable technical sections.

1.3.4.4 Parts Identification

Provide identification and coverage for all parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirement to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing shall show the index, reference, or key number that will cross-reference the illustrated part to the listed part. Parts shown in the listings shall be grouped by components, assemblies, and subassemblies in accordance with the manufacturer's standard practice. Parts data may cover more than one model or series of equipment, components, assemblies, subassemblies, attachments, or accessories, such as typically shown in a master parts catalog

1.3.4.5 Warranty Information

List and explain the various warranties and clearly identify the servicing and technical precautions prescribed by the manufacturers or contract documents in order to keep warranties in force. Include warranty information for primary components such as the compressor of air conditioning system.

1.3.4.6 Personnel Training Requirements

Provide information available from the manufacturers that is needed for use in training designated personnel to properly operate and maintain the equipment and systems.

1.3.4.7 Testing Equipment and Special Tool Information

Include information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.

1.3.4.8 Contractor Information

Provide a list that includes the name, address, and telephone number of the General Contractor and each Subcontractor who installed the product or equipment, or system. For each item, also provide the name address and telephone number of the manufacturer's representative and service organization that can provide replacements most convenient to the project site. Provide the name, address, and telephone number of the product, equipment, and system manufacturers.

1.4 SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES

Furnish the O&M data packages specified in individual technical sections. The required information for each O&M data package is as follows:

1.4.1 Data Package 1

- a. Safety precautions
- b. Cleaning recommendations
- c. Maintenance and repair procedures
- d. Warranty information
- e. Contractor information
- f. Spare parts and supply list

1.4.2 Data Package 2

- a. Safety precautions
- b. Normal operations
- c. Environmental conditions
- d. Lubrication data
- e. Preventive maintenance plan and schedule
- f. Cleaning recommendations
- g. Maintenance and repair procedures
- h. Removal and replacement instructions
- i. Spare parts and supply list
- j. Parts identification
- k. Warranty information
- l. Contractor information

1.4.3 Data Package 3

- a. Safety precautions
- b. Operator prestart
- c. Startup, shutdown, and post-shutdown procedures
- d. Normal operations
- e. Emergency operations
- f. Environmental conditions
- g. Lubrication data
- h. Preventive maintenance plan and schedule

- i. Cleaning recommendations
- j. Troubleshooting guides and diagnostic techniques
- k. Wiring diagrams and control diagrams
- l. Maintenance and repair procedures
- m. Removal and replacement instructions
- n. Spare parts and supply list
- o. Product submittal data
- p. O&M submittal data
- q. Parts identification
- r. Warranty information
- s. Testing equipment and special tool information
- t. Testing and performance data
- u. Contractor information

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 09900

PAINTS AND COATINGS

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)

ACGIH 0100Dec (2005) Documentation of the Threshold Limit Values and Biological Exposure Indices

ASTM INTERNATIONAL (ASTM)

ASTM D 523 (1989; R 1999) Standard Test Method for Specular Gloss

MASTER PAINTERS INSTITUTE (MPI)

MPI 23 (Jan 2004) Surface Tolerant Metal Primer

MPI 94 (Jan 2004) Exterior Alkyd, Semi-Gloss, MPI Gloss Level 5

SCIENTIFIC CERTIFICATION SYSTEMS (SCS)

SCS SP-01 (2000) Environmentally Preferable Product Specification for Architectural and Anti-Corrosive Paints

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC Guide 6 (2004) Guide for Containing Debris Generated During Paint Removal Operations

SSPC Guide 7 (2004; E 2004) Guide for the Disposal of Lead-Contaminated Surface Preparation Debris

SSPC PA 1 (2000; E 2004) Shop, Field, and Maintenance Painting

SSPC PA Guide 3 (1982; E 1995) A Guide to Safety in Paint Application

SSPC QP 1 (1998; E 2004) Standard Procedure for Evaluating Painting Contractors (Field Application to Complex Industrial Structures)

SSPC SP 1 (1982; E 2004) Solvent Cleaning

SSPC SP 10	(2007) Near-White Blast Cleaning
SSPC SP 12	(2002) Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating
SSPC SP 2	(1982; E 2004) Hand Tool Cleaning
SSPC SP 3	(2004; E 2004) Power Tool Cleaning
SSPC SP 6	(2000; E 2004) Commercial Blast Cleaning
SSPC SP 7	(2007) Brush-Off Blast Cleaning
SSPC VIS 1	(2002; E 2004) Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning
SSPC VIS 3	(2004) Visual Standard for Power-and Hand-Tool Cleaned Steel
SSPC VIS 4	(1998; E 2000; E 2004) Guide and Reference Photographs for Steel Surfaces Prepared by Waterjetting

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety -- Safety and Health Requirements
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U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FED-STD-313	(Rev D; Am 1) Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities
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U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.1000	Air Contaminants
29 CFR 1910.1025	Lead
29 CFR 1926.62	Lead

1.2 SUBMITTALS

The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

The current MPI, "Approved Product List" which lists paint by brand, label, product name and product code as of the date of contract award, will be used to determine compliance with the submittal requirements of this specification. The Contractor may choose to use a subsequent MPI "Approved Product List", however, only one list may be used for the entire contract and each coating system is to be from a single manufacturer. All coats on a particular substrate must be from a single manufacturer. No variation from the MPI Approved Products List is acceptable.

Samples of specified materials may be taken and tested for compliance with specification requirements.

In keeping with the intent of Executive Order 13101, "Greening the Government through Waste Prevention, Recycling, and Federal Acquisition", products certified by SCS as meeting SCS SP-01 shall be given preferential consideration over registered products. Products that are registered shall be given preferential consideration over products not carrying any EPP designation.

SD-03 Product Data

Coating

Manufacturer's Technical Data Sheets

SD-07 Certificates

Applicator's qualifications

SD-08 Manufacturer's Instructions

Mixing

Detailed mixing instructions, minimum and maximum application temperature and humidity, potlife, and curing and drying times between coats.

Manufacturer's Material Safety Data Sheets

Submit manufacturer's Material Safety Data Sheets for coatings, solvents, and other potentially hazardous materials, as defined in FED-STD-313.

1.3 APPLICATOR'S QUALIFICATIONS

1.3.1 SSPC QP 1 Certification

All contractors and subcontractors that perform surface preparation or coating application shall be certified by the Society for Protective Coatings (formerly Steel Structures Painting Council) (SSPC) to the requirements of SSPC QP 1 prior to contract award, and shall remain certified while accomplishing any surface preparation or coating application. The painting contractors and painting subcontractors must remain so certified for the duration of the project. If a contractor's or subcontractor's certification expires, the firm will not be allowed to perform any work until the certification is reissued. Requests for extension of time for any delay to the completion of the project due to an inactive certification will not be considered and liquidated damages will apply. Notify the Contracting Officer of any change in contractor certification status.

1.4 REGULATORY REQUIREMENTS

1.4.1 Environmental Protection

In addition to requirements specified elsewhere for environmental protection, provide coating materials that conform to the restrictions of the local Air Pollution Control District and regional jurisdiction.

Notify Contracting Officer of any paint specified herein which fails to conform.

1.4.2 Lead Content

Do not use coatings having a lead content over 0.06 percent by weight of nonvolatile content.

1.4.3 Chromate Content

Do not use coatings containing zinc-chromate or strontium-chromate.

1.4.4 Asbestos Content

Materials shall not contain asbestos.

1.4.5 Mercury Content

Materials shall not contain mercury or mercury compounds.

1.4.6 Silica

Abrasive blast media shall not contain free crystalline silica.

1.4.7 Human Carcinogens

Materials shall not contain ACGIH 0100Doc and ACGIH 0100Doc confirmed human carcinogens (A1) or suspected human carcinogens (A2).

1.5 PACKAGING, LABELING, AND STORAGE

Paints shall be in sealed containers that legibly show the contract specification number, designation name, formula or specification number, batch number, color, quantity, date of manufacture, manufacturer's formulation number, manufacturer's directions including any warnings and special precautions, and name and address of manufacturer. Pigmented paints shall be furnished in containers not larger than 5 gallons. Paints and thinners shall be stored in accordance with the manufacturer's written directions, and as a minimum, stored off the ground, under cover, with sufficient ventilation to prevent the buildup of flammable vapors, and at temperatures between 40 to 95 degrees F.

1.6 SAFETY AND HEALTH

Apply coating materials using safety methods and equipment in accordance with the following:

Work shall comply with applicable Federal, State, and local laws and regulations, and with the ACCIDENT PREVENTION PLAN as specified in Appendix A of EM 385-1-1.

1.6.1 Safety Methods Used During Coating Application

Comply with the requirements of SSPC PA Guide 3.

1.6.2 Toxic Materials

To protect personnel from overexposure to toxic materials, conform to the most stringent guidance of:

- a. The applicable manufacturer's Material Safety Data Sheets (MSDS) or local regulation.
- b. 29 CFR 1910.1000.
- c. ACGIH 0100Doc, threshold limit values.
- d. The appropriate OSHA standard in 29 CFR 1910.1025 and 29 CFR 1926.62 for surface preparation on painted surfaces containing lead. Removal and disposal of coatings which contain lead is specified in Section 13282 LEAD IN CONSTRUCTION." Additional guidance is given in SSPC Guide 6 and SSPC Guide 7. Refer to drawings for list of hazardous materials located on this project. Contractor to coordinate paint preparation activities with this specification section.

1.7 ENVIRONMENTAL CONDITIONS

Comply, at minimum, with manufacturer recommendations for space ventilation during and after installation.

1.7.1 Coatings

Do not apply coating when air or substrate conditions are:

- a. Less than 5 degrees F above dew point;
- b. Below 50 degrees F or over 95 degrees F, unless specifically pre-approved by the Contracting Officer and the product manufacturer. Under no circumstances shall application conditions exceed manufacturer recommendations.

1.8 COLOR SELECTION

Unless otherwise indicated, colors of finish coats shall match existing/adjacent finish surfaces. Where not indicated or specified, colors shall be selected by the Contracting Officer. Manufacturers' names and color identification are used for the purpose of color identification only. Named products are acceptable for use only if they conform to specified requirements. Products of other manufacturers are acceptable if the colors approximate colors indicated and the product conforms to specified requirements.

Tint each coat progressively darker to enable confirmation of the number of coats.

1.9 LOCATION AND SURFACE TYPE TO BE PAINTED

1.9.1 Painting Included

Where a space or surface is indicated to be painted, include the following unless indicated otherwise.

- a. Surfaces behind portable objects and surface mounted articles readily detachable by removal of fasteners, such as screws and bolts.
- b. New factory finished surfaces that are damaged during performance

of the work.

- c. Existing coated surfaces that are damaged during performance of the work.

1.9.1.1 Exterior Painting

Includes new surfaces and appurtenances. Also included are existing coated surfaces made bare by cleaning operations.

1.9.2 Painting Excluded

Do not paint the following unless indicated otherwise.

- a. Surfaces concealed and made inaccessible by machinery and equipment fixed in place.
- b. Internal surfaces of piping and equipment and any surface in direct contact with fuel under normal system operations.
- c. Steel to be embedded in concrete.
- d. Copper, stainless steel, aluminum, brass, and lead except existing coated surfaces.
- e. Hardware, fittings, and other factory finished items.

1.9.3 Mechanical and Electrical Painting

Includes field coating of damaged exterior of new and existing surfaces.

1.9.4 Definitions and Abbreviations

1.9.4.1 Coating

A film or thin layer applied to a base material called a substrate. A coating may be a metal, alloy, paint, or solid/liquid suspensions on various substrates (metals, plastics, wood, paper, leather, cloth, etc.). They may be applied by electrolysis, vapor deposition, vacuum, or mechanical means such as brushing, spraying, calendaring, and roller coating. A coating may be applied for aesthetic or protective purposes or both. The term "coating" as used herein includes emulsions, enamels, stains, varnishes, sealers, epoxies, and other coatings, whether used as primer, intermediate, or finish coat. The terms paint and coating are used interchangeably.

1.9.4.2 DFT or dft

Dry film thickness, the film thickness of the fully cured, dry paint or coating.

1.9.4.3 DSD

Degree of Surface Degradation, the MPI system of defining degree of surface degradation. Five (5) levels are generically defined under the Assessment sections in the MPI Maintenance Repainting Manual.

1.9.4.4 EPP

Environmentally Preferred Products, a standard for determining environmental preferability in support of Executive Order 13101.

1.9.4.5 EXT

MPI short term designation for an exterior coating system.

1.9.4.6 INT

MPI short term designation for an interior coating system.

1.9.4.7 micron / microns

The metric measurement for 0.001 mm or one/one-thousandth of a millimeter.

1.9.4.8 mil / mils

The English measurement for 0.001 in or one/one-thousandth of an inch, equal to 25.4 microns or 0.0254 mm.

1.9.4.9 mm

The metric measurement for millimeter, 0.001 meter or one/one-thousandth of a meter.

1.9.4.10 MPI Gloss Levels

MPI system of defining gloss. Seven (7) gloss levels (G1 to G7) are generically defined under the Evaluation sections of the MPI Manuals. Traditionally, Flat refers to G1/G2, Eggshell refers to G3, Semigloss refers to G5, and Gloss refers to G6.

Gloss levels are defined by MPI as follows:

Gloss Level	Description	Units @ 60 degrees	Units @ 85 degrees
G1	Matte or Flat	0 to 5	10 max
G2	Velvet	0 to 10	10 to 35
G3	Eggshell	10 to 25	10 to 35
G4	Satin	20 to 35	35 min
G5	Semi-Gloss	35 to 70	
G6	Gloss	70 to 85	
G7	High Gloss		

Gloss is tested in accordance with ASTM D 523. Historically, the Government has used Flat (G1 / G2), Eggshell (G3), Semi-Gloss (G5), and Gloss (G6).

1.9.4.11 MPI System Number

The MPI coating system number in each Division found in either the MPI Architectural Painting Specification Manual or the Maintenance Repainting Manual and defined as an exterior (EXT/REX) or interior system (INT/RIN). The Division number follows the CSI Master Format.

