



WORK ORDER NO. N4008521F5519

CONSTRUCTION CONTRACT No.: N40085-21-D-0016

APPROPRIATION: MCON FY-21

**Design-Build RFP for the
REPLACE SHOP 940 PIPING AND VALVES / REPLACE 300 PSIG FUEL
FIRED HEAT EXCHANGER, FRC - E**

At the

BUILDING 137, MCAS, CHERRY POINT, NC

(XL93928)

PREPARED BY

Piping:	Jeff J. Douglas
Structural:	Daniel L. Lavarney, P.E
Mechanical:	Tom Lessard,
Electrical:	John Seay, P.E
Instrumentation:	Eric Suklowski,
QA /QC:	Thomas Anders
Environmental:	Chris Hahn, REM.; GET Solutions, Inc

SUBMITTED BY

Ram Surendren, AIA, LEED AP BD+C

MASON & HANGER
300 WEST VINE STREET, SUITE 1500
LEXINGTON, KY, 40507

APPROVED BY

For Commander, NAVFAC Mid-Atlantic:
Date: December 5th, 2022

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

PROJECT TABLE OF CONTENTS

PART ONE – BIDDING REQUIREMENTS

00 01 15 LIST OF DRAWINGS **02/11, CHG 1: 08/14**

PART TWO – GENERAL REQUIREMENTS

DIVISION – 01 GENERAL REQUIREMENTS

01 14 00 WORK RESTRICTIONS **11/11, CHG 14: 02/22**

01 20 00 PRICE AND PAYMENT PROCEDURES **11/20, CHG 2: 08/21**

01 30 00 ADMINISTRATIVE REQUIREMENTS **11/20, CHG 2: 05/22**

01 31 23.13 20 ELECTRONIC CONSTRUCTION AND FACILITY SUPPORT CONTRACT
MANAGEMENT SYSTEM **05/17, CHG 7: 11/21**

01 32 17.00 20 COST-LOADED NETWORK ANALYSIS SCHEDULES (NAS)
05/18, CHG 3: 08/20

01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES **05/14, CHG 4: 12/18**

01 33 10.05.20 DESIGN SUBMITTAL PROCEDURES **05/17, CHG 5: 03/19**

01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS **11/20, CHG 3: 02/22**

01 45 00.05 20 DESIGN AND CONSTRUCTION QUALITY CONTROL **06/15, CHG 6: 11/20**

01 50 00 TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS
11/20, CHG 1: 08/21

01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS **11/15, CHG 5: 08/21**

01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
02/19, CHG 3: 11/21

01 78 23 OPERATION AND MAINTENANCE DATA **08/15, CHG 2: 08/21**

01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT
INFORMATION (eOMSI) **02/15, CHG 3: 08/21**

01 91 00.15 20 TOTAL BUILDING COMMISSIONING **02/21, CHG 1: 5/21**

PART THREE – PROJECT PROGRAM

1. PROJECT DESCRIPTION

2. PROJECT OBJECTIVES

- 2.1. Mission Statement
- 2.2. Facility Function
- 2.3. Project Specific Priorities
- 2.4. Appropriate Design
- 2.5. Workflow Process

3. SITE ANALYSIS

- 3.1 Existing Site Conditions
- 3.2 Site Development Requirements

4. BUILDING REQUIREMENTS

- 4.1 Space Tabulation
- 4.2 Space Relationships
- 4.3 Exterior Character.

5. ROOM REQUIREMENTS

6. ENGINEERING SYSTEMS REQUIREMENTS

- A10 Foundations
- D20 Piping
- D50 Electrical Power and Lighting
- E10 Equipment

PART FOUR – PERFORMANCE TECHNICAL SPECIFICATION (PTSs)

- A10 Foundations
- D50 Electrical
- Z10 General Performance Technical Specifications

PART FIVE – PRESCRIPTIVE TECHNICAL SPECIFICATIONS

- NOT APPLICABLE

PART SIX - ATTACHMENTS

- Appendix 1 – Marked Up Piping Drawings
- Appendix 2 – Reference Specifications - Test Cell Piping B137 sections 15212 to 15216
- Appendix 3 – Replace Piping-Shop 940 HazMat Report

- Appendix 4 – Performance Appendix Form (PAP)
- Appendix 5 – Permits Records of Decision (PROD) Form
- Appendix 6a – BVD under 150k
- Appendix 6b – BVD over 150K
- Appendix 7 - Performance-Rating-Method-Compliance-Form-2013

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

INTRODUCTION

1. Package Objective:

The renovation project will involve building 137 that houses a military aircraft pneumatic component test system in Shop 940. Piping and valves are distributed throughout Shop 940 supporting the test system. The test system comprises six (6) subsystems. One subsystem is the High- Pressure (300 psig) Fuel Fired Heat Exchanger (FFHE). The fuel fired heat exchanger is located outside of Hangar 3 of Building 137. This project's scope of work includes: Replace all 940 shop piping including valves before and after the specific listed pneumatic test cells. Replace existing (300 psig) network heat exchanger (NHE) with a (new 300 psig) fuel fired heat exchanger and all associated accessories as an option.

2. Components:

Components of this Request for Proposal (RFP) Package: This RFP contains one project and one work site, and an additional project to be exercised as an option.

- Building 137, Shop 940 - houses a military aircraft pneumatic component test system in Shop 940. Piping and valves are distributed throughout Shop 940 supporting the test system. The test system comprises of six (6) subsystems. One subsystem is the High-Pressure (300 psig) Fuel Fired Heat Exchanger (FFHE). The FFHE is located outside of Hangar 3 of Building 137.

3. This RFP has (5) Parts:

- Part 1: Proposal forms and Documents: Information on how bidders will organize and present their responses to the RFP.
- Part 2: General Requirements: NAVFAC/USMC/Cherry point information on the administration of the design and construction process.
- Part 3: Project Program: A detailed description of what the bidder is to design and build.
- Part 4: Performance Technical Specifications: Detailed description of performance characteristics as well as how the project is to be designed and built.
- Part 5: Not Used.
- Part 6: Attachments: Design and construction support information such as Mark ups, geotechnical reports, as-built information, HAZMAT report and much more.

Note: The drawings and specifications provided by the government are for reference only. The information provided is not accurate as to the existing conditions and all items needs to be field verified.

4. Responding to this RFP:

Information in Parts 1, 2, 3, 4, and 6 comprise a single Request for Proposal. Bidders shall respond with one bid.

PART ONE – BIDDING REQUIREMENTS

PROJECT TABLE OF CONTENTS

00 01 15 **LIST OF DRAWINGS 02/11, CHG 1: 08/14**

DOCUMENT 00 01 15

LIST OF DRAWINGS
02/11, CHG 1: 08/14

PART 1 GENERAL

1.1 SUMMARY

This section lists the drawings for the project pursuant to contract clause "DFARS 252.236-7001, Contract Drawings, Maps and Specifications."

1.2 SUPPLEMENTARY DRAWINGS

1.2.1 Reference Drawings

The attached reference drawings in appendix are intended only for reference. All existing conditions and extent of piping, instrumentation and valves to be replaced shall be field verified by the contractor. Drawings are the property of the Government and shall not be used for any purpose other than that intended by the contract. The drawings are full size, and are furnished within the attachments to this RFP in electronic (PDF) format.

1.2.2 Boring Logs

The Government does not guarantee that borings indicate actual conditions, except for the exact locations and the time that they were made. The data are available for examination by prospective bidders in the office of the Contracting Officer at the station.

1.2.3 Subsurface Data

Subsurface data, not specified or indicated, have been obtained by the Government at the station. The data are available for examination by prospective bidders in the office of the Contracting Officer.

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 NOT USED

-- End of Document --

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

PART TWO – GENERAL REQUIREMENTS

Project Table of Contents

DIVISION – 01 GENERAL REQUIREMENTS

01 14 00	WORK RESTRICTIONS 11/11, CHG 14: 02/22
01 20 00	PRICE AND PAYMENT PROCEDURES 11/20, CHG 2: 08/21
01 30 00	ADMINISTRATIVE REQUIREMENTS 11/20, CHG 2: 05/22
01 31 23.13 20	ELECTRONIC CONSTRUCTION AND FACILITY SUPPORT CONTRACT MANAGEMENT SYSTEM 05/17, CHG 7: 11/21
01 32 17.00 20	COST-LOADED NETWORK ANALYSIS SCHEDULES (NAS) 05/18, CHG 3: 08/20
01 33 00.05 20	CONSTRUCTION SUBMITTAL PROCEDURES 05/14, CHG 4: 12/18
01 33 10.05.20	DESIGN SUBMITTAL PROCEDURES 05/17, CHG 5: 03/19
01 35 26	GOVERNMENTAL SAFETY REQUIREMENTS 11/20, CHG 3: 02/22
01 45 00.05 20	DESIGN AND CONSTRUCTION QUALITY CONTROL 06/15, CHG 6: 11/20
01 50 00	TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS 11/20, CHG 1: 08/21
01 57 19	TEMPORARY ENVIRONMENTAL CONTROLS 11/15, CHG 5: 08/21
01 74 19	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL 02/19, CHG 3: 11/21
01 78 23	OPERATION AND MAINTENANCE DATA 08/15, CHG 2: 08/21
01 78 24.00 20	FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI) 02/15, CHG 3: 08/21
01 91 00.15 20	TOTAL BUILDING COMMISSIONING 02/21, CHG 1: 05/21

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

SECTION 01 14 00

WORK RESTRICTIONS
11/11, CHG 14: 02/22

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for all submittals. Submit the following in accordance with Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES and Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

List of Contact Personnel

1.2 SPECIAL SCHEDULING REQUIREMENTS

- a. Contractor must be ready for operation as approved by Contracting Officer before work is started on Marine Corps Air Station Cherry Point Building 137, Cherry Point, NC which would interfere with normal operation.
- b. Have materials, equipment, and personnel required to perform the work at the site prior to the commencement of the work. Specific items of work to which this requirement applies include:
 - (1) Piping, valves, fittings, etc.
 - (2) New 300 PSIG network heat exchanger (NHE) and all associated accessories.
- c. The building will remain in operation during the entire construction period. The Contractor must conduct his operations so as to cause the least possible interference with normal operations of the activity.
- d. Permission to interrupt any active roads, railroads, or utility service must be requested in writing a minimum of 15 calendar days prior to the desired date of interruption.
- e. The work under this contract requires special attention to the scheduling and conduct of the work in connection with existing operations. Due to the criticality of this project, the Contractor is required to provide a detailed plan for each portion of work. This will include a very detailed "critical path" schedule showing phasing. The Contractor will go through the entire phasing in the work area, item by item with the COTR to demonstrate his understanding of the systems and the work to be completed with minimal disruption to operations. Identify on the construction schedule each factor which constitutes a potential interruption to operations.

1.3 CONTRACTOR ACCESS AND USE OF PREMISES

1.3.1 Activity Regulations

Ensure that Contractor personnel employed on the Activity become familiar with and obey Activity regulations including safety, fire, traffic and

security regulations. Keep within the limits of the work and avenues of ingress and egress. Wear appropriate personal protective equipment (PPE) in designated areas. Do not enter any restricted areas unless required to do so and until cleared for such entry. Ensure all Contractor equipment, include delivery vehicles, are clearly identified with their company name.

1.3.1.1 Subcontractors and Personnel Contacts

Provide a list of contact personnel of the Contractor and subcontractors including addresses and telephone numbers for use in the event of an emergency. As changes occur and additional information becomes available, correct and change the information contained in previous lists.