1.9.4.12 Paint

See Coating definition.

1.9.4.13 REX

MPI short term designation for an exterior coating system used in repainting projects or over existing coating systems.

1.9.4.14 RIN

MPI short term designation for an interior coating system used in repainting projects or over existing coating systems.

PART 2 PRODUCTS

2.1 MATERIALS

Conform to the coating specifications and standards referenced in PART 3. Submit manufacturer's technical data sheets for specified coating and solvents. Comply with applicable regulations regarding toxic and hazardous materials.

PART 3 EXECUTION

3.1 PROTECTION OF AREAS AND SPACES NOT TO BE PAINTED

Prior to surface preparation and coating applications, remove, mask, or otherwise protect, hardware, hardware accessories, machined surfaces, and other items not to be coated that are in contact with surfaces to be coated. Following completion of painting, workmen skilled in the trades involved shall reinstall removed items. Restore surfaces contaminated by coating materials, to original condition and repair damaged items.

3.2 SURFACE PREPARATION

Remove dirt, splinters, loose particles, grease, oil, disintegrated coatings, and other foreign matter and substances deleterious to coating performance as specified for each substrate before application of paint or surface treatments. Oil and grease shall be removed prior to mechanical cleaning. Cleaning shall be programmed so that dust and other contaminants will not fall on wet, newly painted surfaces. Exposed ferrous metals such as nail heads on or in contact with surfaces to be painted with water-thinned paints, shall be spot-primed with a suitable corrosion-inhibitive primer capable of preventing flash rusting and compatible with the coating specified for the adjacent areas.

3.3 PREPARATION OF METAL SURFACES

3.3.1 Existing and New Ferrous Surfaces

- a. Ferrous Surfaces including Shop-coated Surfaces and Small Areas That Contain Rust, Mill Scale and Other Foreign Substances: detergent wash in accordance with SSPC SP 1 to remove oil and grease. Where shop coat is missing or damaged, clean according to SSPC SP 10. Water jetting to SSPC SP 12 WJ-4 may be used to remove loose coating and other loose materials. Use inhibitor as recommended by coating manufacturer to prevent premature rusting. Shop-coated ferrous surfaces shall be protected from corrosion by

treating and touching up corroded areas immediately upon detection.

- b. Surfaces With More Than 20 Percent Rust, Mill Scale, and Other Foreign Substances: Clean entire surface in accordance with SSPC SP 10/SSPC SP 12 WJ-2.

3.3.2 Final Ferrous Surface Condition:

For tool cleaned surfaces, the requirements are stated in SSPC SP 2 and SSPC SP 3. As a visual reference, cleaned surfaces shall be similar to photographs in SSPC VIS 3.

For abrasive blast cleaned surfaces, the requirements are stated in SSPC SP 7, SSPC SP 6, and SSPC SP 10. As a visual reference, cleaned surfaces shall be similar to photographs in SSPC VIS 1.

For waterjet cleaned surfaces, the requirements are stated in SSPC SP 12. As a visual reference, cleaned surfaces shall be similar to photographs in SSPC VIS 4.

3.4 APPLICATION

3.4.1 Coating Application

Painting practices shall comply with applicable federal, state and local laws enacted to insure compliance with Federal Clean Air Standards. Apply coating materials in accordance with SSPC PA 1. SSPC PA 1 methods are applicable to all substrates, except as modified herein.

At the time of application, paint shall show no signs of deterioration. Uniform suspension of pigments shall be maintained during application.

Unless otherwise specified or recommended by the paint manufacturer, paint may be applied by brush, roller, or spray. Use trigger operated spray nozzles for water hoses. Rollers for applying paints and enamels shall be of a type designed for the coating to be applied and the surface to be coated. Wear protective clothing and respirators when applying oil-based paints or using spray equipment with any paints.

Paints, except water-thinned types, shall be applied only to surfaces that are completely free of moisture as determined by sight or touch.

Thoroughly work coating materials into joints, crevices, and open spaces. Special attention shall be given to insure that all edges, corners, crevices, welds, and rivets receive a film thickness equal to that of adjacent painted surfaces.

Each coat of paint shall be applied so dry film shall be of uniform thickness and free from runs, drops, ridges, waves, pinholes or other voids, laps, brush marks, and variations in color, texture, and finish. Hiding shall be complete.

Touch up damaged coatings before applying subsequent coats.

- a. Drying Time: Allow time between coats, as recommended by the coating manufacturer, to permit thorough drying, but not to present topcoat adhesion problems. Provide each coat in specified condition to receive next coat.

- b. Primers, and Intermediate Coats: Do not allow primers or intermediate coats to dry more than 30 days, or longer than recommended by manufacturer, before applying subsequent coats. Follow manufacturer's recommendations for surface preparation if primers or intermediate coats are allowed to dry longer than recommended by manufacturers of subsequent coatings. Each coat shall cover surface of preceding coat or surface completely, and there shall be a visually perceptible difference in shades of successive coats.
- c. Finished Surfaces: Provide finished surfaces free from runs, drops, ridges, waves, laps, brush marks, and variations in colors.
- d. Thermosetting Paints: Topcoats over thermosetting paints (epoxies and urethanes) should be applied within the overcoating window recommended by the manufacturer.

3.4.2 Mixing and Thinning of Paints

Reduce paints to proper consistency by adding fresh paint, except when thinning is mandatory to suit surface, temperature, weather conditions, application methods, or for the type of paint being used.

When thinning is allowed, paints shall be thinned immediately prior to application with not more than 1 pint of suitable thinner per gallon. The use of thinner shall not relieve the Contractor from obtaining complete hiding, full film thickness, or required gloss. Thinning shall not cause the paint to exceed limits on volatile organic compounds. Paints of different manufacturers shall not be mixed.

3.4.3 Two-Component Systems

Two-component systems shall be mixed in accordance with manufacturer's instructions. Any thinning of the first coat to ensure proper penetration and sealing shall be as recommended by the manufacturer for each type of substrate.

3.4.4 Coating Systems

- a. Systems by Substrates: Apply coatings that conform to the respective specifications listed in the following Tables:

Table

Division 3. (Not used)
 Division 4. (Not used)
 Division 5. Exterior Metal, Ferrous and Non-Ferrous Paint Table
 Division 6. (Not used)
 Division 9: (Not used)
 Division 10. (Not used)

- b. Minimum Dry Film Thickness (DFT): Apply paints, primers, undercoats, and other coatings to a minimum dry film thickness of 1.5 mil each coat unless specified otherwise in the Tables. Coating thickness where specified, refers to the minimum dry film thickness.
- c. Coatings for Surfaces Not Specified Otherwise: Coat surfaces which have not been specified, the same as surfaces having similar

conditions of exposure.

- d. Existing Surfaces Damaged During Performance of the Work, Including New Patches In Existing Surfaces: Coat surfaces with the following:
 - (1) One coat of primer.
 - (2) One coat of undercoat or intermediate coat.
 - (3) One topcoat to match adjacent surfaces.
- e. Existing Coated Surfaces To Be Painted: Apply coatings conforming to the respective specifications listed in the Tables herein, except that pretreatments, sealers and fillers need not be provided on surfaces where existing coatings are soundly adhered and in good condition. Do not omit undercoats or primers.

3.5 COATING SYSTEMS FOR METAL

Apply coatings of Tables in Division 5 for Exterior.

- a. Apply specified ferrous metal primer on the same day that surface is cleaned, to surfaces that meet all specified surface preparation requirements at time of application.
- b. Inaccessible Surfaces: Prior to erection, use one coat of specified primer on metal surfaces that will be inaccessible after erection.
- c. Shop-primed Surfaces: Touch up exposed substrates and damaged coatings to protect from rusting prior to applying field primer.
- d. Surface Previously Coated with Epoxy or Urethane: Apply MPI 101, 1.5 mils DFT immediately prior to application of epoxy or urethane coatings.
- e. Pipes and Tubing: The semitransparent film applied to some pipes and tubing at the mill is not to be considered a shop coat, but shall be overcoated with the specified ferrous-metal primer prior to application of finish coats.
- f. Exposed Screws, Fasteners, and Miscellaneous Ferrous Surfaces.

3.6 WASTE MANAGEMENT

As specified in the Waste Management Plan and as follows. Do not use kerosene or any such organic solvents to clean up water based paints. Properly dispose of paints or solvents in designated containers. Close and seal partially used containers of paint to maintain quality as necessary for reuse. Store in protected, well-ventilated, fire-safe area at moderate temperature. Place materials defined as hazardous or toxic waste in designated containers.

3.7 PAINT TABLES

All DFT's are minimum values. Acceptable products are listed in the MPI Green Approved Products List, available at <http://www.specifygreen.com/APL/ProductIdxByMPInum.asp>.

3.7.1 EXTERIOR PAINT TABLES

DIVISION 5: EXTERIOR METAL, FERROUS AND NON-FERROUS PAINT TABLE
STEEL / FERROUS SURFACES

A. New Steel that has been hand or power tool cleaned to SSPC SP 2 or
SSPC SP 3

1. Alkyd

New; MPI EXT 5.1Q-G5 (Semigloss) Existing; MPI REX 5.1D-G5

Primer: Intermediate: Topcoat:

MPI 23 MPI 94 MPI 94

System DFT: 5.25 mils

-- End of Section --

SECTION 13282

LEAD IN CONSTRUCTION

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z89.2 (1992) Respiratory Protection

HAWAII OCCUPATIONAL SAFETY AND HEALTH (HIOSH)

HIOSH 12-148.1 Lead

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)

HUD 6780 (1995; Errata Aug 1996; Rev Ch. 7 - 1997) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

- 29 CFR 1926.103 Respiratory Protection
- 29 CFR 1926.21 Safety Training and Education
- 29 CFR 1926.33 Access to Employee Exposure and Medical Records
- 29 CFR 1926.55 Gases, Vapors, Fumes, Dusts, and Mists
- 29 CFR 1926.59 Hazard Communication
- 29 CFR 1926.62 Lead Exposure in Construction
- 29 CFR 1926.65 Hazardous Waste Operations and Emergency Response
- 40 CFR 260 Hazardous Waste Management System: General
- 40 CFR 261 Identification and Listing of Hazardous Waste
- 40 CFR 262 Standards Applicable to Generators of Hazardous Waste
- 40 CFR 263 Standards Applicable to Transporters of Hazardous Waste
- 40 CFR 264 Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and

Disposal Facilities

40 CFR 265 Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

40 CFR 268 Land Disposal Restrictions

49 CFR 172 Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements

49 CFR 178 Specifications for Packagings

UNDERWRITERS LABORATORIES (UL)

UL 586 (1996; Rev thru Apr 2000) High-Efficiency, Particulate, Air Filter Units

HAWAII ADMINISTRATIVE RULES (HAR)

HAR 11-261 Hawaii Administrative Rules, Title 11, Chapter 261 (including appendices), Hazardous Waste Management Identification and Listing of Hazardous Waste

HAR 11-262 Hawaii Administrative Rules, Title 11, Chapter 262 (including appendices), Hazardous Waste Management Standards Applicable to Generators of Hazardous Waste

HAR 11-263 Hawaii Administrative Rules, Title 11, Chapter 263, Hazardous Waste Management Standards Applicable to Transporters of Hazardous Waste

HAR 11-264 Hawaii Administrative Rules, Title 11, Chapter 264 (including appendices), Hazardous Waste Management Standards for Owners and Operators of Hazardous Waste Treatment, Storage, & Disposal Facilities

HAR 11-265 Hawaii Administrative Rules, Title 11, Chapter 265 (including appendices), Hazardous Waste Management Interim Status Standards for Owners & Operators of Hazardous Waste Treatment, Storage, & Disposal Facilities

1.2 DEFINITIONS

1.2.1 Action Level

Employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air averaged over an 8 hour period.

1.2.2 Area Sampling

Sampling of lead concentrations within the lead control area and inside the physical boundaries which is representative of the airborne lead concentrations but is not collected in the breathing zone of personnel (approximately 5 to 6 feet above the floor).

1.2.3 Competent Person (CP)

As used in this section, refers to a person employed by the Contractor who is trained in the recognition and control of lead hazards in accordance with current federal, State, and local regulations and has the authority to take prompt corrective actions to control the lead hazard. A Certified Industrial Hygienist (CIH) certified by the American Board of Industrial Hygiene or a Certified Safety Professional (CSP) certified by the Board of Certified Safety Professionals is required.

1.2.4 Contaminated Room

Refers to a room for removal of contaminated personal protective equipment (PPE).

1.2.5 Decontamination Shower Facility

That facility that encompasses a clean clothing storage room, and a contaminated clothing storage and disposal rooms, with a shower facility in between.

1.2.6 High Efficiency Particulate Arrestor (HEPA) Filter Equipment

HEPA filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining lead-contaminated particulate. A high efficiency particulate filter demonstrates at least 99.97 percent efficiency against 0.3 micron or larger size particles.

1.2.7 Lead

Metallic lead, inorganic lead compounds, and organic lead soaps. Excludes other forms of organic lead compounds.

1.2.8 Lead Control Area

A system of control methods to prevent the spread of lead dust, paint chips or debris to adjacent areas that may include temporary containment, floor or ground cover protection, physical boundaries, and warning signs to prevent unauthorized entry of personnel. HEPA filtered local exhaust equipment may be used as engineering controls to further reduce personnel exposures or building/outdoor environmental contamination.

1.2.9 Lead Permissible Exposure Limit (PEL)

Fifty micrograms per cubic meter of air as an 8 hour time weighted average as determined by 29 CFR 1926.62. If an employee is exposed for more than eight hours in a work day, the PEL shall be determined by the following formula:

$$\text{PEL (micrograms/cubic meter of air)} = 400/\text{No. hrs worked per day}$$

1.2.10 Material Containing Lead/Paint with Lead (MCL/PWL)

Any material, including paint, which contains lead as determined by the testing laboratory using a valid test method. The requirements of this section does not apply if no detectable levels of lead are found using a quantitative method for analyzing paint or MCL using laboratory instruments with specified limits of detection (usually 0.01%). An X-Ray Fluorescence (XRF) instrument is not considered a valid test method.

1.2.11 Personal Sampling

Sampling of airborne lead concentrations within the breathing zone of an employee to determine the 8 hour time weighted average concentration in accordance with 29 CFR 1926.62. Samples shall be representative of the employees' work tasks. Breathing zone shall be considered an area within a hemisphere, forward of the shoulders, with a radius of 6 inches and centered at the nose or mouth of an employee.

1.2.12 Physical Boundary

Area physically roped or partitioned off around lead control area to limit unauthorized entry of personnel.

1.3 DESCRIPTION

1.3.1 Description of Work

Construction activities impacting PWL or material containing lead which are covered by this specification include the demolition and/or removal of material containing lead in good condition, located within the limits of construction. All painted surfaces shall be assumed to contain measurable lead. Sampling data is available for review with the Contracting Officer.

1.3.2 Coordination with Other Work

The contractor shall coordinate with work being performed in adjacent areas. Coordination procedures shall be explained in the Plan and shall describe how the Contractor will prevent lead exposure to other contractors and/or Government personnel performing work unrelated to lead activities.

1.4 SUBMITTALS

The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Occupational and Environmental Assessment Data Report (if objective data is used to justify excluding the initial occupational exposure assessment)

Lead Compliance Plan including CP approval
(signature, date, and certification number)

Competent Person qualifications

Training Certification of workers and supervisors

lead waste management plan

written evidence that TSD is approved for lead disposal

Certification of Medical Examinations

SD-06 Test Reports

sampling results

Occupational and Environmental Assessment Data Report

SD-07 Certificates

Testing laboratory qualifications

SD-11 Closeout Submittals

Completed and signed hazardous waste manifest from treatment or disposal facility

Waste turn-in documents or weight tickets for non-hazardous wastes that are disposed of at sanitary or construction and demolition landfills

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 Competent Person (CP)

Submit name, address, and telephone number of the CP selected to perform responsibilities specified in paragraph entitled "Competent Person (CP) Responsibilities." Provide documented construction project-related experience with implementation of OSHA's Lead in Construction standard (29 CFR 1926.62) which shows ability to assess occupational and environmental exposure to lead, experience with the use of respirators, personal protective equipment and other exposure reduction methods to protect employee health. Submit proper documentation that the CP is trained and certified in accordance with federal, State and local laws.

1.5.1.2 Training Certification

Submit a certificate for each worker and supervisor, signed and dated by the accredited training provider, stating that the employee has received the required lead training specified in 29 CFR 1926.62(1) and is certified to perform or supervise deleading, lead removal or demolition activities in the state of Hawaii.

1.5.1.3 Testing Laboratory

Submit the name, address, and telephone number of the testing laboratory selected to perform the air analysis, testing, and reporting of airborne concentrations of lead. Use a laboratory participating in the EPA National Lead Laboratory Accreditation Program (NLLAP) by being accredited by either the American Association for Laboratory Accreditation (A2LA) or the American Industrial Hygiene Association (AIHA) and that is successfully participating in the Environmental Lead Proficiency Analytical Testing (ELPAT) program to perform sample analysis. Laboratories selected to perform blood lead analysis shall be OSHA approved.

1.5.2 Requirements

1.5.2.1 Competent Person (CP) Responsibilities

- a. Verify training meets all federal, State, and local requirements.
- b. Review and approve Lead Compliance Plan for conformance to the applicable referenced standards.
- c. Continuously inspect PWL or MCL work for conformance with the approved plan.
- d. Perform (or oversee performance of) air sampling. Recommend upgrades or downgrades (whichever is appropriate based on exposure) on the use of PPE (respirators included) and engineering controls.
- e. Ensure work is performed in strict accordance with specifications at all times.
- f. Control work to prevent hazardous exposure to human beings and to the environment at all times.
- g. Supervise final cleaning of the lead control area, take clearance wipe samples if necessary; review clearance sample results and make recommendations for further cleaning.
- h. Certify the conditions of the work as called for elsewhere in this specification.

1.5.2.2 Lead Compliance Plan

Submit a detailed job-specific plan of the work procedures to be used in the disturbance of PWL or MCL. The plan shall include a sketch showing the location, size, and details of lead control areas, critical barriers, physical boundaries, location and details of decontamination facilities, viewing ports, and mechanical ventilation system. Include a description of equipment and materials, work practices, controls and job responsibilities for each activity from which lead is emitted. Include in the plan, eating, drinking, smoking, hygiene facilities and sanitary procedures, interface of trades, sequencing of lead related work, collected waste water and dust containing lead and debris, air sampling, respirators, personal protective equipment, and a detailed description of the method of containment of the operation to ensure that lead is not released outside of the lead control area. Include site preparation, cleanup and clearance procedures. Include occupational and environmental sampling, training and strategy, sampling and analysis strategy and methodology, frequency of sampling, duration of sampling, and qualifications of sampling personnel in the air sampling portion of the plan. Include a description of arrangements made among contractors on multicontractor worksites to inform affected employees and to clarify responsibilities to control exposures.

1.5.2.3 Occupational and Environmental Assessment Data Report

If initial monitoring is necessary, submit occupational and environmental sampling results to the Contracting Officer within three working days of collection, signed by the testing laboratory employee performing the analysis, the employee that performed the sampling, and the CP.

In order to reduce the full implementation of 29 CFR 1926.62, the Contractor shall provide documentation. Submit a report that supports the determination to reduce full implementation of the requirements of 29 CFR 1926.62 and supporting the Lead Compliance Plan.

- a. The initial monitoring shall represent each job classification, or if working conditions are similar to previous jobs by the same employer, provide previously collected exposure data that can be used to estimate worker exposures per 29 CFR 1926.62. The data shall represent the worker's regular daily exposure to lead for stated work.
- b. Submit worker exposure data gathered during the task based trigger operations of 29 CFR 1926.62 with a complete process description. This includes manual demolition, manual scraping, manual sanding, heat gun, power tool cleaning, rivet busting, cleanup of dry expendable abrasives, abrasive blast enclosure removal, abrasive blasting, welding, cutting and torch burning where lead containing coatings are present.
- c. The initial assessment shall determine the requirement for further monitoring and the need to fully implement the control and protective requirements including the lead compliance plan per 29 CFR 1926.62.

1.5.2.4 Medical Examinations

Initial medical surveillance as required by 29 CFR 1926.62 shall be made available to all employees exposed to lead at any time (1 day) above the action level. Full medical surveillance shall be made available to all employees on an annual basis who are or may be exposed to lead in excess of the action level for more than 30 days a year or as required by 29 CFR 1926.62. Adequate records shall show that employees meet the medical surveillance requirements of 29 CFR 1926.33, 29 CFR 1926.62 and 29 CFR 1926.103. Provide medical surveillance to all personnel exposed to lead as indicated in 29 CFR 1926.62. Maintain complete and accurate medical records of employees for the duration of employment plus 30 years.

1.5.2.5 Training

Train each employee performing work that disturbs lead, who performs MCL/PWL disposal, and air sampling operations prior to the time of initial job assignment and annually thereafter, in accordance with 29 CFR 1926.21, 29 CFR 1926.62, and State and local regulations where appropriate.

1.5.2.6 Respiratory Protection Program

- a. Provide each employee required to wear a respirator a respirator fit test at the time of initial fitting and at least annually thereafter as required by 29 CFR 1926.62.
- b. Establish and implement a respiratory protection program as required by ANSI Z88.2, 29 CFR 1926.103, 29 CFR 1926.62, and 29 CFR 1926.55.

1.5.2.7 Hazard Communication Program

Establish and implement a Hazard Communication Program as required by 29 CFR 1926.59.

1.5.2.8 Lead Waste Management

The Lead Waste Management Plan shall comply with applicable requirements of federal, State, and local hazardous waste regulations and address:

- a. Identification and classification of wastes associated with the work.
- b. Estimated quantities of wastes to be generated and disposed of.
- c. Names and qualifications of each contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location and operator and a 24-hour point of contact. Furnish two copies of USEPA, State, and local hazardous waste permits and USEPA Identification numbers.
- d. Names and qualifications (experience and training) of personnel who will be working on-site with hazardous wastes.
- e. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.
- f. Spill prevention, containment, and cleanup contingency measures including a health and safety plan to be implemented in accordance with 29 CFR 1926.65.
- g. Work plan and schedule for waste containment, removal and disposal. Proper containment of the waste includes using acceptable waste containers (e.g., 55-gallon drums) as well as proper marking/labeling of the containers. Wastes shall be cleaned up and containerized daily.
- h. Include any process that may alter or treat waste rendering a hazardous waste non hazardous.
- i. Unit cost for hazardous waste disposal according to this plan.

1.5.2.9 Environmental, Safety and Health Compliance

In addition to the detailed requirements of this specification, comply with laws, ordinances, rules, and regulations of federal, State, and local authorities regarding lead. Comply with the applicable requirements of the current issue of 29 CFR 1926.62. Submit matters regarding interpretation of standards to the Contracting Officer for resolution before starting work. Where specification requirements and the referenced documents vary, the most stringent requirement shall apply. The following State laws, ordinances, criteria, rules and regulations regarding removing, handling, storing, transporting, and disposing of lead-contaminated materials apply:

- a. Hawaii Occupational Safety and Health (HIOSH); HIOSH 12-146.1, Lead Licensing and certification in the state of Hawaii is required.

1.5.3 Pre-Construction Conference

Along with the CP, meet with the Contracting Officer to discuss in detail the Lead Waste Management Plan and the Lead Compliance Plan, including procedures and precautions for the work.

1.6 EQUIPMENT

1.6.1 Respirators

Furnish appropriate respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing lead dust, fume and mist. Respirators shall comply with the requirements of 29 CFR 1926.62.

1.6.2 Special Protective Clothing

Furnish personnel who will be exposed to lead-contaminated dust with proper disposable protective whole body clothing, head covering, gloves, eye, and foot coverings as required by 29 CFR 1926.62. Furnish proper disposable plastic or rubber gloves to protect hands. Reduce the level of protection only after obtaining approval from the CP.

1.6.3 Rental Equipment Notification

If rental equipment is to be used during PWL or MCL handling and disposal, notify the rental agency in writing concerning the intended use of the equipment.

1.6.4 Vacuum Filters

UL 586 labeled HEPA filters.

1.6.5 Equipment for Government Personnel

Furnish the Contracting Officer with two complete sets of personal protective equipment (PPE) daily, as required herein, for entry into and inspection of the lead removal work within the lead controlled area. Personal protective equipment shall include disposable whole body covering, including appropriate foot, head, eye, and hand protection. PPE shall remain the property of the Contractor. The Government will provide respiratory protection for the Contracting Officer.

1.7 PROJECT/SITE CONDITIONS

1.7.1 Protection of Existing Work to Remain

Perform work without damage or contamination of adjacent areas. Where existing work is damaged or contaminated, restore work to its original condition or better as determined by the Contracting Officer.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Protection

3.1.1.1 Notification

- a. Notify the Contracting Officer 20 days prior to the start of any lead work.

3.1.1.2 Lead Control Area

a. Physical Boundary - Provide physical boundaries around the lead control area by roping off the area designated in the work plan or providing curtains, portable partitions or other enclosures to ensure that lead will not escape outside of the lead control area.

b. Warning Signs - Provide warning signs at approaches to lead control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Signs shall comply with the requirements of 29 CFR 1926.62.

3.1.1.3 Eye Wash Station

Where eyes may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes shall be provided within the work area.

3.1.1.4 Personnel Protection

Personnel shall wear and use protective clothing and equipment as specified herein. Eating, smoking, or drinking or application of cosmetics is not permitted in the lead control area. No one will be permitted in the lead control area unless they have been appropriately trained and provided with protective equipment.

3.2 ERECTION

3.2.1 Lead Control Area Requirements

Establish a lead control area by completely establishing barriers and physical boundaries around the area or structure where PWL or MCL removal operations will be performed.

3.3 APPLICATION

3.3.1 Lead Work

Perform lead work in accordance with approved Lead Compliance Plan. Use procedures and equipment required to limit occupational exposure and environmental contamination with lead when the work is performed in accordance with 29 CFR 1926.62 and as specified herein. Dispose of all PWL or MCL and associated waste in compliance with federal, State, and local requirements.

3.3.2 Paint with Lead or Material Containing Lead Removal

Manual or power sanding or grinding of lead surfaces or materials is not permitted unless tools are equipped with HEPA attachments or wet methods. The dry sanding or grinding of surfaces that contain lead is prohibited. Provide methodology for removing lead in the Lead Compliance Plan. Select lead removal processes to minimize contamination of work areas outside the control area with lead-contaminated dust or other lead-contaminated debris or waste and to ensure that unprotected personnel are not exposed to hazardous concentrations of lead. Describe this removal process in the Lead Compliance Plan.

3.3.2.1 Paint with Lead or Material Containing Lead

Perform manual mechanical removal in the lead control areas using enclosures, barriers or containments and powered locally exhausted tools. Collect residue debris for disposal in accordance with federal, State, and local requirements.

3.3.3 Personnel Exiting Procedures

Whenever personnel exit the lead-controlled area, they shall perform the following procedures and shall not leave the work place wearing any clothing or equipment worn in the control area:

- a. Vacuum all clothing before entering the contaminated change room.
- b. Remove protective clothing in the contaminated change room, and place them in an approved impermeable disposal bag.
- c. Wash hands and face at the site, don appropriate disposable or uncontaminated reusable clothing, move to an appropriate shower facility, shower.
- d. Change to clean clothes prior to leaving the clean clothes storage area.

3.4 FIELD QUALITY CONTROL

3.4.1 Tests

3.4.1.1 Air Sampling

Conduct sampling for lead in accordance with 29 CFR 1926.62 and as specified herein. Air sampling shall be directed or performed by the CP.