1.3.1.2 Installation Access

Obtain access to Navy installations through participation in the Defense Biometrics Identification System (DBIDS). Requirements for Contractor employee registration, and transition for employees currently under Navy Commercial Access Control System (NCACS), are available at <https://www.cnlic.navy.mil/om/dbids.html>. No fees are associated with obtaining a DBIDS credential.

Participation in the DBIDS is not mandatory, and Contractor personnel may apply for One-Day Passes at the Base Visitor Control Office to access an installation.

1.3.1.2.1 Registration for DBIDS

Registration for DBIDS is available at <https://www.cnlic.navy.mil/om/dbids.html>. Procedure includes:

- a. Present a letter or official award document (i.e. DD Form 1155 or SF 1442) from the Contracting Officer, that provides the purpose for access, to the base Visitor Control Center representative.
- b. Present valid identification, such as a passport or Real ID Act-compliant state driver's license.
- c. Provide completed SECNAV FORM 5512/1 to the base Visitor Control Center representative to obtain a background check. This form is available for download at <https://www.cnlic.navy.mil/om/dbids.html>.
- d. Upon successful completion of the background check, the Government will complete the DBIDS enrollment process, which includes Contractor employee photo, fingerprints, base restriction and several other assessments.
- e. Upon successful completion of the enrollment process, the Contractor employee will be issued a DBIDS credential, and will be allowed to proceed to worksite.

1.3.1.2.2 DBIDS Eligibility Requirements

Throughout the length of the contract, the Contractor employee must continue to meet background screen standards. Periodic background screenings are conducted to verify continued DBIDS participation and installation access privileges. DBIDS access privileges will be immediately suspended or revoked if at any time a Contractor employee becomes ineligible.

An adjudication process may be initiated when a background screen failure results in disqualification from participation in the DBIDS, and Contractor employee does not agree with the reason for disqualification. The Government is the final authority.

1.3.1.2.3 DBIDS Notification Requirements

- a. Immediately report instances of lost or stolen badges to the Contracting Officer.
- b. Immediately collect DBIDS credentials and notify the Contracting Officer in writing under the following circumstances:
 - (1) An employee has departed the company without having properly returned or surrendered their DBIDS credentials.
 - (2) There is a reasonable basis to conclude that an employee, or former employee, might pose a risk, compromise, or threat to the safety or security of the Installation or anyone therein.

1.3.1.2.4 One-Day Passes

Personnel applying for One-Day passes at the Base Visitor Control Office are subject to daily mandatory vehicle inspection, and will have limited access to the installation. The Government is not responsible for any cost or lost time associated with obtaining daily passes or added vehicle inspections incurred by non-participants in the DBIDS.

1.3.1.3 No Smoking Policy

Smoking is prohibited within and outside of all buildings on installation, except in designated smoking areas. This applies to existing buildings, buildings under construction and buildings under renovation. Discarding tobacco materials other than into designated tobacco receptacles is considered littering and is subject to fines. The Contracting Officer will identify designated smoking areas.

1.3.2 Working Hours

Regular working hours will consist of an 8 1/2 hour period, between 7 a.m. and 3:30 p.m., Monday through Friday, excluding Government holidays.

1.3.3 Work Outside Regular Hours

Work outside regular working hours requires Contracting Officer approval. Make application 15 calendar days prior to such work to allow arrangements to be made by the Government for inspecting the work in progress, giving the specific dates, hours, location, type of work to be performed, contract number and project title. Based on the justification provided, the Contracting Officer may approve work outside regular hours. During periods of darkness, the different parts of the work must be lighted in a manner approved by the Contracting Officer. Make utility cutovers after normal working hours or on Saturdays, Sundays, and Government holidays unless directed otherwise.

1.3.4 Occupied Building

The Contractor shall be working in and around an existing building which is

occupied. Do not enter the buildings without prior approval of the Contracting Officer.

The existing buildings and their contents must be kept secure at all times. Provide temporary closures as required to maintain security as directed by the Contracting Officer.

Provide dust covers or protective enclosures to protect existing work that remains, and Government material located in the building during the construction period.

Leave attached equipment in place, and protect it against damage, or temporarily disconnect, relocate, protect, and reinstall it at the completion of the work.

1.3.5 Utility Cutovers and Interruptions

- a. Make utility cutovers and interruptions after normal working hours or on Saturdays, Sundays, and Government holidays. Conform to procedures required in paragraph WORK OUTSIDE REGULAR HOURS.
- b. Ensure that new utility lines are complete, except for the connection, before interrupting existing service.
- c. Interruption to water, sanitary sewer, storm sewer, telephone service, electric service, air conditioning, heating, fire alarm, compressed air, and steam are considered utility cutovers pursuant to the paragraph WORK OUTSIDE REGULAR HOURS.
- d. Operation of Station Utilities: The Contractor must not operate nor disturb the setting of control devices in the station utilities system, including water, sewer, electrical, and steam services. The Government will operate the control devices as required for normal conduct of the work. The Contractor must notify the Contracting Officer giving reasonable advance notice when such operation is required.

1.4 SECURITY REQUIREMENTS

1.4.1 Station Regulations

No employee or representative of the contractor will be admitted to the work site without an Identification Badge or is specifically authorized admittance to the work site by the FEAD, Facilities Engineering & Acquisition Division.

IMPORTANT NOTE: FEAD personnel (Construction Managers, Engineers/Architects, Engineering Technicians, Contract Specialists, or Contract Surveillance Representatives) will not receive, process, re-transmit, or otherwise handle IN ANY WAY Personally Identifiable Information (PII) related to the badging process. Do NOT forward any of this information to the FEAD.

1.4.2 Contractor Access to MCAS Cherry Point and Outlying Areas

1. Documentation requirements for granting access to MCAS Cherry Point for commercial and contract employers and employees. This document is an aid in meeting ASO 5560.6A requirements and is not a substitute for the order.

2. The Pass & Identification Office at Building 251 will issue credentials to authorized contractors. Sub-Contractors and suppliers must coordinate through the Prime-Contractor:

3. Criminal Activity. In accordance with ASO 5560.6A, the below list of criminal activities within an applicant's record are considered not in the best interest of the Marine Corps and will be grounds for automatic denial of access aboard the Installation:

- a. Conviction of any felony offense.
- b. Conviction of any misdemeanor offense, which was the result of a plea bargain of a felony offense.
- c. Conviction of any offense involving a weapon.
- d. Conviction of any drug offense involving manufacturing or trafficking.
- e. More than one misdemeanor conviction of drug related offenses over the applicant's lifetime or one misdemeanor drug related offense within the last five years.
- f. Conviction of any assault charge.
- g. Conviction of any offense involving theft or larceny.
- h. Conviction of any offense of domestic violence.
- i. Conviction of any offense related to the abuse/neglect of a child.
- j. Conviction of any sexual in nature related offense or registration as a sex offender.
- k. Commission of any grievous criminal offense/misconduct while aboard any Federal installation, including blatant disregard for rules and regulations of the Installation, but excluding minor traffic offenses.
- l. Other than Honorable, Bad Conduct, and Dishonorable discharges from the U.S. Military.
- m. Those identified as undocumented citizens.
- n. Those on the National Terrorist Watch List.
- o. Any individual who attempts to hide or purposely fails to disclose all past criminal history during the vetting process.
- p. Any individual that the Provost Marshal's Office determines to present a risk to the security and safety of the Installation and whose access is deemed not in the best interest of the Marine Corps.
- q. Any individual who has been debarred from the Installation by the Installation Commander or is currently listed as debarred from any other Federal installation.

r. Any individual with an outstanding warrant for their arrest or apprehension.

s. Any individual with a pending criminal court case that, if convicted, would result in access denial in accordance with the criteria listed above.

1.4.3 FLEET READINESS CENTER, EAST (FRC EAST) REQUIREMENTS

Work involved under this contract is in the FRC East Maintenance Depot and Flightline Area. No employee or representative of the Contractor will be admitted to the work site unless they (1) are specifically authorized admittance by the FEAD, and (2) has a security badge. The Contractor shall obtain clearance and FRC East security badges for all personnel required to be on the project site prior to performing any work. The Contractor shall submit a written request for security badges to the FEAD and to FRC East Security. Each employee will be required to go to Trailer 32 to obtain his security badge with FRC East access. A limited number of Contractor vehicles will be allowed access to the site of work subject to meeting regular access requirements. No personal vehicles will be allowed behind the security fence. Parking of vehicles shall be restricted to the immediate project site as determined by the FRC East Security. The security badges issued under this contract are valid for this specific project and are not transferable to another project.

FRC East is registered to the ISO 9001, AS 9110, ISO 14001, and OSHAS 18001 standards. In addition to these, registration under the Occupational Safety and Health Administration's Voluntary Protection Program is in progress. To adhere to the standards required of these programs, FRC East must ensure that all individuals accessing the facility are aware of the conditions and factors that affect the well-being of all employees, temporary workers, contractor personnel, visitors, and any other person in the workplace.

The following are requirements for granting access to Fleet Readiness Center East (FRC East) for commercial and contract employers and employees.

a. The Contractor shall complete a "Contractor Work Notice- Form FRC-East 5000/10" and provide the Notice to the appropriate shop supervisor for signature and leave the top part of the Notice with the shop supervisor to post in a prominent location in the work area. The Contractor shall keep the bottom portion of the "Contractor Work Notice" for his records and provide a copy to the Contracting Officer. For projects occurring on facility roofs (roofing repair, HVAC replacement, or similar work), the Contractor shall complete a "Contractor Work Notice" form and provide the Notice to the shop directly under the area being worked, even if no direct impact to the shop is anticipated. A blank copy of this form is included at the end of this section.

b. In the event of an emergency, including hazardous material spills, the individual discovering the emergency shall call 911 from any FRC East phone. Relay the grid number listed on the phone for location assistance. If you are calling from a cell phone, call 252-466-3616 - Fire Department Dispatch.

c. Badges will be displayed at all times and shall be returned upon completion of visit/work. Every badge is considered

Government Property and all lost badges will be reported to the FRC East Badge and Decal Office located in Trailer 32.

d. The facility must be kept clean and orderly at all times. Ensure that you place all waste in proper receptacles so that the facility is maintained in a "Clean as you go" condition.

e. When in the FRC East industrial areas, wear the personal protective equipment (PPE) required for that area. PPE requirements are generally marked but if there is uncertainty, check with the area supervisor. Typically, safety glasses with side shields and steel toed shoes are required in most shops.

f. Smoking is NOT authorized while traveling from one facility location to another while walking or in a vehicle being operated anywhere within the FRC East compound. ABSOLUTELY NO SMOKING on the property except in Designated Smoking Areas.

g. Extra caution shall be taken around the flight line and aircraft turn-up areas to control trash, debris, and materials. Additionally, all personnel on the flight line must be continuously alert and stay clear of helicopter and jet operations in progress.

h. Vehicles must not obstruct aircraft movement or other daily operations.

i. If an emergency situation occurs which would endanger the health or safety of personnel, the area shall be evacuated. Re-entry to affected buildings will be at the discretion of uniformed guards, fire department, or safety office personnel only.

j. Decisions to evacuate will be from the FRC East Commanding Officer or his/her representative. Visitors/contractors, along with non-essential facility personnel, south of Harrison Drive, adjacent to Building 4224, will evacuate the facility first. Fifteen minutes later, the visitors/contractors south of Curtis Road, between Buildings 83 & 84, will evacuate the facility. Fifteen minutes later the visitors/contractors north of Curtis Road will evacuate the facility.

k. Cellular phones and photographic equipment are not authorized within FRC East unless they are approved in advance by the Security Office (252-464-7999). Cellular phones may be used on roof areas for emergency purposes only.

l. All vehicles must have proper passes, and no pass may be transferred between vehicles.

m. All vehicles will follow posted speed limits, which are: "Do not exceed 5 MPH on the outside of buildings, nor 3 MPH inside of any building".

n. Vehicle headlights must be on at all times within the facility.

o. All vehicles are required to slow down, sound horn, and proceed with caution at all cross aisles and other locations where vision is obstructed.

p. Personnel are strictly forbidden to introduce any substance into the storm drain system including catch basins, roof drains, and floor drains.

q. All facility entrants are responsible for all materials they bring into the facility and shall handle them in such a manner to ensure they are not left as "foreign objects" anywhere in the facility.

r. In case of a utility emergency on weekends or after normal work hours, call the Public Works Department trouble call desk at 252-466-4363.

s. The use of gasoline is prohibited for any purpose other than fueling motor vehicles. All gasoline-powered vehicles are prohibited inside FRC East buildings.