- a. The CP shall be on the job site directing the air and wipe sampling and inspecting the PWL or MCL removal work to ensure that the requirements of the contract have been satisfied during the entire PWL or MCL operation.
- b. Collect personal air samples on employees who are anticipated to have the greatest risk of exposure as determined by the CP. In addition, collect air samples on at least twenty-five percent of the work crew or a minimum of two employees, whichever is greater, during each work shift.
- c. Submit results of air samples, signed by the CP, within 72 hours after the air samples are taken.
- d. Conduct area air sampling daily, on each shift in which lead-based paint removal operations are performed, in areas immediately adjacent to the lead control area. Sufficient area monitoring shall be conducted to ensure unprotected personnel are not exposed at or above 30 micrograms per cubic meter of air. If 30 micrograms per cubic meter of air is reached or exceeded, stop work, correct the condition(s) causing the increased levels. Notify the Contracting Officer immediately. Determine if condition(s) require any further change in work methods. Removal work shall resume only after the CP and the Contracting Officer give approval.

e. Before any work begins, collect and analyze baseline soil samples (if applicable) in accordance with methods defined by federal, State, and local standards inside and outside of the physical boundary to assess the degree of dust contamination in the facility prior to lead disturbance or removal.

3.4.1.2 Sampling After Removal

After the visual inspection, conduct soil sampling (if applicable) if bare soil is present during external removal operations collect soil samples according to the HUD protocol contained in HUD 6780 to determine the lead content of settled dust in parts per million (ppm) or for soil.

3.4.1.3 Testing of Material Containing Lead Residue

Test residue in accordance with 40 CFR 261 and HAR 11-261 for hazardous waste.

3.5 CLEANING AND DISPOSAL

3.5.1 Cleanup

Maintain surfaces of the lead control area free of accumulations of dust and debris. Restrict the spread of dust and debris; keep waste from being distributed over the work area. Do not dry sweep or use pressurized air to clean up the area. At the end of each shift and when the lead operation has been completed, clean the controlled area of visible contamination by vacuuming with a HEPA filtered vacuum cleaner, wet mopping the area and wet wiping the area as indicated by the Lead Compliance Plan. Reclean areas showing dust or debris. After visible dust and debris is removed, wet wipe and HEPA vacuum all surfaces in the controlled area. If adjacent areas become contaminated at any time during the work, clean, visually inspect, and then wipe sample all contaminated areas. The CP shall then certify in writing that the area has been cleaned of lead contamination before clearance testing.

3.5.1.1 Clearance Certification

The CP shall certify in writing that air samples collected outside the lead control area during paint removal operations are less than 30 micrograms per cubic meter of air; the respiratory protection used for the employees was adequate; the work procedures were performed in accordance with 29 CFR 1926.62; and that there were no visible accumulations of material and dust containing lead left in the work site. Do not remove the lead control area or roped off boundary and warning signs prior to the Contracting Officer's acknowledgement of receipt of the CP certification.

Soil samples (if applicable) taken at the exterior of the work site shall be used to determine if soil lead levels had increased at a statistically significant level (significant at the 95 percent confidence limit) from the soil lead levels prior to the operation. If soil lead levels either show a statistically significant increase above soil lead levels prior to work or soil lead levels above any applicable federal or state standard for lead in soil, the soil shall be remediated.

3.5.2 Disposal

a. All material, whether hazardous or non-hazardous shall be disposed in accordance with all laws and provisions and all federal, State or

local regulations. Ensure all waste is properly characterized. The result of each waste characterization (TCLP for RCRA materials) will dictate disposal requirements.

b. Contractor is responsible for segregation of waste. Collect lead-contaminated waste, scrap, debris, bags, containers, equipment, and lead-contaminated clothing that may produce airborne concentrations of lead particles. Label the containers in accordance with 29 CFR 1926.62, 40 CFR 261 and HAR 11-261.

c. Dispose of lead-contaminated material classified as hazardous waste at an EPA or State approved hazardous waste treatment, storage, or disposal facility off Government property.

d. Store waste materials in U.S. Department of Transportation (49 CFR 178) approved 55 gallon drums. Properly label each drum to identify the type of waste (49 CFR 172) and the date the drum was filled. For hazardous waste, the collection drum requires marking/labeling in accordance with 40 CFR 262 and HAR 11-262 during the accumulation/collection timeframe. The Contracting Officer or an authorized representative will assign an area for interim storage of waste-containing drums. Do not store hazardous waste drums in interim storage longer than 90 calendar days from the date affixed to each drum.

e. Handle, store, transport, and dispose lead or lead-contaminated waste in accordance with 40 CFR 260, 40 CFR 261, HAR 11-261, 40 CFR 262, HAR 11-262, 40 CFR 263, HAR 11-263, 40 CFR 264, HAR 11-264, 40 CFR 265, and HAR 11-265. Comply with land disposal restriction notification requirements as required by 40 CFR 268.

3.5.2.1 Disposal Documentation

Submit written evidence to demonstrate the hazardous waste treatment, storage, or disposal facility (TSD) is approved for lead disposal by the EPA, State or local regulatory agencies. Submit one copy of the completed hazardous waste manifest, signed and dated by the initial transporter in accordance with 40 CFR 262 and HAR 11-262. Contractor shall provide a certificate that the waste was accepted by the disposal facility. Provide turn-in documents or weight tickets for non-hazardous waste disposal.

3.5.2.2 Payment for Hazardous Waste

Payment for disposal of hazardous and non-hazardous waste will not be made until a signed copy of the manifest from the treatment or disposal facility certifying the amount of lead-containing materials or non-hazardous waste delivered is returned and a copy is furnished to the Government.

-- End of Section --

SECTION 15050

BASIC MECHANICAL MATERIALS AND METHODS

PART 1 GENERAL

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM B 117 (2002) Operating Salt Spray (Fog) Apparatus

1.2 RELATED REQUIREMENTS

This section applies to all sections of Division 15, "Mechanical" of this project specification, unless specified otherwise in the individual section.

1.3 QUALITY ASSURANCE

1.3.1 Material and Equipment Qualifications

Provide materials and equipment that are standard products of manufacturers regularly engaged in the manufacture of such products, which are of a similar material, design and workmanship. Standard products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year use shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2 year period.

1.3.2 Alternative Qualifications

Products having less than a two-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturer's factory or laboratory tests, can be shown.

1.3.3 Service Support

The equipment items shall be supported by service organizations. Submit a certified list of qualified permanent service organizations for support of the equipment which includes their addresses and qualifications. These service organizations shall be reasonably convenient to the equipment installation and able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

1.3.4 Manufacturer's Nameplate

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

1.3.5 Modification of References

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction", or words of similar meaning, to mean the Contracting Officer.

1.3.5.1 Definitions

For the International Code Council (ICC) Codes referenced in the contract documents, advisory provisions shall be considered mandatory, the word "should" shall be interpreted as "shall." Reference to the "code official" shall be interpreted to mean the "Contracting Officer." For Navy owned property, references to the "owner" shall be interpreted to mean the "Contracting Officer." For leased facilities, references to the "owner" shall be interpreted to mean the "lessor." References to the "permit holder" shall be interpreted to mean the "Contractor."

1.3.5.2 Administrative Interpretations

For ICC Codes referenced in the contract documents, the provisions of Chapter 1, "Administrator," do not apply. These administrative requirements are covered by the applicable Federal Acquisition Regulations (FAR) included in this contract and by the authority granted to the Officer in Charge of Construction to administer the construction of this project. References in the ICC Codes to sections of Chapter 1, shall be applied appropriately by the Contracting Officer as authorized by his administrative cognizance and the FAR.

1.4 DELIVERY, STORAGE, AND HANDLING

Handle, store, and protect equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Contracting Officer. Replace damaged or defective items.

1.5 ELECTRICAL REQUIREMENTS

Furnish motors, controllers, disconnects and contactors with their respective pieces of equipment. Motors, controllers, disconnects and contactors shall conform to and have electrical connections provided as indicated on the contract drawings and under Section 16050 BASIC ELECTRICAL MATERIALS AND METHODS. Furnish internal wiring for components of packaged equipment as an integral part of the equipment. Extended voltage range motors will not be permitted. Controllers and contactors shall have a maximum of 120 volt control circuits, and shall have auxiliary contacts for use with the controls furnished. When motors and equipment furnished are larger than sizes indicated, the cost of additional electrical service and related work shall be included under the section that specified that motor or equipment. Power wiring and conduit for field installed equipment shall be provided as indicated on the contract drawings and conform to the requirements of Section 16050 BASIC ELECTRICAL MATERIALS AND METHODS.

1.6 INSTRUCTION TO GOVERNMENT PERSONNEL

When specified in other sections, furnish the services of competent instructors to give full instruction to the designated Government personnel

in the adjustment, operation, and maintenance, including pertinent safety requirements, of the specified equipment or system. Instructors shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work.

Instruction shall be given during the first regular work week after the equipment or system has been accepted and turned over to the Government for regular operation. The number of man-hours (8 hours per day) of instruction furnished shall be as specified in the individual section. When more than 32 man-hours of instruction are specified, use approximately half of the time for classroom instruction. Use other time for instruction with the equipment or system.

When significant changes or modifications in the equipment or system are made under the terms of the contract, provide additional instruction to acquaint the operating personnel with the changes or modifications.

1.7 ACCESSIBILITY

Install all work so that parts requiring periodic inspection, operation, maintenance, and repair are readily accessible. Install concealed valves, expansion joints, controls, dampers, and equipment requiring access, in locations freely accessible through access doors.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PAINTING OF NEW EQUIPMENT

New equipment painting shall be factory applied for factory fabricated equipment or shop applied for shop fabricated equipment, and shall be as specified herein, and provided under each individual section. Interior surfaces in direct contact with fuel during normal operations shall not be painted.

3.1.1 Factory Painting Systems

Manufacturer's standard factory painting systems may be provided subject to certification that the factory painting system applied will withstand 125 hours in a salt-spray fog test, except that equipment located outdoors shall withstand 500 hours in a salt-spray fog test. Salt-spray fog test shall be in accordance with ASTM B 117, and for that test the acceptance criteria shall be as follows: immediately after completion of the test, the paint shall show no signs of blistering, wrinkling, or cracking, and no loss of adhesion; and the specimen shall show no signs of rust creepage beyond 0.125 inch on either side of the scratch mark.

The film thickness of the factory painting system applied on the equipment shall not be less than the film thickness used on the test specimen. If manufacturer's standard factory painting system is being proposed for use on surfaces subject to temperatures above 120 degrees F, the factory painting system shall be designed for the temperature service.

3.1.2 Shop Painting Systems for Metal Surfaces

Paint in accordance with Section 09900 PAINTS AND COATINGS.

-- End of Section --

SECTION 15194

AVIATION FUEL DISTRIBUTION AND DISPENSING

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN PETROLEUM INSTITUTE (API)

API BULL 2209	(1978) Pipe Plugging Practices
API RP 1110	(1997) Pressure Testing of Liquid Petroleum Pipelines
API Spec 6D	(2002) Specification for Pipeline Valves
API Spec 1581	(2002) Specifications and Qualification Procedures for Aviation Jet Fuel Filter/Separators
API Std 594	(1997) Check Valves: Wafer, Wafer-Lug and Double-Flanged Type
API Std 607	(1993; R 1998) Fire Test for Soft-Seated Quarter-Turn Valves
API Std 610	(2004) Centrifugal Pumps for Petroleum, Petrochemical, and Natural Gas Industries

AMERICAN WELDING SOCIETY (AWS)

AWS A5.1	(2003) Carbon Steel Electrodes for Shielded Metal Arc Welding
AWS A5.4	(1992; R 2000) Stainless Steel Electrodes for Shielded Metal Arc Welding
AWS A5.5	(1996) Low-Alloy Steel Electrodes for Shielded Metal Arc Welding

ASME INTERNATIONAL (ASME)

ASME B16.11	(2002) Forged Fittings, Socket-Welding and Threaded
ASME B16.21	(1992) Nonmetallic Flat Gaskets for Pipe Flanges
ASME B16.3	(1998) Malleable Iron Threaded Fittings
ASME B16.39	(1998) Malleable Iron Threaded Pipe Unions

ASME B16.5 (2003) Pipe Flanges and Flanged Fittings

ASME B16.9 (2003) Factory-Made Wrought Steel
Buttwelding Fittings

ASME B31.1 (2004) Power Piping

ASME B31.3 (2002) Process Piping

ASME B40.100 (2006) Pressure Gauges and Gauge
Attachments

ASME BPVC SEC VIII D1 (2007) Boiler and Pressure Vessel Code;
Section VIII, Pressure Vessels Division 1
- Basic Coverage

ASTM INTERNATIONAL (ASTM)

ASTM A 105/A 105M (2003) Carbon Steel Forgings for Piping
Applications

ASTM A 182/A 182M (2004a) Forged or Rolled Alloy-Steel Pipe
Flanges, Forged Fittings, and Valves and
Parts for High-Temperature Service

ASTM A 193/A 193M (2004c) Alloy-Steel and Stainless Steel
Bolting Materials for High-Temperature
Service

ASTM A 194/A 194M (2004a) Carbon and Alloy Steel Nuts for
Bolts for High Pressure or High
Temperature Service or Both

ASTM A 216/A 216M (2007) Standard Specification for Steel
Castings, Carbon, Suitable for Fusion
Welding, for High-Temperature Service

ASTM A 234/A 234M (2004) Piping Fittings of Wrought Carbon
Steel and Alloy Steel for Moderate and
High Temperature Service

ASTM A 269 (2007a) Standard Specification for
Seamless and Welded Austenitic Stainless
Steel Tubing for General Service

ASTM A 312/A 312M (2004b) Seamless and Welded Austenitic
Stainless Steel Pipes

ASTM A 351/A 351M (2003) Castings, Austenitic,
Austenitic-Ferritic (Duplex), for
Pressure-Containing Parts

ASTM A 36/A 36M (2004) Carbon Structural Steel

ASTM A 403/A 403M (2004) Wrought Austenitic Stainless Steel
Piping Fittings

ASTM A 53/A 53M (2004a) Pipe, Steel, Black and Hot-Dipped,
Zinc-Coated, Welded and Seamless

ASTM A 743/A 743M (2006) Standard Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application

ASTM F 456 (2004) Hardened Steel Washers

ASTM F 1199 (1988; R 2004) Cast (All Temperatures and Pressures) and Welded Pipe Line Strainers (150 psig and 150 degrees F Maximum)

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

MSS SP-58 (2002) Pipe Hangers and Supports - Materials, Design and Manufacture

MSS SP-69 (2002) Pipe Hangers and Supports - Selection and Application

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA MG 1 (2006; Errata 2007) Standard for Motors and Generators

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 30 (2003) Flammable and Combustible Liquids Code

NFPA 407 (2001) Aircraft Fuel Servicing

NFPA 70 (2005) National Electrical Code

SOCIETY OF AUTOMOTIVE ENGINEERS INTERNATIONAL (SAE)

SAE AMS3275 (1999; Rev B) Sheet, Acrylonitrile Butadiene (NBR) Rubber and Non-Asbestos Fiber Fuel and Oil Resistant

SAE J514 (2004) Hydraulic Tube Fittings

U.S. DEPARTMENT OF DEFENSE (DOD)

MIL-DTL-24441/29 (Rev A) Paint, Epoxy-Polyamide, Green Primer, Formula 150, Type IV

MIL-DTL-24441/31 (Rev A) Paint, Epoxy-Polyamide, White, Formula 152, Type IV

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FED-STD-595 (Rev B; Am 1) Colors Used in Government Procurement

UNDERWRITERS LABORATORIES (UL)

UL 674 (2003; Rev thru Apr 2006) Standard for

Electric Motors and Generators for Use in
Division 1 Hazardous (Classified) Locations

UL 596 (2006) Industrial Control Equipment for
Hazardous (Classified) Locations

UL 886 (1994; Rev thru Nov 2005) Outlet Boxes and
Fittings for Use in Hazardous (Classified)
Locations

1.2 DEFINITIONS

In ASME B31.3 and NFPA 30 publications, the advisory provisions shall be considered mandatory, as though the work "shall" had been substituted for "should" wherever it appears; reference to the "authority having jurisdiction" and "owner" shall be interpreted to mean the Contracting Officer.

1.2.1 Year 2000 Compliant

Year 2000 compliant - means computer controlled facility components that accurately process date and time data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000 and leap year calculations.

1.3 SUBMITTALS

The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Submit shop drawings of Aviation fuel system equipment and components fabricated to order.

SD-03 Product Data

Pipe

Valves

Solenoid control valve

Float control valve

Filter separator unit

Air eliminator unit

Basket Strainer

Fuel transfer pump

Fuel sample connector

Protective coatings

Fittings

Spare Parts Data

Fuel Supply

A letter, at least 60 days prior to fuel delivery, stating the amount of fuel required for testing, flushing, cleaning, or startup of the system. The letter shall define the required dates of each fuel delivery necessary.

Tests

A letter, at least 10 working days in advance of each test, advising the Contracting Officer of the test. Individual letters shall be submitted for the piping tests, the equipment tests, and the system performance tests.

Demonstrations

A letter, at least 14 working days prior to the proposed training date, scheduling a proposed date for conducting the onsite training.

Submit manufacturer's data including specifications and performance test data. For fuel pumps, include actual diameter of impeller being furnished and manufacturer's certified pump test curves showing the characteristics over the entire operating range.

SD-04 Samples

System Flushing

Fuel samples, prior to any flushing procedures, taken from the transfer piping, pump house piping, fueling loop supply and return piping, supply and return piping to the operating tanks, and product recovery piping. Each sample shall be clearly identified according to the location from which it was taken. The Contractor will be responsible for the expense of the test.

Flushing Acceptance

Fuel samples, following flushing procedures but prior to cleaning, taken from the transfer piping, pump house piping, fueling loop supply and return piping, supply and return piping to the operating tanks, and product recovery piping. Each sample shall be clearly identified according to the location from which it was taken. The Contractor will be responsible for the expense of the test.

Cleaning Acceptance

Fuel samples, following cleaning procedures, taken from the transfer piping, pump house piping, fueling loop supply and return piping, supply and return piping to the operating tanks, and product recovery piping. Each sample shall be clearly identified according to the location from which it was taken. The Contractor will be responsible for the expense of the test.

Experience

A letter listing prior projects, the date of construction, a point of contact for each prior project, the scope of work of each prior project, and a detailed list of work performed. The letter shall also provide evidence of prior manufacturer's training, state licensing, etc.

SD-08 Manufacturer's Instructions

Solenoid control valve

Float control valve

Filter separator unit

Air Eliminator unit

Basket Strainer

Fuel transfer pump

Protective coatings

SD-10 Operation and Maintenance Data

Solenoid control valve, Data Package 3

Float control valve, Data Package 3

Fuel transfer pump, Data Package 3

Filter separator unit, Data Package 2

Air Eliminator Unit, Data Package 2

Submit operation and maintenance data in accordance with Section 01781 OPERATION AND MAINTENANCE DATA.

1.4 QUALIFICATIONS

1.4.1 CONTRACTORS EXPERIENCE

Each installation Contractor shall have successfully completed at least one project of the similar scope and nature within the last 3 years. Each installation Contractor shall demonstrate specific installation experience in regard to the specific system installation to be performed. Each installation Contractor shall have taken, if applicable, manufacturer's training courses on the installation of piping, equipment, inspection, testing, flushing, and controls, operations, maintenance, and repairs of fuel systems, and meet the licensing requirements in the state.

1.4.2 WELDING

Each welder shall be qualified by test using equipment, procedures and a base metal and electrode or filler wire from the same compatible group number that will be encountered in field welding. Procedures and welders shall be qualified in accordance with Section IX, ASME Boiler and Pressure Vessel Code. Welders qualified by another employer may be accepted as permitted by ASME B31.1. The welder shall apply his assigned symbol near

each weld he makes as a permanent record. Contractor shall provide a complete copy of qualified procedures and a list of names and identification symbols of qualified welders to the Contracting Officer prior to the start of work.

1.5 REGULATORY REQUIREMENTS

The design, fabrication, and installation of the aviation fuel system shall be in accordance with this specification, as well as meet all federal, state, and local code requirements.

Conform to the safety and fire regulations of the Station Fire Department when work is in progress. Obtain a "Hot Work" permit each day before performing welding or burning.

1.6 CONCRETE CONSTRUCTION

Provide and install as indicated on contract drawings.

1.7 PROJECT/SITE CONDITIONS

1.7.1 Verification of Dimensions

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

1.7.2 Fuel Supply

Fuel required for the flushing, cleaning, and testing of materials, equipment, piping, meters, pumps, instruments, etc., as specified in this section will be provided by the Government. The Government will also furnish the operators, equipment, and services as necessary for filling the existing system's fuel storage tanks. The Contractor shall provide all other labor, equipment, appliances, and materials required for the flushing, cleaning, adjusting, and testing operations. Systems shall not be flushed, cleaned, adjusted, or tested with any fuel or liquid not intended for final system operation. Fuel used in the system shall remain the property of the Government unless otherwise directed by the Contracting Officer. Fuel shortages not attributable to normal handling losses shall be reimbursed to the Government.

1.7.3 Spare Parts Data

The Contractor shall submit spare parts data for each different item of equipment specified. The data shall include a complete list of parts and supplies, with current unit prices and source of supply, a recommended spare parts list for 1 year of operation, and a list of the parts recommended by the manufacturer to be replaced on a routine basis.

1.8 DELIVERY, STORAGE, AND HANDLING

Stored items shall be protected from the weather and contamination. Proper protection and care of material before, during, and after installation shall be the Contractor's responsibility. Any material found to be damaged shall be replaced at the Contractor's expense. During installation, piping and similar openings shall be capped to keep out dirt and other foreign matter.

PART 2 PRODUCTS

2.1 STANDARD PRODUCTS

Material and equipment shall be standard products of a manufacturer regularly engaged in the manufacturing of such products, which are of a similar material, design and workmanship. The standard products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2 year use shall include applications of equipment and material under similar circumstances and of similar size. The 2 years experience shall be satisfactorily completed by a product which has been sold or is offered for sale on the commercial market through advertisements, manufacturer's catalogs, or brochures. Products having less than a 2 year field service record will be acceptable if a certified record of satisfactory field operation, for not less than 6000 hours, exclusive of the manufacturer's factory tests, can be shown. Products shall be supported by a service organization. System components shall be environmentally suitable for the indicated locations. The completed installation shall conform to the applicable requirements of NFPA 30.

2.2 NAMEPLATES

Specified equipment, gauges, and valves shall have an attached nameplate to list the manufacturer's name, address, component type or style, model or serial number, catalog number, capacity or size, and the system which is controlled. Plates shall be durable and legible throughout equipment life and made of anodized aluminum or 304 stainless steel or nickel copper material. Plates shall be fixed in prominent locations with nonferrous screws or bolts or rivets.

2.3 ELECTRICAL WORK

Electrical equipment, motors, and wiring shall be in accordance with Section 16050 INTERIOR DISTRIBUTION SYSTEM. Each motor shall conform to NEMA MG 1 and be of sufficient size to drive the equipment at the specified capacity without exceeding the nameplate rating of the motor when operating at proper electrical system voltage. Electrical characteristics shall be as shown, and unless otherwise indicated, motors of 1 horsepower and above shall be the continuous duty, high efficiency type. Switches and devices necessary for controlling the electrical equipment shall be provided. Pumps shall be completely wired and ready for connection to the power circuit. Wiring, motors, equipment, and fittings, unless otherwise indicated, shall be explosion-proof in conformance with the applicable requirements of UL 674, UL 698, and UL 886 for Class I, Division 1, Group D hazardous locations. Electrical equipment shall conform to the requirements of NFPA 70.

2.4 FUEL SYSTEMS

Provide fuel system equipment, materials, installation, workmanship, fabrication, assembly, erection, examination, inspection, flushing, and testing shall be in accordance with ASME B31.3, and NFPA 70, as modified and supplemented by the contract specifications and drawings.

2.5 SPECIAL REQUIREMENTS

2.5.1 Shop Drawings

Submit shop drawings showing types, sizes, location, and installation

details for:

- a. Solenoid control valves
- b. Float operated pilot control valve
- c. Filter separator unit
- d. Air eliminator unit
- e. Fuel pumps

2.5.2 Metals

Metal contacting the fuel shall be stainless steel or plated or coated carbon steel as modified herein. Zinc, zinc-coated steel, zinc-coated cast iron, brass, copper, and copper-bearing alloys contacting the fuel shall not be permitted, except as modified herein. Brass contacting the fuel shall be permitted up to a maximum of 0.5 percent of the total fuel wetted surface area in each system. Carbon steel containing up to a maximum of one percent copper contacting the fuel shall be permitted in carbon steel piping systems. Brass hose fittings and couplings will be permitted.

2.5.3 System

Capacity and efficiency of equipment shall not be less than that indicated. System components, including piping, equipment, valves, and accessories shall be suitable for maximum working pressure of ANSI Class 150, 275 psig at 100 degrees F.

2.5.4 Electrical Motors, Controllers, Contactors and Disconnects

Provide explosion proof type conforming to NFPA 70, Class I, Division 1, Group D, except where NFPA 70, Class I, Division 2, Group D is indicated. Provide motors, controllers, contactors, and disconnects with respective pieces of equipment. Motors, controllers, contactors, and disconnects shall conform to and shall have electrical connections provided under Division 16, "Electrical." Controllers and contactors shall have a maximum of 120-volt control circuits and shall have auxiliary contacts for use with the controls furnished.

2.6 CARBON STEEL PIPING

Carbon steel pipe shall be limited to sizes 2-1/2 inches nominal diameter and less and shall not be used any where after the outlet of the filter separator unit.

2.6.1 Pipe

ASTM A 53/A 53M, Type E (electric-resistance welded, Grades A or B) or Type S (seamless, Grade A or B), black steel; Weight Class STD (Standard) for pipe sizes larger than 2 inches, Weight Class XS (Extra-Strong) for pipe sizes 2 inches and smaller.

2.7 FITTINGS FOR CARBON STEEL PIPING

2.7.1 Socket Welding Fittings and Threaded Fittings

Connections for pipe size 2-1/2 inches and smaller shall be forged, socket

weld type, 2000 W.O.G. conforming to ASTM A 182/A 182M and ASME B16.11. Connections for pipe size 2-1/2 inches shall be butt weld type conforming to ASTM A 234/A 234M, Grade WPB and ASME B16.9 of the same wall thickness as the adjoining pipe. Threaded connections may only be used on piping 1-1/2 inches or smaller and where connecting to a threaded joint. Threaded fittings shall be in accordance with ASME B16.3, Class 150. Threaded connections shall be sealed tightly with a thread sealant or lubricant compatible with the fuel to be handled. All piping with threads shall be Scheduled 80 (minimum).

2.7.2 Buttwelding Fittings and Tapered Reducing Fittings

ASME B16.9, ASTM A 234/A 234M, Type WPB, of the same material and weight as the piping in which fittings are installed. Backing rings shall conform to ASME B31.3 and be compatible with materials being welded.

2.7.3 Flanges

ASME B16.5, Class 150, Raised Face Type, ASTM A 105/A 105M.

2.7.4 Unions

ASME B16.39, Class 150.

2.8 WELDING FOR CARBON STEEL PIPING

2.8.1 Process for Carbon Steel

ASME B31.3, metallic arc process.

2.8.2 Welding Electrodes

AWS A5.1 or AWS A5.5, E70XX low hydrogen electrodes.

2.9 STAINLESS STEEL PIPING

ASTM A 312/A 312M, Grade 304L, seamless only. Minimum wall thickness for pipe sizes 6 inches and smaller shall be Schedule 40.