1.4.4 Mandatory Contract Performance Requirements for FRC East

a. All personnel working on site at FRC East under this contract must document their receipt and review of the information listed in FRCEASTINST 5000.1A, enclosure (1), annually. The Security Department will provide a means of completing initial review prior to FRC East entrance.

b. Foreign object (FO) is defined as any article or substance alien to the aircraft or assembly which is allowed to invade the product. Foreign Object Damage (FOD) is the damage that occurs due to these FOs. All FRC East work sites will be maintained in such a manner as to prevent FOD to aircraft and/or aircraft components. Work sites shall be kept clean at all times. All debris, scrap material, tools, and equipment will be cleared from the work site as work progresses. At no time will hoses, power cords, materials, etc. be permitted to create tripping hazards in areas of the work site.

c. In those cases where a contractor supervisor determines that solving a safety or health problem is beyond their control, but within the control of FRC East, the contractor shall notify the Contracting Officer.

d. All contractor employees performing work on site at FRC East shall immediately report any safety, security, or environmental violation to the Contracting Officer, who will notify the cognizant FRC East Safety/Security/Environmental Office. The initial FRC East notification can be made via phone or e-mail and should include as many applicable details as possible (date, time, identification numbers, tags, company, etc.). This initial notification will be made as soon as possible. A safety incident will require the contractor to complete and submit an incident memo to the Contracting Officer, who will forward a copy to the FRC Safety Office within 24 hours of the accident/incident. This incident memo will include the full name of the person involved in the incident, their age, sex, job title, the name of the employing company, and the contract number/title. In addition, this memo will include the severity of the illness or injury, indirect cause(s) of the accident, and whether personal protective equipment was available and used.

e. All contractors and sub-contractors working within FRC East must develop and operate effective safety and health programs.

1.4.4.1 Additional Contract Performance Requirements for FRC East

a. Work above or anywhere near aircraft or passageways shall be avoided whenever possible. If this is not possible, the cognizant shop supervisor will be informed so arrangements can be made to protect, move, or evacuate assets from the area to minimize foreign object debris potential. The area below the elevated work area will be adequately marked and barricaded at all times. Under no circumstances will work be performed over unprotected spaces.

b. Constant control of tools and materials is required at all times in the following critical areas: Shop 94304 (Rotor Head Shop); Shop 94601 (Ordinance/Survival Shop); Shop 93117 (Aircraft Paint Shop); Shop 93111 (Aircraft Clean Shop); Shop 96552, 96555, and 96556 (Aircraft Engine Shops); all shops in Building 4225 (Blade Vane); and all Shop 95000 Aircraft Hangars.

c. Buildings 131, 137, 188, 245, 4224, and 4247 are classified as hazardous areas and have special requirements. Do not utilize any ignitable items powered by electric motors or internal combustion engines unless they are determined to be suitable to the conditions of the buildings.

d. The recharging of mobile equipment shall not take place inside any FRC-East building.

e. Tools and hardware will be controlled at all times to prevent migration out of the work site. Lost tools shall be reported to the Contracting Officer who will then notify the FRC East Tool Control Manager at 252-464-9741. Tools found unattended will be confiscated and reported to the Contracting Officer.

f. Personnel working on the flight line must be continuously alert, and stay clear of helicopter and jet operations in progress.

g. Work requiring any modification to an air pollution control device must be approved in advance by the Contracting Officer, who will obtain approval from the FRC East Air Quality Program Manager. These devices are marked with a 5" x 9" red placard and a contact number, 252-464-7264.

h. Work accomplished that will impact industrial ventilation systems or fans will require prior notification of the Contracting Officer, who will then notify the FRC East Air Quality Program Manager at 252-464-7264. These systems are continuously monitored.

1.4.5 Staging Area

Contractor to coordinate with government for contractor staging area location. Amount of material on site shall be kept to a minimum and shall only be material that is pertinent to the work currently being performed. All stockpiling of equipment and materials shall be closely coordinated with the Government and shall not disrupt activities at the site.

Replace Shop 940 P&Vs / Replace 300 PSIG FFHE, FRC-E
Building 137, MCAS, Cherry Point, NC

N40085-21-D-0016

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 20 00

PRICE AND PAYMENT PROCEDURES

11/20, CHG 2: 08/21

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.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EP 1110-1-8 (2016) Construction Equipment Ownership
and Operating Expense Schedule

1.2 SUBMITTALS

Government approval is required for all submittals.

SD-01 Preconstruction Submittals

Schedule of Prices

1.3 SCHEDULE OF PRICES

1.3.1 Data Required

Within 15 calendar days of notice of award, prepare and deliver to the Contracting Officer a Schedule of Prices (construction Contract) as directed by the Contracting Officer. Schedule of Prices must have cost summarized and totals provided for each construction category. Provide a detailed breakdown of the Contract price, giving quantities for each of the various kinds of work, unit prices, and extended prices. Contractor overhead and profit including salaries for field office personnel, if applicable, must be proportionately spread over all pay items and not included as individual pay items.

1.3.2 Payment Schedule Instructions

Payments will not be made until the Schedule of Prices has been submitted to and accepted by the Contracting Officer. For design phase progress payment(s), the Schedule of Prices must include detailed design activities and general (summarized) approach for the construction phase(s) of the project. The Schedule of Prices must be fully developed with detailed construction line items as design progresses. The complete design and construction Schedule of Prices must be submitted and accepted prior to starting construction work.

For Fast-Tracked or Critical Path Submittals of construction projects, the Schedule of Prices must include detailed design and construction line items for each fast-tracked/critical path phase(s), submitted to and accepted by the Contracting Officer during the Post Award Kickoff Meetings and confirmed prior to starting construction work in that phase. Additionally, the Schedule of Prices must be separated as follows:

a. Primary Facilities Cost Breakdown:

Defined as work on the primary facilities out to the 5 foot line. Work out to the 5 foot line includes construction encompassed within a theoretical line 5 foot from the face of exterior walls and includes attendant construction, such as pad mounted HVAC cooling equipment, cooling towers, and transformers placed beyond the 5 foot line.

b. Supporting Facilities Cost Breakdown:

Defined as site work, including incidental work, outside the 5 foot line.

1.4 CONTRACT MODIFICATIONS

In conjunction with the Contract Clause DFARS 252.236-7000 Modification Proposals-Price Breakdown, and where actual ownership and operating costs of construction equipment cannot be determined from Contractor accounting records, base equipment use rates upon the applicable provisions of the EP 1110-1-8.

1.5 CONTRACTOR'S INVOICE AND CONTRACT PERFORMANCE STATEMENT

1.5.1 Content of Invoice

Requests for payment will be processed in accordance with the Contract Clause FAR 52.232-27 Prompt Payment for Construction Contracts and FAR 52.232-5 Payments Under Fixed-Price Construction Contracts. Invoices not completed in accordance with contract requirements will be returned to the Contractor for correction of the deficiencies. The requests for payment shall include the documents listed below.

- a. The Contractor's invoice, on NAVFAC Form 7300/30 furnished by the Government, showing in summary form, the basis for arriving at the amount of the invoice. Form 7300/30 must include certification by Quality Control (QC) Manager as required by the Contract.
- b. The Estimate for Voucher/Contract Performance Statement on NAVFAC Form 4330/54 furnished by the Government. Use NAVFAC Form 4330, unless otherwise directed by the Contracting Officer, on NAVFAC Contracts when a Monthly Estimate for Voucher is required.
- c. Contractor's Monthly Estimate for Voucher and Contractors Certification (NAVFAC Form 4330) with Subcontractor and supplier payment certification. Other documents, including but not limited to, that need to be received prior to processing payment include the following submittals as required. These items are still required monthly even when a pay voucher is not submitted.
- d. Monthly Work-hour report.
- e. Updated Construction Progress Schedule and tabular reports required by the contract.
- f. Contractor Safety Self Evaluation Checklist.
- g. Updated submittal register.
- h. Solid Waste Disposal Report.

- i. Certified payrolls.
- j. Updated testing logs.
- k. Other supporting documents as requested.

1.5.2 Submission of Invoices

Monthly invoices and supporting forms for work performed through the anniversary award date of the Contract must be submitted to the Contracting Officer within 5 calendar days of the date of invoice. For example, if Contract award date is the 7th of the month, the date of each monthly invoice must be the 7th and the invoice must be submitted by the 12th of the month.

1.6 PAYMENTS TO THE CONTRACTOR

Payments will be made on submission of itemized requests by the Contractor which comply with the requirements of this section, and will be subject to reduction for overpayments or increase for underpayments made on previous payments to the Contractor.

1.6.1 Obligation of Government Payments

The obligation of the Government to make payments required under the provisions of this Contract will, at the discretion of the Contracting Officer, be subject to reductions and suspensions permitted under the FAR and agency regulations including the following in accordance with FAR FAR 32.103 Progress Payments Under Construction Contracts:

- a. Reasonable deductions due to defects in material or workmanship;
- b. Claims which the Government may have against the Contractor under or in connection with this Contract;
- c. Unless otherwise adjusted, repayment to the Government upon demand for overpayments made to the Contractor; and
- d. Failure to maintain accurate "as-built" or record drawings in accordance with FAR 52.236.21.

1.6.2 Payment for Onsite and Offsite Materials

Progress payments may be made to the Contractor for materials delivered on the site, for materials stored off construction sites, or materials that are in transit to the construction sites under the following conditions:

- a. FAR 52.232-5(b) Payments Under Fixed Price Construction Contracts.
- b. Materials delivered on the site but not installed, including completed preparatory work, and off-site materials to be considered for progress payment must be major high cost, long lead, special order, or specialty items, not susceptible to deterioration or physical damage in storage or in transit to the construction site. Examples of materials acceptable for payment consideration include, but are not limited to, structural steel, non-magnetic steel, non-magnetic aggregate, equipment, machinery, large pipe and fittings, precast/prestressed concrete products, plastic lumber (e.g., fender

piles/curbs), and high-voltage electrical cable. Materials not acceptable for payment include consumable materials such as nails, fasteners, conduits, gypsum board, glass, insulation, and wall coverings.

- c. Materials to be considered for progress payment prior to installation must be specifically and separately identified in the Contractor's estimates of work submitted for the Contracting Officer's approval in accordance with Schedule of Prices requirement of this Contract. Requests for progress payment consideration for such items must be supported by documents establishing their value and that the title requirements of the clause at FAR 52.232-5 Payments Under Fixed-Price Construction Contracts have been met.
- d. Materials are adequately insured and protected from theft and exposure.
- e. Provide a written consent from the surety company with each payment request for offsite materials.
- f. Materials to be considered for progress payments prior to installation must be stored either in Hawaii, Guam, Puerto Rico, or the Continental United States. Other locations are subject to written approval by the Contracting Officer.
- g. Materials in transit to the job site or storage site are not acceptable for payment.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

11/20, CHG 2: 05/22

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.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2014) Safety -- Safety and Health
Requirements Manual

1.2 SUBMITTALS

Government approval is required for all submittals.

SD-01 Preconstruction Submittals

View Location Map

Progress and Completion Pictures

Design Submittal Packaging

Performance Assessment Plan (PAP)

1.3 VIEW LOCATION MAP

Submit, prior to or with the first digital photograph submittals, a sketch or drawing indicating the required photographic locations. Update as required if the locations are moved.

1.4 PROGRESS AND COMPLETION PICTURES

Photographically document site conditions prior to start of construction operations. Provide monthly, and within one month of the completion of work, digital photographs, 1600x1200x24 bit true color minimum resolution in JPEG file format showing the sequence and progress of work. Take a minimum of 20 digital photographs each week throughout the entire project from a minimum of ten different viewpoints selected by the Contractor unless otherwise directed by the Contracting Officer. Submit with the monthly invoice two sets of digital photographs, each set on a separate compact disc (CD) or data versatile disc (DVD), cumulative of all photos to date. Indicate photographs demonstrating environmental procedures. Provide photographs for each month in a separate monthly directory and name each file to indicate its location on the view location sketch. Also provide the view location sketch on the CD or DVD as a digital file. Include a date designator in file names. Photographs provided are for unrestricted use by the Government.

1.5 MINIMUM INSURANCE REQUIREMENTS

Provide the minimum insurance coverage required by FAR 28.307-2 Liability, during the entire period of performance under this contract. Provide other insurance coverage as required by North Carolina law.

1.6 SUPERVISION

1.6.1 Superintendent Qualifications

Provide project superintendent with a minimum of 5 years experience in construction with at least 2 of those years as a superintendent on projects similar in size and complexity. The individual must be familiar with the requirements of EM 385-1-1 and have experience in the areas of hazard identification and safety compliance. The individual must be capable of interpreting a critical path schedule and construction drawings. The qualification requirements for the alternate superintendent are the same as for the project superintendent. The Contracting Officer may request proof of the superintendent's qualifications at any point in the project if the performance of the superintendent is in question.

1.6.2 Minimum Communication Requirements

Have at least one qualified superintendent, or competent alternate, capable of reading, writing, and conversing fluently in the English language, on the job-site at all times during the performance of Contract work. In addition, if a Quality Control (QC) representative is required on the Contract, then that individual must also have fluent English communication skills.

1.6.3 Duties

The project superintendent is primarily responsible for managing subcontractors and coordinating day-to-day production and schedule adherence on the project. The superintendent is required to attend Red Zone meetings, partnering meetings, and quality control meetings. The superintendent or qualified alternative must be on-site at all times during the performance of this contract until the work is completed and accepted.

1.6.4 Non-Compliance Actions

The Project Superintendent is subject to removal by the Contracting Officer for non-compliance with requirements specified in the contract and for failure to manage the project to ensure timely completion. Furthermore, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders is acceptable as the subject of claim for extension of time for excess costs or damages by the Contractor.

1.7 PRECONSTRUCTION MEETING CONFERENCE

Upon completion of design and design acceptance by the government, prior to commencing any work at the site, coordinate with the Contracting Officer a time and place to meet for the Preconstruction Meeting. The meeting conference must take place within 35 calendar days after award of the contract, but prior to commencement of any work at the site. The purpose of this meeting conference is to discuss and develop a mutual

understanding of the administrative requirements of the Contract including but not limited to: daily reporting, invoicing, value engineering, safety, base-access, outage requests, hot work permits, schedule requirements, quality control, schedule of prices or earned value report, shop drawings, submittals, cybersecurity, prosecution of the work, government acceptance, final inspections and contract close-out. Contractor must present and discuss their basic approach to scheduling the construction work and any required phasing.

1.7.1 Attendees

Contractor attendees must include the Project Manager, Superintendent, Site Safety and Health Officer (SSHO), Quality Control Manager and major subcontractors.

1.8 POST AWARD KICKOFF (PAK) MEETING

Immediately after award, coordinate with the Contracting Officer a time and place for the PAK Meeting. The PAK meeting must be held within 35 calendar days after contract award and prior to commencing work. If mutually agreed upon by the Contractor and the Government, the PAK Meeting may be held concurrently with the Design Presentation/Design Development Meeting or Concept Design Workshop (CDW) whichever is required.

1.8.1 PAK Meeting Outcomes

- a. Integrate the Contractor and all client representatives into the project team.
- b. Achieve consensus from the project team on any issues and concerns with the Contractor's technical proposal and the User's functional requirements. Confirm the design is within the project budget.
- c. Review the administrative requirements of the contract that are critical during the design phase.
- d. Establish clear lines of communication and points of contact for Government and Contractor team members.
- e. Obtain an acceptable conceptual design including floor and site plans, signed by the client, Contractor and other key team members.
- f. Review the project design schedule and design package requirement, design submittal packaging, and preliminary construction schedule in accordance with Section . Discuss design milestones and events that will be included in the Quality Control Communication Plan.
- g. Establish clear expectations and schedules for facility turnover, providing DD Form 1354 asset management records, eOMSI submittals, Guiding Principle Validation, Third Party Certification (if applicable), and training of Government maintenance personnel.
- h. Establish procedure for design packages reviews, Contractor's resolution to comments, and Government's role in review of packages.
- i. Establish clear expectations for Design Model presentations for projects implementing Building Information Management/Modeling (BIM).

1.8.2 PAK Meeting Contractor Attendees

The following Contractor personnel must attend the PAK meeting; Project Manager, Project Scheduler, Lead Designer-of-Record (DOR), Design Staff responsible for each architectural/engineering discipline when facility design is discussed, Superintendent, QC Manager, and the Commissioning Authority (CA). Optional attendees include: Principal, Assistant Project Manager, major subcontractors and specialized supplemental QC personnel.

1.9 DESIGN PRESENTATION/DEVELOPMENT (DP/D)

The Contractor must lead discussions to develop an understanding of the facility design that the accepted technical proposal represents with the Government users and maintainers of the facility. Develop site plans, floor plans, exterior finish materials, and building elevations to conduct working sessions with the Government meeting attendees. The purpose of the DP/D Meeting is to confirm the appropriateness of the facility design and develop acceptable alternatives if changes are needed. The Contractor must anticipate that Government Facility Users represented at the DP/D Meeting will provide additional functional information. Incorporate functional design changes into the facility design as required to meet the needs of the Users. At the end of the DP/D Meeting the Contractor must provide either assurance that the updated design can be built within the budget or identify potential cost modification items and establish a follow-on DP/D Meeting to finalize a design that will include trade-offs to bring the project within the budget. The following Contractor key personnel must attend the Design Presentation: Project Manager, Project Scheduler, Cost Estimator, Lead Designer of Record, Design Staff responsible for each architectural/engineering discipline when facility design is discussed, Major Subcontractors, and DQC.

1.10 FACILITY TURNOVER PLANNING MEETINGS (Red Zone Meetings)

Meet with the Government to identify strategies to ensure the project is carried to expeditious closure and turnover to the Client. Start planning the turnover process at the Pre-Construction Conference meeting with a discussion of the Red Zone process and convene at regularly scheduled NRZ Meetings beginning at approximately 75 percent of project completion. Include the following in the facility Turnover effort:

1.10.1 Red Zone Checklist

- a. Contracting Officer's Technical Representative (COTR) will provide the Contractor a copy of the Red Zone Checklist template.
- b. Prior to 75 percent completion, modify the Red Zone Checklist template by adding or deleting critical activities applicable to the project and assign planned completion dates for each activity. Submit the modified Red Zone Checklist to the Contracting Officer. The Contracting Officer may request additional activities be added to the Red Zone Checklist at any time as necessary.

1.10.2 Meetings

- a. Conduct regular Red Zone Meetings beginning at approximately 75 percent project completion, or three to six months prior to Beneficial Occupancy Date (BOD), whichever comes first.
- b. The Contracting Officer will establish the frequency of the meetings,

which is expected to increase as the project completion draws nearer. At the beginning, Red Zone meetings may be every two weeks then increase to weekly towards the final month of the project.

- c. Using the Red Zone Checklist as a Plan of Action and Milestones (POAM) and basis for discussion, review upcoming critical activities and strategies to ensure work is completed on time.
- d. During the Red Zone Meetings discuss with the COTR any upcoming activities that require Government involvement.
- e. Maintain the Red Zone Checklist by documenting the actual completion dates as work is completed and update the Red Zone Checklist with revised planned completion dates as necessary to match progress. Distribute copies of the current Red Zone Checklist to attendees at each Red Zone Meeting.

1.11 PARTNERING

To most effectively accomplish this Contract, the Contractor and Government must form a cohesive partnership with the common goal of drawing on the strength of each organization in an effort to achieve a successful project without safety mishaps, conforming to the Contract, within budget and on schedule. The partnering team must consist of personnel from both the Government and Contractor including project level and corporate level leadership positions. Key Personnel from the supported command, end user, PWD, FEAD/ROICC, Contractor, key subcontractors and the Designer of Record are required to participate in the Partnering process.

1.11.1 Team-Led (Informal) Partnering

- a. The Contracting Officer will coordinate the initial Team-Led (Informal) Partnering Session with key personnel of the project team, including Contractor and Government personnel. The Partnering Session will be co-led by the Government Construction Manager and Contractor's Project Manager.
- b. The Initial Team-led Partnering session may be held concurrently with the Post-Award Kickoff meeting. Partnering sessions will be held at a location mutually agreed to by the Contracting Officer and the Contractor, typically at a conference room on-base or at the Contractor's temporary trailer.
- c. The Initial Team-Led Partnering Session will be conducted and facilitated using electronic media (a video and accompanying forms) provided by Contracting Officer.
- d. The Partners will determine the frequency of the follow-on sessions.
- e. Participants will bear their own costs for meals, lodging and transportation associated with Partnering.

1.12 PERFORMANCE ASSESSMENT PLAN (PAP)

The Performance Assessment Plan (PAP) will be used to document design innovation and budget management, provide performance feedback to the Contractor, and as a basis for interim and final evaluations in the Contractor Performance Appraisal Reporting System (CPARS) on-line database.

It is the intent of the Government to establish the PAP based on tangible, measurable indicators of outstanding contractor performance, and on commitments made in the Contractor's proposal. The initial PAP may be found on the NAVFAC Design-Build Request for Proposal Website in RFP PART 6 Attachments. Review and finalize the initial PAP during the Partnering Session. During the initial Partnering Session, the Government, the Contractor, the Designer-of-Record, and the Client will establish the PAP. Following the establishment of the PAP, the Contractor will present it, with his input, for update and discussion at projects meetings which discuss project performance. Submit an updated PAP on a monthly basis with the invoice for that period as a minimum.

1.13 MOBILIZATION

Contractor shall mobilize to the jobsite within 60 calendar days after contract award. Mobilize is defined as having equipment AND having a physical presence of at least one person from the contractor's team on the jobsite.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 31 23.13 20

ELECTRONIC CONSTRUCTION AND FACILITY SUPPORT CONTRACT MANAGEMENT SYSTEM
05/17, CHG 7: 11/21

PART 1 GENERAL

1.1 CONTRACT ADMINISTRATION

Utilize the Naval Facilities Engineering Command's (NAVFAC's) Electronic Construction and Facility Support Contract Management System (eCMS) for the transfer, sharing, and management of electronic technical submittals and documents. The web-based eCMS is the designated means of transferring technical documents between the Contractor and the Government. Paper media or e-mail submission, including originals or copies, of the documents identified in Table 1 are not permitted, except where eCMS is unavailable, non-functional, or specifically requested in addition to electronic submission.