2.9.1 Control Piping

Stainless steel control piping shall be seamless, fully annealed tubing conforming to ASTM A 269, Grade TP316, with a Rockwell hardness of B80 or less. Tubing wall thickness for 1/2 inch tubing shall be a minimum 0.049 inch.

2.10 FITTINGS FOR STAINLESS STEEL PIPING

2.10.1 Socket Welding Fittings and Threaded Fittings

Fittings 2 inch and smaller shall be stainless steel type F 304L socket welded 2000 pound W.O.G. ASME B16.11, except stainless steel shall conform to ASTM A 182/A 182M, Grade F304L. Threaded fittings may only be used for piping 1-1/2 inches or smaller and where connecting to a threaded joint. Threaded connections shall be sealed tightly with a thread sealant or lubricant compatible with the fuel to be handled. All piping with threads shall be Scheduled 80 (minimum).

2.10.2 Buttwelding Fittings and Tapered Reducing Fittings

Fittings 2-1/2 inch and larger shall be butt weld type ASME B16.9, except stainless steel shall conform to ASTM A 403/A 403M, Class WP, Type 304L, of the same weight as the pipe in which the fittings are installed.

2.10.3 Flanges

ASME B16.5, Class 150, Raised Face Type, except stainless steel shall conform to ASTM A 182/A 182M, Grade F304L.

2.10.4 Unions

ASME B16.39, Class 150, except stainless steel shall conform to ASTM A 312/A 312M, Type 304L.

2.10.5 Control Piping Fittings

Fittings shall be flareless, Type 316 stainless steel conforming to SAE J514.

2.11 WELDING FOR STAINLESS STEEL PIPING

2.11.1 Process for Stainless Steel

ASME B31.3, Gas Tungsten Arc Process or Gas Metal Arc Process.

2.11.2 Welding Electrodes

AWS A5.4, E308L electrodes.

2.12 PIPING GASKETS, BOLTS, NUTS AND WASHERS

2.12.1 Gaskets

ASME B16.21, composition ring 0.0625 inch thick, of one piece factory cut, resistant to the effects of aviation hydrocarbon fuels and manufactured of fire-resistant materials. Provide full-face gaskets for flat-face flanged joints, and ring gaskets for raised-face flanged joints.

2.12.1.1 Nitrile Butadiene (Buna-N)

Buna-N material shall be in accordance with SAE AMS3275.

2.12.1.2 Acrylonitrile Butadiene Rubber (NBR)

NBR material shall conform to SAE AMS3275.

2.12.2 Bolts

ASTM A 193/A 193M, Grade B8. Extend no less than two full threads beyond the nut with the bolts tightened to the required torque.

2.12.3 Nuts

ASTM A 194/A 194M, Grade 8.

2.12.4 Washers

ASTM F 436, flat circular stainless steel washers. Provide washers under

bolt heads and nuts.

2.13 VALVES

Paragraph 2.5.2 Metals apply to this Section.

Portions of a valve coming in contact with fuel shall be compatible with the fuel to be handled. Valves shall have bodies, bonnets, and covers constructed of stainless steel conforming to ASTM A 743/A 743M, Type 304 or 316; or cast steel conforming to ASTM A 216/A 216M, Grade WCB internally plated with chromium, nickel, or internally electrodeless nickel plated. Stem and trim shall be stainless steel for each valve. Valves shall be suitable for a working pressure of 275 psig at 100 degrees F with a weatherproof housing. Valves shall be provided with flanged end connections unless indicated otherwise. Seats, body seals, and stem seals shall be Viton or Buna-N. Sizes smaller than 2 inches may have union end connections, or threaded end connections with a union on all but one side of the valve. Viton or Teflon with metal backup seals.

2.13.1 Ball Valves

Size 2-1/2" and larger, standard port, floating ball design, conform to fire test requirements of API Std 607. Stainless steel one-piece uni-body, ASTM A276 316 stainless steel ball and stem, grounded stem, reinforced PTFE seat and seals, stainless steel trim, capable of handling two-way shutoff, with lever handle operator, flanged end connections, ANSI Class 150 and shall have lock feature.

2.13.2 Ball Valves

Sizes 2" and smaller. Standard port, API 607 fire safe construction, stainless steel (SS) and carbon steel (CS) uni-body, ANSI stainless steel ball and stem, bottom loaded and grounded stem, packing nut threaded into body, metal back-up pressure equalizing seats, reinforced PTFE seat and seals, NPT threaded end connections, lever handle operator.

2.13.3 Wafer Check Valve

Stainless steel body and dual plates, viton resilient seals, 316 SS pins and dual independent stainless steel springs, designed and tested to API 594, ANSI 150# raised face wafer design end connections.

2.13.4 Piston Check Valves

Size 2" and smaller. Corrosion resistant, API 607 fire safe construction, standard port, 800# bolted bonnet, forged steel body and bonnet, stainless steel trim, NPT threaded end connections.

2.13.5 Pump Pressure and Pressure Relief Valves

Stainless steel (SS) and corrosion resistant carbon steel (CS) body, stainless steel trim, viton seals. Valve shall be hydraulically operated and normally closed. Valve shall be capable of maintaining a constant upstream pressure regardless of the downstream demand. Valve shall have an angle pattern. Valves shall be factory-set to open at the indicated pressure and shall be field adjustable. Valve setpoint shall be adjustable within a minimum range of plus or minus 20 percent of the indicated setpoint. Sizes 1-1/2 inch and larger shall have flanged end connections, ANSI Class 150, and sizes 1 inch and smaller shall have threaded NPT end

connections.

2.13.6 Thermal Pressure Relief Valves

Corrosion resistant carbon steel body, stainless steel trim, viton seals, NPT connections, angle pattern, factor set pressure and minimum flow as indicated, field adjustable. Valve setpoint shall be adjustable within a minimum range of plus or minus 20 percent of the indicated setpoint.

2.13.7 Wafer Type Check Valves

API Spec 6D and API Std 594, ANSI Class 150. Wafer type check valves may be provided in lieu of swing-check valves in piping sizes larger than 4 inches. Valves shall have ASTM A 351/A 351M, Grade CF8M stainless steel disc and seal material; 316 stainless steel spring, hinge pin, stop pin, and radial-thrust bearing materials. Install valves between ANSI Class 150 pipe flanges.

2.13.8 Solenoid Control Valve

Valves shall be single-seated, diaphragm actuated, pilot-controlled globe valves. Valve shall be provided with a position indicator, a pilot circuit strainer, and pressure gauge quick-disconnect fittings located in the valve inlet, outlet, and cover. Service and adjustments to a valve shall be possible without removing the valve from the line. Portions of a valve coming in contact with fuel shall be compatible with the fuel and shall be of noncorrosive material. Valves shall have bodies, bonnets, and covers constructed of stainless steel conforming to ASTM A 743/A 743M, Type 304 or 316; or cast steel conforming to ASTM A 216/A 216M, Grade WCB internally plated with chromium, nickel, or internally electrodeless nickel plated. Stem and trim shall be stainless steel for each valve. Valves shall be suitable for a working pressure of 275 psig at 100 degrees F with a weatherproof housing. Valves shall be provided with flanged end connections unless otherwise indicated. Seats, body seals, and stem seals shall be Viton or Buna-N. The solenoid shall be rated for Class I, Division 1, Group C and D hazardous locations. The solenoid shall accommodate the specific control conditions of the system in which the valve is to be installed. Functions shall be externally adjustable. Valve shall be provided with the following:

2.13.8.1 Solenoid Control Feature

Solenoid control is a direct acting, 3-way solenoid control that changes position when the coil is de-energized or energized and applies or relieves pressure in the cover chamber of the three-way valve. Solenoid control is equipped with a manual actuator which can be used to operate the solenoid without electrical power. After manual actuation, return the actuator to its original position to enable the solenoid to return to the de-energized position. When the solenoid is energized the main valve shall be under command of remote control and differential control and when the solenoid is de-energized the main valve is closed.

2.13.8.2 Remote Control Feature

When remote control pressure is applied to the three-way valve, inlet pressure is directed to the main valve and the main valve closes. When remote control pressure is relieved, the main valve is under the command of the differential control.

2.13.8.3 Rate of Flow Feature

Pressure differential control is normally open and responds to differential pressure changes sensed across the orifice plate assembly. Increase in differential pressure tends to close differential control and decrease in differential pressure tends to open differential control which causes the main valve to modulate and maintain a relatively constant rate of flow.

2.13.8.4 Check Valve Feature

When outlet pressure is higher than inlet pressure, pilot check valves are actuated and the main valve closes.

2.13.8.5 Opening Speed Feature

Flow control pilot controls the opening speed of the main valve.

2.13.8.6 Limit Switch Assembly Feature

Limit switch assembly is actuated by a stem extension to the main valve stem. The limit switch assembly as factory adjusted to actuate a single-pole double-throw switch when the main valve is almost closed. When the main valve starts to open, the spring loaded switch actuating lever is released and returns the switch to its normal position.

2.14 PIPING ACCESSORIES

2.14.1 Pipe Hangers and Supports

MSS SP-58 and MSS SP-69, of the adjustable type, except as modified herein or indicated otherwise. Provide steel pipe hangers and supports. The finish of rods, nuts, bolts, washers, hangers, and supports shall be hot-dip galvanized.

2.14.1.1 Pipe Protection Shields

MSS SP-58 and MSS SP-69, Type 40, except material shall be Type 316 stainless steel. Provide at each slide type pipe hanger and support.

2.14.1.2 Low Friction Supports

Supports shall have self-lubricating antifriction bearing elements composed of 100 percent virgin tetrafluoroethylene polymer and reinforcing aggregates, prebonded to appropriate backing steel members. The coefficient of static friction between bearing elements shall be 0.06 from initial installation for both vertical and horizontal loads and deformation shall not exceed 0.002 inch under allowable static loads. Bond between material and steel shall be heat cured, high temperature epoxy. Design pipe hanger and support elements for the loads applied. Antifriction material shall be a minimum of 0.09 inch thick. Steel supports shall be hot-dip galvanized. Units shall be factory designed and manufactured.

2.14.1.3 Miscellaneous Metal

ASTM A 36/A 36M, standard mill finished structural steel shapes, hot-dip galvanized.

2.14.1.4 Concrete Anchors, Bolts, Nuts, Washers and Screws

Type 316 stainless steel bolts, nuts, washers, and screws to anchor equipment to concrete. Otherwise, hot-dip galvanized steel.

2.15 EQUIPMENT

Design pressure components of equipment for minimum working pressure of ANSI Class 150. Metal contacting the fuel shall be stainless steel Types 304 or 316, except as modified herein for epoxy coated carbon steel.

2.15.1 Epoxy (Interior) Coating System for Wetted Carbon Steel Surfaces

Epoxy coating system shall be three coat thin film system compliant with EPA VOC regulations. Epoxy coats 2,8 lbs/gallon maximum VOC. Coating system shall be factory applied. Field coating shall not be permitted. All coating materials shall be manufactured by one manufacturer. Surfaces shall be prepared and coatings shall be strictly applied in accordance with manufacturer's written instructions by qualified personnel. Observe all manufacturer's safety instructions and obtain all Materials Safety Data Sheet (MSDS) in accordance with 29 CFR 1926.59. Alternate systems or products will not be considered. Adjust all manufacturing preparation to avoid conflicts with final surface preparation requirements, otherwise carbon steel shall not be used.

2.15.1.1 Epoxy Primer Coat

Epoxy polyamide, MIL-DTL-24441/29 (Formula 150, Type IV, Green).

2.15.1.2 Epoxy Intermediate Coat

Epoxy polyamide, MIL-DTL-24441/31 (Formula 152, Type IV, White).

2.15.1.3 Epoxy Top Coat

Epoxy polyamide, MIL-DTL-24441/31 (Formula 152, Type IV, White, (Tinted). Tint to approximately FED-STD-595 color number 27778 parchment using pigment dispersions prepared for epoxy paint tinting. Manufacturer shall tint material and appropriately label.

2.15.1.4 Coating Thickness

Apply coatings at the following specified thickness:

Coat	Minimum DFT (Mils)	Maximum DFT (Mils)
Primer	3	5
Intermediate	3	5
Top	2	3
	----	----
Total system	8	13

2.15.2 Filter Separator Unit

Unit shall be tested and qualified in accordance with the performance requirements of API Spec 1581, Group II, Class B, except as modified herein. Unit shall be equipped with water slug control feature.

2.15.2.1 Housing Vessel

Units shall be fabricated from stainless steel or epoxy coated carbon steel as modified herein. Unit shall be constructed and labeled in accordance with ASME BPVC SEC VIII D1. The housing shall be designed for a working pressure of 150 psig. Unit shall be horizontal, end-opening type with coalescers and separators mounted side-by-side (coalescers at the bottom of the vessel and separators at the top), first stage coalescer 4-element, and second stage separator 2-element. The head opening shall be equipped with a hinged or pivoting device to facilitate swinging the head to one side for servicing. The hinges or pivots shall support the head during servicing without distortion or misalignment. Swing-type bolts shall be used on main closures. Unit shall be provided with 3 inch inside diameter lifting eyes spaced to support the entire weight of the unit. The housing shall be provided with a 3/4 inch inlet compartment fuel drain plug. A hand hole access plate shall be provided in the inlet compartment. Gaskets and O-ring shall be Buna-N construction. Threaded base mounting adapters shall be provided for the coalescers. The separators shall be mounted on adapters with blunted "Vee" type knife edges. Provide one complete set of coalescer and separator elements for each unit. Furnish one complete spare set of coalescer and separator elements for each unit.

2.15.2.2 Float Control Valve

The float assembly shall control the filter separator solenoid control valve. Flanged float operated pilot control, stainless steel body and trim, stainless steel float ball and arm, flow clean strainers, stainless steel control tubing and fittings, and integral tester feature. The movement span of the float shall be field adjustable. The assembly shall be fitted into the filter separator housing sum. Float shall ride on the fuel-water interface inside the filter separator sump and have three stages of operation. The stages of operation include:

- a. Stage I: With the float down, the filter separator control valve shall be open.
- b. Stage II: With the float at the intermediate level, the filter separator control valve shall remain open.
- c. Stage III: With the float at a high level, the filter separator control valve shall close.