1.1.1 Format Naming Convention for Files Uploaded Into eCMS

Include the identification number of the document, the type of document, the name/subject or title, and for daily reports, the date (day of work) with format YYYY/MM/DD in the filename. For example, for RFI's, 0011_RFI_Roof_Leaking.doc; for submittals, 0032a_Submittals_Light_Fixture.pdf; for Daily Reports, 0132_Daily_Report_20190504.xls. Contact the Contracting Officer's Representative (COR) regarding availability of eCMS training and reference materials.

1.1.2 Uploading Documents Processed Outside of eCMS

When specifically requested to provide documents outside of eCMS, upload all final project documentation (e.g., documents that are signed and/or adjudicated by the Government) mentioned in Table 1 into eCMS by creating a record in the module associated with that document type and uploading the document(s). Subject/title of the record should include the type of record i.e., RFI/Submittal/Other, the identification number(s), and the statement "Processed Outside of eCMS". For example, "RFI 001-012 Processed Outside of eCMS".

1.2 USER PRIVILEGES

The Contractor will be provided access to eCMS. All technical submittals and documents must be transmitted to the Government via the COR. Project roles and system roles will be established to control each user's menu, application, and software privileges, including the ability to create, edit, or delete objects.

1.3 SUBMITTALS

Government approval is required for all submittals.

SD-01 Preconstruction Submittals

List of Contractor's Personnel

1.4 SYSTEM REQUIREMENTS AND CONNECTIVITY

1.4.1 General

The eCMS requires a web-browser (platform-neutral) and Internet connection. Obtain from an approved vendor an External Certification Authority (ECA), Primary Key Infrastructure (PKI) certificate, or other similar digital identification to support two-factor authentication and access to eCMS. Provide and maintain computer hardware and software for the eCMS access throughout the duration of the contract for all Contractor-designated users. Provide connectivity, speed, bandwidth, and access to the Internet to ensure adequate functionality. 70 mbps download speed recommended, 40 mbps minimum for loading large files. Neither upgrading of the Contractor's computer system nor delays associated from the usage of the eCMS will be justification or grounds for a time extension or cost adjustment to the Contract.

1.4.2 Contractor Personnel List

Within 20 calendar days of contract award, provide to the Contracting Officer a list of Contractor's personnel who will have the responsibility for the transfer, sharing and management of electronic design, technical submittals and documents and will require access to the eCMS. Project personnel roles to be filled in the eCMS include the Contractor's Project Manager, Designer of Record, Superintendent, Quality Control (QC) Manager, and Site Safety and Health Officer (SSHO). Personnel must be capable of electronic document management. Notify the COR immediately of any personnel changes to the project. The Contracting Officer reserves the right to perform a security check on all potential users. Provide the following information:

- First Name
- Last Name
- E-mail Address
- Office Address
- Project Role (e.g. Project Manager, QC Manager, Superintendent)

1.5 SECURITY CLASSIFICATION

In accordance with Department of Navy guidance, all military construction contract data are unclassified, unless specified otherwise by a properly designated Original Classification Authority (OCA) and in accordance with an established Security Classification Guide (SCG). Refer to the project's OCA when questions arise about the proper classification of information.

The eCMS must only be used for the transaction of unclassified information associated with construction projects. In conformance with the Freedom of Information Act (FOIA), DoD INSTRUCTION 5200.48 CONTROLLED UNCLASSIFIED INFORMATION (CUI), and DoD requirements, any unclassified project documentation uploaded into the eCMS must be designated either "U - UNCLASSIFIED" (U) or "CUI - CONTROLLED UNCLASSIFIED INFORMATION" (CUI).

1.6 ECMS UTILIZATION

Establish, maintain, and update data and documentation in the eCMS throughout the duration of the contract.

Personally Identifiable Information (PII) transmittal is not permitted in the eCMS.

1.6.1 Information Security Classification/Identification

The eCMS must be used for the transmittal of the following documents. This requirement supersedes conflicting requirements in other sections. Table 1 - Project Documentation Types provides the appropriate U and CUI designations for various types of project documents. Construction documents requiring CUI status must be marked accordingly. Apply the appropriate markings before any document is uploaded into eCMS. Markings are not required on U documents.

Table 1 also identifies which eCMS application is to be used in the transmittal of data (these are subject to change based on the latest software configuration). If a designated application is not functional within 4 hours of initial attempt, defer to the Submittal application and submit the required data as an uploaded portable document (e.g. PDF), word processor, spreadsheet, drawing, or other appropriate format. Hard copy or e-mail submission of these items is acceptable only if eCMS is documented to be not available or not functional or specifically requested in addition to electronic submission. After uploading documents to the Submittal application, transmit the submittals and attachments to the COR via the Transmittal application. For Submittals, select the following:

- Preparation by = Contractor personnel assigned to prepare the submittal
- Approval by = Contracting Officer Representative (COR)
- Returned by = Design Lead/Manager
- Forwarded to = Contractor project manager

Table 1 - Project Documentation Types

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
As-Built Drawings	U	Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager	Submittals and Transmittals
Building Information Modeling (BIM)	U	1. Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager 2. Design reviews will be performed in existing "Dr Checks"	Submittals and Transmittals
Construction Permits	U	Refer to rules of the issuing activity, state or jurisdiction	Submittals and Transmittals

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
Construction Schedules (Activities and Milestones)	U	After the schedule submittal is approved by the COR, import the schedule file into the scheduling application, and select "Approve" to establish a new schedule baseline	Submittals, Transmittals and Scheduling App
Construction Schedules (Cost-Loaded)	CUI	After the schedule submittal is approved by the COR, import the schedule file into the scheduling application, and select "Approve" to establish a new schedule baseline	Submittals, Transmittals and Scheduling App
Construction Schedules (3-Week Lookahead)	U	Import the schedule file into the scheduling application, and select "Approve" to establish a new schedule baseline	Scheduling App
DD 1354 Transfer of Real Property	U		Submittals and Transmittals
Daily Production Reports	CUI	Provide weather conditions, crew size, man-hours, equipment, and materials information	Daily Report
Daily Quality Control (QC) Reports	CUI	Provide QC Phase, Definable Features of Work Identify visitors	Daily Report
Designs and Specifications	U	1. Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager 2. Design reviews will be performed in existing "Dr Checks"	Submittals and Transmittals
Environmental Notice of Violation (NOV), Corrective Action Plan	U	Refer to rules of the issuing activity, state or jurisdiction	Submittals and Transmittals
Environmental Protection Plan (EPP)	CUI		Submittals and Transmittals

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
Invoice (Supporting Documentation)	CUI	Applies to supporting documentation only. Invoices are submitted in Wide-Area Workflow (WAWF)	Submittals and Transmittals
Jobsite Documentation, Bulletin Board, Labor Laws, SDS	U		Submittals and Transmittals
Meeting Minutes	CUI		Meeting Minutes
Modification Documents	CUI	Provide final modification documents for the project. Upload into "Modifications - RFPs"	Document Management
Operations & Maintenance Support Information (OMSI/eOMSI), Facility Data Worksheet	U	1. Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager 2. Design reviews will be performed in existing "Dr Checks"	Submittals and Transmittals
Photographs	U	Subject to base/installation restrictions	Submittals and Transmittals
QCM Initial Phase Checklists	CUI		Checklists (Site Management)
QCM Preparatory Phase Checklists	CUI		Checklists (Site Management)
Quality Control Plans	CUI		Submittals and Transmittals
QC Certifications	U		Submittals and Transmittals
QC Punch List	U		Punch Lists (Testing Logs)
Red-Zone Checklist	U		Checklists (Site Management)
Rework Items List	CUI		Punch Lists (Testing Logs)

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
Request for Information (RFI) Post-Award	CUI		RFIs
Safety Plan	CUI		Daily Report
Safety - Activity Hazard Analyses (AHA)	CUI		Daily Report
Safety - Mishap Reports	CUI		Daily Report
SCIF/SAPF Accreditation Support Documents	CUI	Note: Some Construction Security plans may be classified as Secret. Classified information must not be uploaded into eCMS. Refer to the Site Security Manager, as applicable.	Submittals and Transmittals
Shop Drawings	U	Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager	Submittals and Transmittals
Storm Water Pollution Prevention (Notice of Intent - Notice of Termination)	U	Refer to rules of the issuing activity, state or jurisdiction	Submittals and Transmittals
Submittals and Submittal Log	U		Submittals and Transmittals
Testing Plans, Logs, and Reports	CUI		Submittals and Transmittals
Training/Reference Materials	U		Submittals and Transmittals
Training Records (Personnel)	CUI		Submittals and Transmittals
Utility Outage/Tie-In Request/Approval	CUI		Submittals and Transmittals
Warranties/BOD Letter	CUI		Submittals and Transmittals

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
Quality Assurance Reports	CUI		Checklists (Government initiated)
Non-Compliance Notices	CUI		Non-Compliance Notices (Government initiated)
Other Government-prepared documents	CUI		GOV ONLY
All Other Documents	CUI	Refer to FOIA guidelines and contact the FOIA official to determine whether exemptions exist	As applicable

1.6.2 Markings on CUI documents

- a. Only CUI documents being electronically uploaded into the eCMS (.docx, .xlsx, .ppt and others as appropriate), and associated paper documents described in the paragraph CONTRACT ADMINISTRATION require CUI markings as indicated in the subparagraphs below.
- b. CUI documents that are originally created within the eCMS application using the web-based forms (RFIs, Daily Reports, and others as appropriate) will be automatically watermarked by the eCMS software, and these do not require additional markings.
- c. CUI documents must be marked "CONTROLLED UNCLASSIFIED INFORMATION" at the bottom of the outside of the front cover (if there is one), the title page, the first page, and the outside of the back cover (if there is one).
- d. CUI documents must be marked on the internal pages of the document as "CONTROLLED UNCLASSIFIED INFORMATION" at top and bottom.
- e. Where Installations require digital photographs to be designated CUI, place the markings on the face of the photograph.
- f. For visual documentation, other than photographs and audio documentation, mark with either visual or audio statements as appropriate at both the beginning and end of the file.

1.7 QUALITY ASSURANCE

Requested Government response dates on Transmittals and Submittals must be in accordance with the terms and conditions of the Contract. Requesting response dates earlier than the required review and response time, without concurrence by the Government COR, may be cause for rejection.

Incomplete submittals will be rejected without further review and must be resubmitted. Required Government response dates for resubmittals must reflect the date of resubmittal, not the original submittal date.

Replace Shop 940 P&Vs / Replace 300 PSIG FFHE, FRC-E
Building 137, MCAS, Cherry Point, NC

N40085-21-D-0016

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

-- End of Section --

SECTION 01 32 17.00 20

COST-LOADED NETWORK ANALYSIS SCHEDULES (NAS)

05/18, CHG 3: 08/20

PART 1 GENERAL

1.1 DEFINITIONS

The cost-loaded Network Analysis Schedule (NAS) is a tool to manage the project, both for Contractor and Government activities. The NAS is also used to report progress, evaluate time extensions, and provide the basis for progress payments.

For consistency, when scheduling software terminology is used in this section, the terms in Primavera's scheduling programs are used.

1.2 SCHEDULE REQUIREMENTS PRIOR TO THE START OF WORK

1.2.1 Preliminary Scheduling Meeting

Before preparation of the Project Baseline Schedule, and prior to the start of work, meet with the Contracting Officer to discuss the proposed schedule and the requirements of this section. Propose projected data dates for monthly update schedules for the project and incorporate each monthly update submittal into submittal register. Discuss required forms, terminology, and submittal requirements of this section and other requirements related to schedule management for this contract.

1.2.2 Project Baseline Schedule

1.2.2.1 Baseline NAS

Submit the Baseline NAS at the Post-Award Kickoff (PAK) Meeting or within 30 calendar days after contract award whichever occurs first. The Baseline schedule must include detailed design activities and a general approach to construction, including summary activities for required phasing and definable areas. Summary Construction activities must not exceed duration of 60 calendar days, unless approved otherwise by Contracting Officer. Data date must be set to contract award date and no progress stasued for any activity.

Only bonds may be paid prior to acceptance of the Baseline NAS. The acceptance of a Baseline NAS is a condition precedent to:

- a. The Contractor submitting the first design submittal.
- b. Processing Contractor's invoices(s) other than that for the bonds.
- c. Review of any schedule updates.

1.2.2.2 Post-Award Kickoff (PAK) Meeting and Baseline NAS

Present the Draft Baseline NAS at the PAK Meeting. Be prepared to discuss the schedule logic emphasizing how the schedule satisfies the design package requirements and incorporates the required government review periods for each design submittal.

1.2.2.3 Construction Baseline

Submit the Construction Baseline NAS prior to the pre-final design submittal. The pre-final design submittal will not be reviewed until a Construction Baseline NAS is submitted.

The acceptance of the Construction Baseline NAS is a condition precedent to:

- a. The contractor starting demolition work or construction stage(s) of the contract.
- b. Processing Contractor's invoices for demolition or construction activities.
- c. Review of any construction phase schedule updates.

Submittal of the Construction Baseline NAS must be the Contractor's certification that the submitted schedule meets the requirements of the Contract Documents, and represents the Contractor's plan on how the work will be accomplished. Provide all items listed in paragraph REQUIRED TABULAR REPORTS AND NATIVE P6 XER FILES with baseline NAS submittal.

1.3 THREE-WEEK LOOK AHEAD SCHEDULE

1.3.1 Weekly CQC Coordination and Production Meeting

Deliver electronic file of 3-Week Look Ahead Schedule to the Contracting Office at least 24 hours prior to the weekly scheduled CQC Coordination and Production Meeting. Contractor is required to provide all attendees at the CQC Coordination and Production Meeting with a hard copy of the 3-Week Look Ahead Schedule.

1.3.2 Look Ahead Schedule Requirements

Prepare and issue a 3-Week Look Ahead schedule to provide a more detailed day-to-day plan of upcoming work identified on the Project Network Analysis Schedule. Requirements include:

- a. For each Look Ahead schedule activity, identify parent NAS activity number(s). The parent NAS activity is the activity in the NAS that would incorporate the Look Ahead schedule activity requirement and or scope of work.
- b. Update schedule each week to show the planned work for the current and following two-week period. Also include previous week, as-built work, showing actual start and finish dates.
- c. Include upcoming outages, closures, preparatory meetings, and initial meetings, testing and inspections.
- d. Clearly identify longest path activities on the Three-Week Look Ahead Schedule. Include a key or legend that distinguishes longest path activities. Include all Longest Path activity NAS start/finish dates exceeded and/or occurring during this period.
- e. The detail work plans are to be bar chart type schedules, derived from but maintained separately from the Project NAS on an electronic spreadsheet program and printed on 11 by 17 inch sheets as directed by

the Contracting Officer.

- f. Activities must not exceed 5 working days in duration and have sufficient level of detail to assign crews, tools and equipment required to complete the work.

1.4 MONTHLY NETWORK ANALYSIS

Submittal of Monthly NAS is the Contractor's certification that the submitted schedule meets the requirements of the Contract Documents and represents the Contractor's plan on how the work will be accomplished. Provide all items listed in paragraph REQUIRED TABULAR REPORTS AND NATIVE P6 XER FILES with the monthly NAS submittal.

1.4.1 Monthly Network Analysis Updates

- a. Regardless of whether an invoice is being submitted monthly, an updated schedule must be submitted monthly to the Government. The Monthly NAS update must be submitted within 10 calendar days of the data date.
- b. Provide all items listed in paragraph REQUIRED TABULAR REPORTS AND NATIVE P6 XER FILES, with each monthly NAS update submittal.
- c. Meet with Government representative(s) at monthly intervals to review and agree on the information presented in the updated project schedule. The submission of an accepted, updated schedule to the Government is a condition precedent to the processing of the Contractor's invoice.
- d. Activity progress must incorporate as-built events as they occurred and correspond to records including but not limited to submittals and daily production and quality control reports. Software Settings: Handle schedule calculations and Out-of-Sequence progress (if applicable) through Retained Logic, not Progress Override. Show all activity durations and float values in days. Show activity progress using Remaining Duration. Set default activity type to "Task Dependent".
- e. Update schedule must reflect current Contract Completion Date and contract value in accordance with all conformed contract modifications issued prior to data date of NAS update.

1.4.2 As-Built Schedule

As a condition precedent to the release of retention and making final payment, submit an "As-Built Schedule," as the last schedule update showing all activities at 100 percent completion. This schedule must reflect the exact manner in which the project was actually constructed.

1.5 CORRESPONDENCE AND TEST REPORTS

Reference Schedule activity IDs that are being addressed in each correspondence (e.g., letters, Requests for Information (RFIs), e-mails, meeting minute items, Production and QC Daily Reports, material delivery tickets, photographs) and test report (e.g., concrete, soil compaction, weld, pressure).

1.6 ADDITIONAL SCHEDULING REQUIREMENTS

Other specification sections may include additional scheduling requirements, including systems to be inspected, tested and commissioned, and submittal procedures. Those schedule requirements must be incorporated into the NAS schedule.

1.7 SUBMITTALS

Government approval/acceptance is required for all submittals.

SD-01 Preconstruction Submittals

Baseline NAS

Construction Baseline NAS

Designated Project Scheduler

SD-07 Certificates

Three-Week Look Ahead Schedule

Monthly Network Analysis Updates

SD-11 Closeout Submittals

As-Built Schedule

1.8 SOFTWARE

Prepare and maintain project schedules using Primavera P6 software in a version compatible with Government's current version. Importing data into P6 using data conversion techniques or third party software is cause for rejection of the submitted schedule. Schedules with Performing Organizational Breakdown Structure (POBS) data is cause for rejection.

1.9 DESIGNATED PROJECT SCHEDULER

Within 30 calendar days of contract award, submit to the Contracting Officer for approval an individual who will serve as the Designated Project Scheduler. Include a copy of the candidate's resume with qualifications. The Contracting Officer may remove the Designated Project Scheduler, and require replacement, if the scheduler does not effectively fulfill their duties in accordance with the contract requirements. Payment request will not be processed without an approved Designated Project Scheduler.

1.9.1 Qualifications

The Designated Project Scheduler must have prepared and maintained at least three previous construction schedules, of similar size and complexity to this contract, using Primavera P6.

1.9.2 Duties

Duties of the Designated Project Scheduler:

- a. Prepare Baseline NAS.

- b. Prepare monthly schedule updates.
- c. Prepare tabular reports.
- d. Prepare Time Impact Analysis (TIA) as necessary.
- e. Provide certification that NAS and TIA submittals conform to the contract requirements.
- f. Participate with the Prime Contractor and Government Representative in a monthly teleconference call, and scheduled with sufficient time to support the Monthly Network Analysis Updates process, to discuss project status, schedule updates, critical activities, potential delays, and contract modifications impacting the schedule. Have a computer with P6 software available during the meeting.

1.10 NETWORK SYSTEM FORMAT

Prepare the schedule in accordance with the following Primavera P6 settings and parameters. Deviation from these settings and parameters, without prior consent of the Contracting Officer, is cause for rejection of schedule submission.

1.10.1 Schedule Activity Properties and Level of Detail

1.10.1.1 Activity Identification and Organization

- a. Identify design and construction activities planned for the project and other activities that could impact project completion if delayed in the NAS.
- b. Each activity must have a unique name.
- c. Identify administrative type activity/milestones, including all pre-construction submittal and permit requirements prior to demolition or construction stage.
- d. Include times for procurement, Contractor quality control and construction, acceptance testing and training in the schedule.
- e. Include the Government approval time required for the submittals that require Government Approval prior to construction, as indicated in Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES.
- f. Create separate activities for each Phase, Area, Floor Level and Location the activity is occurring.
- g. Do not use construction category activity to represent non-work type reference (e.g. Serial Letter, Request for Information) in NAS. Place Non-work reference within the P6 activity details notebook.

Activity categories included in the schedule are specified below.

1.10.1.2 Activity Logic

- a. With the exception of the Contract Award and Contract Completion Date (CCD) milestone activities, activity must not be open-ended; each activity must have at least one predecessor and at least one successor.

- b. Activities must not have open start or open finish (dangling) logic.
- c. Do not use lead or lag logic without Contracting Officer prior approval.
- d. Minimize redundant logic ties.
- e. Once an activity exists on the schedule it must not be deleted or renamed to change the scope of the activity and must not be removed from the schedule logic without approval from the Contracting Officer.
 - (1) While an activity cannot be deleted, where said activity is no longer applicable to the schedule, but must remain within the logic stream for historical record, change the activity original and remaining duration to zero and clearly label "(NO LONGER REQUIRED)" after the activity name. Actual finish date for activity that falls behind the data date. Redistribute accordingly any remaining budget associated with that activity, to other remaining appropriate activity.
 - (2) Document any such change in the activities' "Notebook," including a date and explanation for the change.
 - (3) The ID number for a "NO LONGER REQUIRED" activity must not be re-used for another activity.

1.10.1.3 Longest Path Activity Baseline Limitation

For P6 settings, critical activities are defined as being on the Longest Path. Longest Path (Critical) Activities must not make up more than 30 percent of all activity within the Construction Baseline Schedule.

1.10.1.4 Assigned Calendars

All NAS activity must be assigned calendars that reflect required and anticipated non-work days.

1.10.1.5 Activity Categories

1.10.1.5.1 Design Activities

Design activities must include design decision points and design submittal packages, including critical path submittals for Fast Tracked Phases. Review times for design development packages must be included in the schedule. Refer to Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES, for specific requirements.

1.10.1.5.2 Pre-construction Activities

Examples of pre-construction activities include, but are not limited to, bond approval, permits, pre-construction submittals and approvals. Include pre-construction activities that are required to be completed prior to the Contractor starting the demolition or construction stage of work.

1.10.1.5.3 Procurement Activities

Examples of procurement activities include, but are not limited to:

Material/equipment submittal preparation, submittal and approval of material/equipment; material/equipment fabrication and delivery, and material/equipment on-site. As a minimum, separate procurement activities must be provided for critical items, long lead items, items requiring Government approval and material/equipment procurement for which payment will be requested in advance of installation. Show each delivery with relationship tie to the Construction Activity specifically for the delivery.

1.10.1.5.4 Government Activities

Government and other agency activities that could impact progress must be clearly identified. Government activities include, but are not limited to; Government approved submittal reviews, Government conducted inspections/tests, environmental permit approvals by State regulators, utility outages, Design Start, Construction Start (including Design/Construction Start for each Fast-Track Phase, and delivery of Government Furnished Material/Equipment.