2.15.2.3 Legs

Unit shall be provided with four each 3 by 3 by 1/4 inch angle-shaped legs welded to the housing. Each leg shall be fitted with a 4 by 4 by 1/2 inch thick base plate and provision for anchor bolts.

2.15.2.4 Inlet and Outlet Connections

The inlet and outlet connections shall be 4 inch nominal pipe size and be located parallel to each other as indicated. Both inlet and outlet shall be provided with flanged end connections.

2.15.2.5 Manual Drain Valve

Unit shall be equipped with a 3/4 inch stainless steel manual ball valve on a water and fuel drain line. The valve shall allow the drainage of water, fuel, and sediment from the unit by gravity.

2.15.2.6 Sight Gauge

Unit shall be provided with a 1/2 inch clear liquid level gauge for observing the water accumulation in the sump. The gauge shall be equipped with nickel-copper alloy ball checks in both the upper and lower fittings, an upper and lower shutoff valve, and a bottom blowoff cock. The gauge shall contain a colored density sensitive ball.

2.15.2.7 Automatic Air Vent and Pressure Relief Valve

Unit shall be provided with an angle pattern pressure relief valve on top of the unit to assure the design working pressure of the unit is never exceeded. An automatic air eliminator shall be installed on top of the unit to vent trapped air from within the vessel. The air eliminator shall release at pressures up to 150 psi with no fuel leakage. The air eliminator shall be provided with a nonreturn check valve feature, opening pressure of 1 psi, to prevent air from being drawn into the unit via the air eliminator.

2.15.2.8 Fuel Sample Connector

Sampling connections shall be provided at the inlet and outlet connections to the housing. Each sampling connection shall consist of a 1/4 inch stainless steel sampling probe where the probe faces upstream, a ball valve, a quick disconnect coupling, and an aluminum dust cap with bronze chain, fit in 0.375 inch ports and extend outward less than 0.84 inch from the port boss. The sampling connections shall be capable of accepting a sampling kit for drawing the samples required to assure fuel quality.

2.15.2.9 Spider Assembly

Unit shall be provided with a spider assembly to hold the coalescers and separators in position and to support against vibration. The method of stabilization shall assure an electrical bond between the spider and the vessel.

2.15.2.10 Coalescer and Separator Cartridges

Unit shall be provided with coalescers and separators that have been qualified to the performance requirements of API Spec 1581, Group II, Class B. Separators shall be 200 mesh stainless steel coated on both sides with Teflon. Coalescers shall have a minimum capacity of 2.27 gpm per inch of length, and separators shall have a minimum capacity of 8.33 gpm per inch of length. Provide one complete set of all elements for each unit. Provide one complete spare set of coalescer elements for each unit.

2.15.2.11 Differential Pressure Indicator

The unit housing shall be equipped with a direct-reading, piston type differential pressure gauge that measures the differential pressure across both coalescers and separators. The gauge shall consist of a spring-supported, corrosion resistant piston moving inside a glass cylinder, ultra-violet light shield. The cylinder shall have stainless steel end flanges with Viton O-ring seals and thermal relief valve. The high pressure inlet of the gauge shall have a 10 micron pleated paper filter and the low pressure connection shall have a fine mesh stainless steel strainer. The gauge shall have an operating pressure of 300 psi with a cylinder burst pressure of not less than 1200 psi, -30 to +160 DEG F

range. Differential pressure range of the gauge through approximately 3 inches of piston movement shall be 0-30 psi with an accuracy of plus or minus 0.5 psi, calibrated linearly with 1 psi scale graduations. High and low pressure connections shall be 1/4 inch NPT female with a stainless steel bar stock valve at each connection. Construction of the gauge shall be such that a 3-valve manifold is not necessary. If only one bar stock valve is closed, the gauge shall not be damaged by up to 300 psi differential pressure in either direction. The differential pressure gauge shall be attached to the filter separator by a gauge panel.

2.15.3 Air Eliminator Unit

Units shall be fabricated from stainless steel or epoxy coated carbon steel as modified herein. Unit shall be constructed and labeled in accordance with ASME BPVC SEC VIII D1. The housing shall be designed for a working pressure of 150 psig. Unit shall be horizontal, with ANSI 150# raised face end connections and NPT drain and vent connections. Air eliminator shall be certified by manufacturer including maximum working pressure 150 psi at 566 deg F, minimum design metal temperature -20 deg F at 150 psi, and shall be equipped with a factory mounted air eliminator head, NEMA 4X AND 7, explosion-proof electric float switch, 316 stainless steel float assembly, and stainless steel tubing, fittings, and sight glass. Certification data including manufacturer's name and address, serial number, year built, part number, and model number, and flow direction, shall be permanently attached to the equipment on a metal nameplate as indicated herein.

2.15.4 Basket Strainer

Strainer shall be in accordance with ASTM F 1199, except as modified herein. Strainer shall be the cleanable, basket or "Y" type, the same size as the pipeline. Strainer body shall be fabricated of epoxy coated carbon steel as modified herein, or Type 304 or 316 stainless steel, with the bottom drilled and welded NPT tapped half coupling, and ANSI 150# raised face flanged end connections. The body shall have arrows clearly cast on the sides indicating the direction of flow. Strainer shall be equipped with a removable cover, 150 psi working pressure, and sediment screen. Sediment screen shall be perforated 316 stainless steel basket with 3/16" diameter holes lined with 40-mesh type 316 stainless steel wire. Pressure drop for clean strainer shall not exceed 3 psig at design flow rates. Strainer shall be provided with an air eliminator vent. The ratio of net effective strainer area to the area of the connecting pipe shall be not less than 3 to 1.

2.15.5 Fuel Transfer Pump

Fuel pump shall suitable for fuel service and shall be positive displacement, self-priming, sliding vane, rotary pump constructed of stainless steel or cast steel conforming to ASTM A 216/A 216M, Grade WCB internally plated with chromium, nickel, or internally electrodeless nickel plated. Pump assembly shall be statically and dynamically balanced for flow rates which range from 0 up to 120 percent of design flow. Pump case shall be designed for a 275 psi maximum operating pressure. Pump shall be driven by an explosion-proof motor for Class I, Division 1, Group D, hazardous locations as defined in NFPA 70 via integral mounted gear reduction drive unit with oil lubricated hardened helical gears. Motor shall not exceed 1,800 rpm nominal and be provided with lifting lugs on the motor casing. Pump shall be accessible for servicing without disturbing connecting piping. Pumps shall be in accordance with API Std 610, except as modified herein. Pump, gear drive, and motor shall be factory mounted,

coupled, and aligned on a single factory fabricated steel or cast iron baseplate assembly.

2.16 SYSTEM COMPONENTS AND ACCESSORIES

Paragraph 2.5.2 Metals apply to this Section.

2.16.1 Pump Flow Switch

Switch shall be actuating vane type flow switch with single adjustable set-point. One piece milled and bored steel body, MNPT end connection, CSA listed. Switch shall be provided with a DPDT dry contact type snap action switch mechanism which is UL listed for Class 1, Division 1, Group D hazardous locations. Switch power shall be 120 volts, single phase, 60 hertz, and 10 amps minimum.

2.16.2 Pressure Gauges

Gauges shall conform to ASME B40.100. Gauges shall be all stainless steel, silicon filled, single style pressure gauge for fuel with 4-1/2 inch dial, 1/2" lower stem, 316 SS tube and socket, SS movement +/- 1% full scale accuracy, white dial face, balanced black pointer and markings, 270 sweep, 0-160 psi range, trogamide safety glass, O-ring case seal and with stainless steel pressure snubber and needle valve.

2.16.3 Site Flow Indicator

Indicator shall be of stainless steel construction, be compatible with the fuel to be handled, and have flanged end connections for size 2 inch and larger and NPT end connections for size 1-1/2" and smaller. The sight flow indicator shall consist of a housing containing a rotating propeller that is visible through a tempered glass observation port.

2.16.4 Automatic Air Vent

Lever type, all stainless steel body, stainless steel trim, welded permanent sealed body and cap, tamper proof no-gasket elliptical float, free floating guided lever, stainless steel valve and seat, 3/4" FNPT inlet x 3/4" FNPT outlet connections, 500 psig maximum at 100 deg F rating.

2.16.5 Identification Markings

Aboveground pipe, equipment, etc., supplied under this section shall have identification markings applied in accordance with Section 09900 PAINTS AND COATINGS.

2.17 PROTECTIVE COATINGS FOR PIPING

2.17.1 Protective Coatings for Aboveground Carbon Steel Piping

Coat piping and appurtenances in accordance with Section 09900 PAINTS AND COATINGS.

2.18 BONDING

NFPA 70 for materials and workmanship. The fuel piping system shall be bonded in metallic contact to provide electrical continuity to fixed and moving components for grounding the entire system. Provide jumpers to overcome the insulating effects of gaskets, paints, or nonmetallic

components. Minimum size ground conductor shall be No. 6, with single covered, flexible, stranded, copper conductor, Type RR-USE.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Demolition

Remove materials so as not to damage materials which are to remain. Replace existing work damaged by the Contractor's operations with new work of the same construction. The Contractor shall be responsible for draining and removing the remaining fuel and sludge, and for cleaning and inerting the piping to make it safe for welding.

3.2 INSTALLATION

Provide and install all fuel system equipment, items, appurtenances, piping, hardware, and related work as indicated. Install piping straight and true to bear evenly on supports. Install valves with stems horizontal or above. Install flanges and unions at valves, connections to equipment, and where indicated. The work includes installing piping up to and including the pumping equipment and valves. Equipment shall be properly leveled, aligned, and secured in place in accordance with manufacturer's instructions. Supports shall be provided for equipment, appurtenances, and pipe as required. Anchors, bolts, nuts, washers, and screws shall be installed where required for securing the work in place. Minimum sizes, types, and spacing of anchors and bolts shall be per manufacturer's written installation instructions. Provide each system complete and ready for operation. Equipment, materials, installation, workmanship, fabrication, assembly, erection, examination, inspection, and testing shall be in accordance with ASME B31.3 and NFPA 30, except as modified herein.

3.2.1 Protection Against Hazardous Conditions

The piping and the surrounding area shall be inspected for explosive vapors prior to work and frequently during the course of the work. If, in the opinion of the Contracting Officer, a hazardous condition exists, work shall cease until such condition has been corrected.

3.2.2 Safety

NFPA 30 and NFPA 407; safety rules shall be strictly observed. The flash points of fuels in degrees Fahrenheit are as follows:

<u>FUELS</u>	<u>FLASH POINT</u>
Jet Fuel JP-5	Plus 140

3.2.3 Connections To Existing Systems

Notify the Contracting Officer in writing at least 10 days prior to the date the connections are required; receive approval before interrupting service. Provide materials required to make connections into existing systems and perform excavating, backfilling, compacting, and other incidental labor as required.

3.2.4 Cutting Existing Pipe

Perform the initial cutting of the existing piping with a multiwheel pipe cutter, using a nonflammable lubricant. After cutting, seal the interior of the piping with a gas barrier plug in accordance with API BULL 2209. The interior of the piping shall be purged with carbon dioxide or nitrogen during welding process. The complete method of cutting, sealing, and welding shall be approved in advance of the actual work.

3.2.5 Cleaning of Piping

Keep the interior and ends of new piping and existing piping affected by the Contractor's operations thoroughly cleaned of water and foreign matter. Keep piping systems clean during installation by means of plugs or other approved methods. When work is not in progress, securely close open ends of pipe and fittings to prevent entry of water and foreign matter. Inspect piping before placing into position.

3.2.6 Field Service Representative

Manufacturer's qualified field service representatives shall be provided at no additional cost to the Government each major equipment including fuel pump, air eliminator, filter separator, and control valves for proper installation and start-up prior to system testing and flushing. Following the testing and flushing, and adjusting procedures, the service representatives shall also witness as a minimum the first day of operation. Any additional time required due to delays or corrections by the Contractor shall be provided at no additional cost to the Government. The manufacturer's field service representative shall also instruct the required personnel in the proper operation and maintenance of the fuel pump, air-eliminator, filter separator, and control valves.

3.3 PIPE AND FITTINGS

Inspect, test, and approve piping before burying, covering, or concealing. Provide fittings for changes in direction of piping and for connections. Reducing branch connections in steel piping may be made with forged branch outlet reducing fittings for branches two or more pipe sizes smaller than mains. Branch outlet fittings shall be forged, flared for improved flow where attached to the run, reinforced against external strains, and designed to withstand full pipe bursting strength. Stub type connections are prohibited. Jointing compound for pipe threads shall be polytetraflouroethylene (PTFE) pipe thread paste or PTFE powder and oil. Pipe nipples 6 inches long and shorter shall be Schedule 80 pipe. Make changes in piping sizes through tapered reducing pipe fittings.

3.3.1 Fittings and End Connections

Install threaded fittings and end connections for sizes less than one inch; threaded or socket-welding or buttwelding fittings and end connections for sizes one to 2 inches; threaded connections for threaded valves, traps, strainers, and threaded connections to equipment; buttwelding fittings and end connections for sizes 2.5 inches and larger; and flanged connections for flanged valves, traps, strainers, and flanged connections to equipment.

3.3.2 Pipe Hangers and Supports

Install additional hangers and supports for the concentrated loads in piping between hangers and supports, such as for valves. Install

ASTM A 36/A 36M miscellaneous steel shapes as required. Support piping as follows:

Nominal Pipe Size (Inches)	One and Under	1.5	2	3	4	6	8	10	12
Maximum Hanger Spacing (Feet)	7	9	10	12	14	17	19	22	23

3.3.3 Anchors, Bolts, Nuts, Washers, and Screws

Install where required for securing the work in place. Sizes, types, and spacing of anchors and bolts not indicated or specified shall be as required.