1.10.1.5.5 Construction Quality Management (CQM) Activities

The Preparatory and Initial Phase meetings for each Definable Feature of Work identified in the Contractor's Quality Control Plan must be included in the Three-Week Look Ahead Schedule. Preparatory and Initial phase meetings are not required in the NAS, but can be represented by a start milestone linked to successor parent Construction Activity. The Follow-up Phase must be represented by the Construction Activities themselves in the NAS.

1.10.1.5.6 Construction Activities

On-site construction activities must not have a duration in excess of 20 working days. Contractor activities must be driven by calendars that reflect Saturdays, Sundays and all Federal Holidays as non-work days, unless otherwise defined in this contract.

1.10.1.5.7 Turnover and Closeout Activities

Include activities or milestones for items on the NAVFAC Red Zone Checklist/POAM that are applicable to this project. As a minimum, include required Contractor testing, required Government acceptance inspections on equipment, Pre-Final Inspection, Punch List Completion, Final Inspection and Acceptance. Add an unconstrained start milestone for the initial NAVFAC Red Zone - Facility Turnover Planning Meeting at approximately 75 percent construction contract completion or six months prior to Contract Completion Date (CCD), whichever is sooner.

1.10.1.5.8 Commissioning Activities

Include in the baseline schedule activities and milestones associated with Commissioning.

- a. Identify the general area or location(s) of systems for Commissioning Inspection and Testing
- b. Incorporate into the baseline schedule time periods for Government submittal review

1.10.1.6 Contract Milestones and Constraints

1.10.1.6.1 Project Start Date Milestones

Include as the first activity on the schedule a start milestone titled, "Contract Award", which must have a Mandatory Start constraint equal to the Contract Award Date.

1.10.1.6.1.1 Design Phase Completion Milestone

Include an unconstrained finish milestone on the schedule titled, "Design Phase Completion". Design Phase Completion is defined as the point in time when all design requirements are complete and approved. Duration for Government review and approval must be included as predecessor activities to Design Phase Completion.

1.10.1.6.1.2 Post-Award Kickoff (PAK) meeting Milestone

Include an unconstrained finish milestone on the schedule titled, "Post-Award Kickoff Meeting". The Post Award Kickoff Meeting may be a single day, or it may range over several days. The intent is to cover all PAK topics, including Partnering and Concept Design Workshop (if required) in one continuous session.

1.10.1.6.2 Preconstruction Submittals Finish Milestone

Include an unconstrained finish milestone on the schedule titled, "Preconstruction Submittals". This milestone is complete when all required preconstruction submittals have been reviewed and approved by the Government.

1.10.1.6.3 Contractor Mobilization Finish Milestone

Include an unconstrained finish milestone on the schedule titled, "Contractor Mobilization".

1.10.1.6.4 NAVFAC Red Zone - Facility Turnover Planning Meeting Milestones

See paragraph TURNOVER AND CLOSEOUT ACTIVITIES above.

1.10.1.6.5 Substantial Completion Milestone

Include an unconstrained finish milestone on the schedule titled "Substantial Completion." Substantial Completion is defined as the point in time the Government would consider the project ready for beneficial occupancy wherein by mutual agreement of the Government and Contractor, Government use of the facility is allowed while construction access continues in order to complete remaining items (e.g. punch list and other close out submittals). Include a separate Substantial Completion Milestone for each phase if the contract requires construction to be completed in phases.

1.10.1.6.6 DD-1354 Finish Milestone

Add unconstrained finish milestone, titled "DD-1354" and scheduled 30 calendar days prior to Substantial Completion, whenever a Form DD-1354 is required.

1.10.1.6.7 Projected Completion Milestone

Include an unconstrained finish milestone on the schedule titled "Projected Completion." Projected Completion is defined as the point in time all contract requirements are complete and verified by the Government with a successful Final Inspection in accordance with Section 01 45 00.05 20 DESIGN AND CONSTRUCTION QUALITY CONTROL. This milestone must have the Contract Completion Date (CCD) milestone as its only successor.

1.10.1.6.8 Contract Completion Date (CCD) Milestone

Last schedule entry must be an unconstrained finish milestone titled "Contract Completion (CCD: DD-MM-YY)." DD-MM-YYYY is the current contract completion date at data date, day-month-year corresponding to P6 Must Finish By Date. NAS milestone updates of Project Completion finish date for longest path must reflect calculated float as positive or negative based on CCD. Calculation of schedule updates must be such that if the finish of the "Projected Completion" milestone falls after the contract completion date, then negative float is calculated on the longest path. If the finish of the "Projected Completion" milestone falls before the contract completion date, the float calculation must reflect positive float on the longest path.

1.10.1.6.9 Additional Milestones

Provide up to 5 additional milestones as required by Contracting Officer.

1.10.1.7 Work Breakdown Structure & Activity Code

At a minimum, establish a Work Breakdown Structure (WBS) and provide activity codes identified as follows:

1.10.1.7.1 Work Breakdown Structure (WBS)

Group all activities and milestones within appropriate WBS categories including, at a minimum, the following:

a. Project Milestones:

- (1) Management Milestones
- (2) Project Administrative Meetings
- (3) Permits
- (4) Design Phase
- (5) Submittals and Reviews

b. Pre-Construction Phase:

- (1) Submittals and Reviews
- (2) Procurement
- (3) Mobilization

c. Construction Phase: Create multiple sub-sections in accordance with project specific categories of work including in WBS descending order

as follows:

(1) General Area

(a) Type of Work Item

1. Location

- d. Project Closeout: Include activity items such as, but not limited to, Punchlist, Demobilization, O&M, As-built Drawings, Training, and As-built NAS.
- e. Modifications: Create sub-category of Conformed and Non-Conformed under Modification WBS. Create multiple sub-sections as the project progresses identified by issue and Fragnet placed in Conformed for modifications issued prior data date, or Non-Conformed for issues not modified to contract prior data date.
- f. Removed Activity: Activity is "removed" by remaining within logic sequence, eliminating duration and adding "(NO LONGER REQUIRED)" after Activity Name in Activity Table.
- g. Commissioning & Testing:
 - (1) Specific area/locations of commissioning
 - (2) Final Testing
 - (3) Training

1.10.1.7.2 Responsibility Code

All activities in the project schedule must be identified with the resource for completing the task. Activities must not belong to more than one responsible party.

1.10.1.7.3 Activity Category Code

Provide user defined "CAT" codes for Project Level activity codes. Use the following codes:

- a. Assign "PROC" value to Procurement type activity
- b. Assign "PRE-CON" value to Pre-construction activity
- c. Assign "CONS" value to Construction type activity
- d. Assign "TEST" value to dedicated testing type activities
- e. Assign "CX" value to dedicated Commissioning type activities
- f. Assign "CLOS" value to dedicated Close Out type activity
- g. Assign "OTHR" to other activity not otherwise designated
- h. Assign "DSGN" value to Design type activity

1.10.1.7.4 Construction Specification Institute (CSI) Masterformat Code

Provide up to an additional five activity codes as required by the Contracting Officer.

1.10.1.7.5 Drawing Code

Identify all activities in the project schedule with its respective Drawing Code. The Drawing Code is the Sheet Number on the primary project drawing which indicates work to be performed. If an activity does not have an applicable Drawing Code (e.g. Mobilize), the code must be "0000".

1.10.1.8 Adverse Weather Lost Work Days

Use the National Oceanic and Atmospheric Administration's (NOAA) Summary of Monthly Normals report to obtain the historical average number of days each month with precipitation, using a nominal 30-year, greater than 0.10 inch precipitation amount parameter, as indicated on the Station Report for the NOAA location closest to the project site as the basis for establishing a "Weather Calendar" showing the number of anticipated non-workdays for each month due to adverse weather, in addition to Saturdays, Sundays and all Federal Holidays as non-work days.

Assign the Weather Calendar to any activity that could be impacted by adverse weather. The Contracting Officer will issue a modification in accordance with the contract clauses, giving the Contractor a time only extension for the difference of days between the anticipated and actual adverse weather delay if the number of actual adverse weather delay days exceeds the number of days anticipated for the month in which the delay occurs and the adverse weather delayed activities are on the longest path to contract completion in the period when delay occurred. A lost workday due to weather conditions is defined as a day in which the Contractor cannot work at least 50 percent of the day on the impacted activity. Impacts resulting from adverse weather must be documented in Narrative Report for the month that it occurred.

Make changes to P6 project calendars to reflect as-built conditions where work occurred where originally anticipated as non-work days, and where work did not occur (lost work day).

1.10.1.9 Anticipated Restricted Delays

Unless otherwise noted or defined in Section 01 14 00 WORK RESTRICTIONS, allow in the schedule one lost workday for every two months of project duration for instances where base access is not permitted or where work areas are temporarily not accessible for security reasons which causes a delay in the work. Use Anticipated Restricted Delays as basis for establishing a "Security Calendar" showing the number of anticipated non-workdays for each month due to anticipated restrictions, in addition to anticipated adverse weather, Saturdays, Sundays and all Federal Holidays as non-work days. Assign the Security Calendar to any activity that could be impacted by restriction delays. The Contracting Officer will issue a modification in accordance with the contract clauses, giving the Contractor a time extension for the difference of days between the anticipated and actual lost work days if the number of actual restriction delay days exceeds the number of anticipated for the month in which the delay occurs and the restriction delayed activities are critical to contract completion. A lost workday due to restriction delay is defined as a day in which the Contractor cannot work at least 50 percent of the

day on the impacted activity.

Impacts resulting from restriction delays must be documented in Narrative Report for the month that it occurred.

Make changes to P6 project calendars to reflect as-built conditions where work occurred where originally anticipated as non-work days, and where work did not occur (lost work day).

1.10.1.10 Cost Loading

The Project Network Analysis Schedule (NAS) must be cost-loaded and will provide the basis for progress payments. Earned Value Reports must be derived from and correspond to cost loaded NAS. Use the Critical Path Method (CPM) and the Precedence Diagram Method (PDM) to satisfy time and cost applications.

1.10.1.10.1 Cost Loading Activities

Assign material and equipment costs, including their quantities, for which payment will be requested in advance of installation, to their respective procurement activity. Assign labor costs, including their quantities, for material and equipment paid for after installation to their respective construction activities. Include all typical mobilization costs dispersed over early construction activities. Costs for mobilization will not be paid as individual pay items with the exception of batch plant set-up, mobilization of dredging equipment or other similar labor-intensive situations. The value of commissioning, testing and closeout WBS section may not be less than 10 percent of the total costs for procurement and construction activities. ALL activities assigned Government responsibility will have Zero Cost. No contractor cost should be assigned to an activity designated as a Government responsibility. Do not include field overhead positions as individual pay items. Evenly disperse overhead costs and profit to each activity over the duration of the project.

1.10.1.10.2 Partial Payment

Breakdown unit of measure and cost must be defined within P6 Activity Detail Expenses for partial payment of any cost loaded activity. Lump sum cost loaded activity will not be partially paid.