3.4 PROTECTIVE COATINGS FOR ABOVEGROUND CARBON STEEL PIPING

Painting required for exposed surfaces and finish painting of items only primed at the factory, shall be painted and shall have identification markings applied as specified in Section 09900 PAINTS AND COATINGS. Stainless steel and aluminum surfaces, nameplates and identification or warning and safety labels shall not be painted. Prior to any painting, surfaces shall be cleaned to remove dust, dirt, rust, oil, and grease.

3.5 IDENTIFICATION NAMEPLATES

Attach laminated plastic nameplates to control equipment. Nameplates shall be Melamine plastic, 0.125 inch thick, black with white center core, matte finish surface and square corners. Accurately align lettering and engrave into the white core. Minimum size of nameplates shall be one by 2.5 inches. Lettering shall be minimum of 0.25 inch high normal block style. Key the nameplates to a chart and schedule for each system. Furnish two copies of each chart and schedule. Each nameplate inscription shall identify its function.

3.6 FIELD QUALITY CONTROL

3.6.1 Tests

Prior to initial operation, inspect piping system for compliance with drawings, specifications, and manufacturer's submittals.

3.6.2 Piping Tests

Before final acceptance of the work, test each system as in service to demonstrate compliance with contract requirements.

3.6.2.1 Pneumatic Test

Pneumatically test each piping system to 25 psig, examine joints with soap solution. Gradually increase to 50 psig and hold for 1 hour. The pneumatic test is more hazardous than a hydrostatic test, therefore, special safety measures, including the wearing of face masks, shall be taken during testing under pressure. Only authorized personnel shall be permitted in the area during pneumatic and hydrostatic testing.

3.6.2.2 Hydrostatic Tests

Upon completion of pneumatic testing, hydrostatically test each piping system at 1.5 times maximum system operating pressure but in no case more than 275 psig in accordance with ASME B31.3 and API RP 1110, with no leakage or reduction in gage pressure for 4 hours. Thoroughly flush piping before placing in operation. Flush piping, including branch piping, at a minimum velocity of 8 feet per second. Correct defects in work provided by the Contractor and repeat tests until work is in compliance with contract requirements. Furnish electricity, instruments, connecting devices, and personnel for the tests. Government will furnish fuel for piping testing and flushing provided by the Contractor. Contractor shall be responsible for losses greater than 10 percent.

3.7 FLUSHING, CLEANING, AND ADJUSTING

Paragraph 2.5.2 Metals apply to this Section. The Contractor shall provide all required labor, equipment, and materials including temporary product recovery tank(s), fuel pump(s), and the required power connections and appurtenances, overflow protection, and safety devices for the entire duration of the flushing, cleaning, and adjusting procedures indicated herein.

3.7.1 Preparations for Flushing

Following installation but prior to equipment tests, the following preparations for flushing the system shall be performed.

3.7.1.1 Initial System Cleaning

Preservatives and foreign matter within the piping, valves, line strainers, pumps, oil/water separators, and other equipment coming in contact with fuel, shall be removed. Fuel will not be delivered to the system until the initial system cleaning is satisfactorily completed and approved by the Contracting Officer and the Facilities Engineer.

3.7.1.2 Protection of Equipment

Control valves, fuel sensors, pressure indicating devices, and related components, shall be isolated from the system prior to the start of flushing operations and, where applicable, replaced with spools of pipe whose diameter is equal to the item removed. Coalescer and separator elements in each filter separator shall also be removed prior to the flushing operations.

3.7.1.3 Temporary Strainers

Temporary 40 mesh cone type strainers shall be installed in the suction line ahead of each fueling pump. The temporary strainers shall remain in place for a minimum of 2 days after system startup, after which time the Contractor shall remove the strainers and prepare the piping as intended for final system operation.

3.7.2 System Flushing

Flushing procedures shall precede fuel cleaning procedures.

3.7.2.1 Procedures

The fuel piping shall be flushed with fuel. The flow rate of the system during flushing procedures shall gradually be increased up to and held at the maximum rated system capacity for a minimum of three (3) each 0.25 hour continuous flushing with a maximum of two (2) hours between flushings. During the flushing procedure the Contractor shall provide and maintain its own temporary product recovery tank(s) to capture the fuel used for flushing operations. Fuel shall be flushed through the installed strainer, piping, pump, air eliminator, and filter separator. Strainers shall be inspected and cleaned prior to each flushing operation and in order to ensure maximum flow rate. Contractor is totally responsible for the proper set-up, start-up, operation and maintenance of the product recovery tank system and associated components, and take-down and removal and proper disposal of the recovery tank system and components including any residual fuel, liquids, or sediments, immediately after completion and acceptance of the all required testing and flushing procedures.

3.7.2.2 Flushing Acceptance

Acceptance of the flushing procedure shall be based on the fuel having a maximum of 8.0 mg/gallon solids with free water not to exceed 2 mL/quart. If the sample tested exceeds the maximum contamination allowances, the system flushing procedure shall be repeated at the Contractor's expense.

3.7.3 Fuel Cleaning

Following the acceptance of the flushing procedures, remove all temporary piping spools and replace with the appropriate equipment. Fuel sensors, control valves, pressure indicating devices, related components, and coalescer and separator elements in filter separators shall be reinstalled and/or un-isolated. Permanent strainers shall be removed, cleaned, and reinstalled. If the pressure differential across the filter/separator elements exceed that recommended by the manufacturer, the elements shall be replaced.

3.7.3.1 Procedures

The cleaning procedure shall be performed by continually circulating fuel through the fueling system. The flow rate of the fuel cleaning procedure shall gradually be increased up to the maximum rated system capacity. During the cleaning, only one pump at a time shall operate. The fuel shall be manually alternated between different pumps and filter separators on a periodic basis in order to clean each pump suction and discharge line. The cleaning procedure shall continue until the following acceptance certification is met.

3.7.3.2 Cleaning Acceptance

Acceptance of the fuel cleaning procedure will be based on the certification from the Contracting Officer that each fuel sample has a maximum contamination level of 2.0 mg/gallon solids with free water not to exceed 10 parts per million.

3.7.4 Initial System Adjustments

Following the flushing and cleaning operations but prior to equipment tests, each system component shall be initially adjusted, if necessary, to meet the system's final operational requirements. The Government will

supply enough fuel to the system to enable the Contractor to make final adjustments to equipment and controls. Flow rates and pressures shall be adjusted to meet the indicated requirements. Pumps, control valves, filter separators, etc., shall operate as intended. During initial system adjustments to a pantograph's venturi tube or control valve, the pressure regulating device at each pressure fueling nozzle shall be either disabled or removed. The sequence of control for each component shall be adjusted to meet the indicated system requirements. Following the initial system adjustments, the equipment tests shall be performed in order to determine any necessary final system adjustments.

3.8 ACCEPTANCE PERFORMANCE TESTS

All tests shall be coordinated in writing at least ten (10) working days in advance of the test with the Contracting Officer's Representative (COR) and the Facilities Engineer (FE). The following tests shall be performed.

3.8.1 Operating Tank Low Level Alarm

Valves shall be positioned to transfer fuel between operating tanks. One fueling pump shall be started and sufficient fuel shall be pumped out of the first operating tank to allow the low level alarm (LLA) to stop the fueling pump. This procedure shall be repeated at least one (1) time until the LLA stops the fueling pump due to the low liquid level in the operating tank.

3.8.2 Fuel Delivery

Flow rates at loading station shall be measured against various pressure fueling nozzle backpressures. Each timed flow rate period shall be at least 1 minute. False backpressure shall be created by throttling a valve downstream of the nozzle. The valve may be located on a tank truck fueling line. The corresponding flow rates GPM shall be recorded at pressure fueling nozzle pressures of 20 psig, 25 psig and 35 psig. During the flow rate measurements, it shall be ensured that each temporary strainer has been removed, valves are fully open, pressure relief valves are not leaking, and the differential pressure drop across each filter separator is within an acceptable range.

3.8.3 Fueling Pump Operation

Operation of pressure and flow devices to start and stop the fueling pump at the indicated pressure and flow rates shall be demonstrated in the presence of the COR and FE and Government operating staff. The operating sequence shall be repeated at least one (1) time. For this test, the flow rates shall be measured and recorded.

3.8.4 Emergency Shutdown

With the fueling pump circulating fuel through the system, each emergency stop pushbutton station shall be tested to verify that the pump stops and the emergency shutoff valve closes at the pushbutton station. The above procedure shall be repeated three times. Tests for both the automatic and manual modes shall be conducted.

3.8.5 System Performance Tests

The acceptance tests shall be performed again and shall be considered the initial system performance test. The initial test shall be performed

following necessary system adjustments and calibrations to the various equipment and controls. The initial performance test shall also demonstrate the proper operation of each flushing mode. Following the initial performance test, a final performance test shall be performed which involves the demonstration of the fueling system during actual fueling unloading and loading operations through the use of refueling trucks. The use of refueling trucks shall be coordinated with the COR and FE prior to testing. In the event a portion of the system or any piece of equipment fails to meet the test, the Contractor shall make all the necessary repairs or adjustments and repeat the acceptance tests until satisfactory performance is obtained.

3.8.5.1 DEMONSTRATIONS

Contractor shall conduct a training course for the Government operating staff as designated by the Contracting Officer. The training period shall consist of a total of 4 hours of normal working time and shall start after the system is functionally completed, but prior to final system acceptance. The field instructions shall cover all of the items contained in the Operation and Maintenance Data, as well as demonstrations of routine maintenance operations.

3.9 FIELD PAINTING

After completion of field inspections and tests, clean and paint previously coated but damaged and any remaining uncoated carbon steel surfaces exposed to the weather, including valves, strainers, traps, fuel pumps, filter separators, air eliminators, piping flanges, bolts, nuts, washers, pipe hangers, supports, expansion joints, and miscellaneous metal. Do not paint stainless steel or aluminum surfaces. Prior to painting, clean surfaces to remove dust, dirt, rust, oil, and grease. Apply two coats of enamel paint to a total minimum dry film thickness of 2 mils. Apply the second coat of paint after the preceding coat is thoroughly dry. Color to match existing. Nameplates and identification or warning and safety labels shall not be painted.

-- End of Section --

SECTION 16050

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 GENERAL

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM D 709 (2001; R 2007) Laminated Thermosetting Materials

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2 (2007; Errata 2007) National Electrical Safety Code

IEEE Std 100 (2000) The Authoritative Dictionary of IEEE Standards Terms

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA 250 (2003) Enclosures for Electrical Equipment (1000 Volts Maximum)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2007) National Electrical Code - 2008 Edition

1.2 RELATED REQUIREMENTS

This section applies to certain sections of Division 15, MECHANICAL.

1.3 DEFINITIONS

- a. Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, shall be as defined in IEEE Std 100.
- b. The technical sections referred to herein are those specification sections that describe products, installation procedures, and equipment operations and that refer to this section for detailed description of submittal types.
- c. The technical paragraphs referred to herein are those paragraphs in PART 2 - PRODUCTS and PART 3 - EXECUTION of the technical sections that describe products, systems, installation procedures, equipment, and test methods.

1.4 ELECTRICAL CHARACTERISTICS

Electrical characteristics for this project shall be 60 Hz, 120/208 and 277/480 volts secondary, three phase, three wire. Final connections to the power distribution system at the existing shall be made by the .

1.5 ADDITIONAL SUBMITTALS INFORMATION

Submittals required in other sections that refer to this section must conform to the following additional requirements as applicable.

1.5.1 Shop Drawings (SD-02)

Include wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure a coordinated installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices.

1.5.2 Product Data (SD-03)

Submittal shall include performance and characteristic curves.

1.6 QUALITY ASSURANCE

1.6.1 Regulatory Requirements

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

1.6.2 Standard Products

Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in the technical section.

1.6.2.1 Alternative Qualifications

Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

1.6.2.2 Material and Equipment Manufacturing Date

Products manufactured more than 3 years prior to date of delivery to site shall not be used, unless specified otherwise.

1.7 WARRANTY

The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

1.8 POSTED OPERATING INSTRUCTIONS

Provide for each system and principal item of equipment as specified in the technical sections for use by operation and maintenance personnel. The operating instructions shall include the following:

- a. Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
- b. Start up, proper adjustment, operating, lubrication, and shutdown procedures.
- c. Safety precautions.
- d. The procedure in the event of equipment failure.
- e. Other items of instruction as recommended by the manufacturer of each system or item of equipment.

Print or engrave operating instructions and frame under glass or in approved laminated plastic. Post instructions where directed. For operating instructions exposed to the weather, provide weather-resistant materials or weatherproof enclosures. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

1.9 MANUFACTURER'S NAMEPLATE

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

1.10 FIELD FABRICATED NAMEPLATES

ASTM D 709. Provide laminated plastic nameplates for each equipment enclosure, relay, switch, and device; as specified in the technical sections or as indicated on the drawings. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125 inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be one by 2.5 inches. Lettering shall be a minimum of 0.25 inch high normal block style.

1.11 ELECTRICAL REQUIREMENTS

Electrical installations shall conform to IEEE C2, NFPA 70, and requirements specified herein.

1.12 INSTRUCTION TO GOVERNMENT PERSONNEL

Where specified in the technical sections, furnish the services of competent instructors to give full instruction to designated Government personnel in the adjustment, operation, and maintenance of the specified systems and equipment, including pertinent safety requirements as required. Instructors shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work. Instruction shall be given during the first regular work week after the equipment or system has been accepted and turned over to the Government for regular operation. The number of man-days (8 hours per day) of instruction furnished shall be as specified in the individual section.

PART 2 PRODUCTS

2.1 FACTORY APPLIED FINISH

Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA 250 corrosion-resistance test.

PART 3 EXECUTION

3.1 FIELD APPLIED PAINTING

Paint electrical equipment as required to match finish of adjacent surfaces or to meet the indicated or specified safety criteria.

3.2 FIELD FABRICATED NAMEPLATE MOUNTING

Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two sheet-metal screws or two rivets.

-- End of Section --