1.10.2 Schedule Software Settings and Restrictions

- a. Activity Constraints: Date/time constraint(s), other than those required by the contract, are not allowed unless accepted by the Contracting Officer. Identify any constraints proposed and provide an explanation for the purpose of the constraint in the Narrative Report as described in paragraph REQUIRED TABULAR REPORTS.
- b. Default Progress Data Disallowed: Actual Start is date work begins on activity with intent to pursue work to substantial completion. Actual Finish is date work is substantially complete to point where successor activity can begin. Actual dates on the CPM schedule must correspond with activity dates reported on the Contractor Quality Control and Production Reports.
- c. At a minimum, include the following settings and parameters in P6 Schedule preparation:

- (1) General: Define or establish Calendars and Activity Codes at the "Project" level, not the "Global" level.
- (2) Admin Drop-Down Menu, Admin Preferences, Time Periods Tab:
 - (a) Set time periods for P6 to 8.0 Hours/Day, 40.0 Hours/Week, 172.0 Hours/Month and 2000.0 Hours/Year.
 - (b) Use assigned calendar to specify the number of work hours for each time period: Must be checked.
- (3) Admin Drop-Down Menu, Admin Preferences, Earned Value Tab:
 - (a) Earned Value Calculation: Use "Budgeted values with current dates".
- (4) Project Level, Dates Tab:
 - (a) Set "Must Finish By" date to "Contract Completion Date", and set "Must Finish By" time to 05:00pm.
- (5) Project Level, Defaults Tab:
 - (a) Duration Type: Set to "Fixed Duration & Units".
 - (b) Percent Complete Type: Set to "Physical".
 - (c) Activity Type: Set to "Task Dependent".
 - (d) Calendar: Set to "Standard 5 Day Workweek". Calendar must reflect Saturday, Sunday and all Federal holidays as non-work days. Alternative calendars may be used with Contracting Officer approval.
- (6) Project Level, Calculations Tab:
 - (a) Default Price/Unit for activities without resource or role Price/Units: Set to "\$1/h".
 - (b) Activity percent complete based on activity steps: Must be Checked.
 - (c) Link Budget and At Completion for not started activities: Must be Checked.
 - (d) Reset Remaining Duration and Units to Original: Must be Selected.
 - (e) Subtract Actual from At Completion: Must be Selected.
 - (f) Recalculate Actual units and Cost when duration percent complete changes: Must be Checked.
 - (g) Update units when costs change on resource assignments: Must be Unchecked.
 - (h) Link Actual to Date and Actual This Period Units and Cost: Must be Checked.

(7) Project Level, Settings Tab:

(a) Define Critical Activities: Check "Longest Path".

(8) Work Breakdown Structure Level, Earned Value Tab:

(a) Technique for Computing Performance Percent Complete:
"Activity percent complete" is selected.

(b) Technique for Computing Estimate to Complete (ETC): "PF = 1"
is selected.

1.10.3 Required Tabular Reports and Native P6 XER Files

Include the following reports with the Baseline, Monthly Update and any other required schedule submittals:

a. Time Scaled Logic Schedule

Provide formatted 11 by 17-inch Time-scaled Logic Schedule in color and landscape-oriented with each schedule submittal. Clearly show activities on the longest path setting Gantt chart longest path activity bars to red. Group activities by WBS and sort by finish date in ascending order. Include the following information in column form for each activity and include accompanying Gantt chart:

- (1) Activity ID
- (2) Activity Name
- (3) Original Duration
- (4) Remaining duration
- (5) Physical Percent Complete
- (6) Start Date
- (7) Finish Date
- (8) Total Float

b. Previous Monthly Update Comparison Time Scaled Logic Schedule (Submit with all Monthly Update Schedule Submittals.)

Provide formatted 11 by 17-inch Time-scaled Logic Schedule in color and landscape-oriented with each monthly update schedule submittal. Clearly show activities on the current month longest path setting Gantt chart longest path activities bars to red. Show previous month activities as yellow bars and previous month milestones in yellow within Gantt chart. Sort by finish date in ascending order. Filter activities for longest path. Maintain and assign the accepted previous month update or the accepted baseline schedule for the first update submittal as the baseline and primary baseline in P6 before printing the schedule. Include the following information in column form for each activity and include accompanying Gantt chart:

- (1) Activity ID

- (2) Activity Name
 - (3) Original Duration
 - (4) Current Month Remaining Duration
 - (5) Current Month Start Date
 - (6) Previous Month Update Start Date (BL Project Start)
 - (7) Start Date Delta between Current Month and Previous Month
(Variance - BL Project Start Date)
 - (8) Current Month Finish Date
 - (9) Previous Month Finish Date (BL Project Finish)
 - (10) Finish Date Delta between Current Month and Previous Month
(Variance - BL Project Start Date)
 - (11) Current Month Total Float
- c. P6 native XER file: Include the back-up native .xer program file compatible with the Government version of P6. Each native schedule file must have a unique file name to include project name and data date using (yyyy-mm-dd) convention. Each native schedule must have a unique Project ID and Project Name.
- d. Log Report: P6 Scheduling/Leveling Report.
- e. Narrative Report: Identify and justify:
- (1) Provide Project Summary Data in format below:
 - (a) Data Date _____
 - (b) Award Date: _____
 - (c) Original Project Duration: _____ days post Award Date
 - (d) Current Project Duration: _____ days post Award Date
 - (e) Time percent elapsed: _____ percent at data date
 - (f) Original CCD: _____
 - (g) Current CCD: _____ (thru MOD _____)
 - (h) Anticipated CCD: _____ (____ calendar days early/late)
 - (i) Original Contract Value: \$_____
 - (j) Current Contract Value: \$_____
 - (k) Invoiced Amount: \$_____ (____ percent)
 - (l) Cost Growth: _____ percent

- (m) Schedule Growth: ____ percent
- (n) There are a total of ____ activities, ____ activities complete (____ percent), ____ activities in progress (____ percent), ____ activities not started (____ percent). Of the in progress and not started activities; ____ (____ percent) are on the longest path. The longest path has duration of ____ calendar days from data-date to anticipated project completion.
- (2) Progress made in each area of the project;
 - (3) Longest Path;
 - (4) Date/time constraint(s), other than those required by the contract
 - (5) Listing of all changes made between the previous schedule and current updated schedule include: added or deleted activities, original and remaining durations for activities that have not started, logic (sequence constraint lag/lead), milestones, planned sequence of operations, longest path, calendars or calendar assignments, and cost loading;
 - (6) Any decrease in previously reported activity Earned Amount;
 - (7) Pending items and status thereof, including permits, changes orders, and time extensions;
 - (8) Status of Contract Completion Date and interim milestones;
 - (9) Status of Projected Completion Milestone and account of difference in calendar days between previous update Projected Completion Milestone
 - (10) Current and anticipated delays listing Activity Names and IDs for impacted activities(describe cause of delay and corrective actions(s) and mitigation measures to minimize);
 - (11) Description of current and potential future schedule problem areas.
 - (12) Identification of any weather and restricted lost time as compared to anticipated weather for the month and anticipated restricted days for which the update is submitted. Impacts resulting from adverse weather must be documented in tabular form showing the calendar month (or billing period) with the days on which construction activity incurred Lost Work Days due to adverse weather. In narrative form, describe the adverse weather cause such as precipitation measurement, temperature, wind or other influencing factors, and why work was impacted. Describe the construction activity(s) that was (were) scheduled, impacted.

Each entry in the narrative report must cite the respective Activity ID and Activity Name, the date and reason for the change, and description of the change.

- f. Earned Value Report: Derive from and correspond to P6 cost loaded schedule. List all activities having a budget amount cost loaded. Compile total earnings on the project from notice to proceed to current progress payment request. Show current budget, previous

physical percent complete, to-date physical percent complete, previous earned value, to-date earned value, cost this period and cost to complete on the report for each activity.

- g. Schedule Variance Control (SVC) Diagram: With each schedule submission, provide a SVC diagram showing 1) A Cash Flow Curve indicating planned project cost based on each of projected early and projected late activity finish dates and 2) one curve for Earned Value to-date. Revise Cash Flow Curves when the contract is modified, or as directed by the Contracting Officer Include a legend on report clearly indication 3 curves: early finish, late finish, and earned-value to date.

Use the following settings in Activity Usage Profile Options:

- (1) In the Data section, under Display, the radio box for Cost must be selected.
- (2) In the Data section, under Filter for Bars/Graphs, the checkbox for Total must be checked.
- (3) In the Show Bars/Curves section:
 - (a) Under the By Date column, the checkboxes for Baseline, Actual and Remaining Late must be checked. The checkboxes for Budgeted and Remaining Early must be unchecked.
 - (b) Under the Cumulative column, the checkboxes for Baseline, Actual and Remaining Late must be checked. The checkboxes for Budgeted and Remaining Early must be unchecked.
 - (c) Set the color for Baseline to green.
 - (d) Set the color for Actual to blue.
 - (e) Set the color for Remaining Late to red.
- (4) In the Show Earned Value Curves section, the checkboxes for Planned Value Cost, Earned Value Cost and Estimate at Completion must be unchecked.
- h. Logic Diagram showing timescale from data date to 60 days after data date with filter for longest path. Leave Group By selection blank and sort by finish date in ascending order.
- i. Baseline or Monthly Update Checklist as applicable completed and certified by Qualified Scheduler. Baseline Project Schedule and Monthly Update Schedule Checklists can be found on the Whole Building Design Guide website at <https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/ufgs-01-32-17-00-20>
- j. Screen shot PDF of P6 Time Periods Settings referenced in paragraph SCHEDULE SOFTWARE SETTINGS AND RESTRICTIONS, list item d.(2): ADMIN DROP-DOWN MENU, ADMIN PREFERENCES, TIME PERIODS TAB
- k. Daily Reported Production Activity: Submit on a monthly basis, in electronic spreadsheet (format provided by the Government), summary of daily reported production activity for the reporting month in the

update schedule. Use the following columns for reporting:

- (1) Date
- (2) Activity ID
- (3) Work Description
- (4) Contractor
- (5) Billable Hours

1.11 CONTRACT MODIFICATION

1.11.1 Time Impact Analysis (TIA)

Submit a Time Impact Analysis with each cost and time proposal for a proposed change. TIA must illustrate the influence of each change or delay on the Contract Completion Date or milestones. No time extensions will be granted nor delay damages paid unless a delay occurs which consumes all available Project Float, impacts the longest path, and extends the Projected Completion beyond the Contract Completion Date.

- a. Each TIA must be in both narrative and schedule form. The narrative must define the scope and conditions of the change; provide start and finish dates of impact, successor and predecessor activity to impact period, responsible party; describe how it originated, and how it impacts the schedule's longest path. The schedule submission must consist of three native XER files:
 - (1) Fragnet used to define the scope of the changed condition
 - (2) Most recent accepted schedule update as of the time of the impact start date. Update this schedule to show all activity progress as of the time of the impact start date. The impact start date is identified as the time when an existing activity is impeded for either starting or finishing.
 - (3) The impacted schedule that has the fragnet inserted in the updated schedule and the schedule "run" so that the new completion date is determined.
- b. For claimed as-built project delay, the inserted fragnet TIA method must be modified to account for as-built events known to occur after the data date of schedule update used. Updated schedules for periods following the impact start date will be used to evaluate how the project progressed (as-built) through the finish of impact. Impact to longest path must be determined for each following update period.
- c. All TIAs must include any mitigation, and must determine the apportionment of the overall delay assignable to each individual delay. Apportionment must provide identification of delay type and classification of delay by compensable and non-compensable events. The associated narrative must clearly describe analysis methodology used, and the findings in a chronological listing beginning with the earliest delay event.
 - (1) Identify and classify types of delay defined as follows:

- (a) Force majeure delay (e.g. weather delay): Any delay event caused by something or someone other than the Government or the Contractor, or the risk of which has not been assigned solely to the Government or the Contractor. If the force majeure delay is on the longest path, in absence of other types of concurrent delays, the Contractor is granted an extension of contract time, classified as a non-compensable event.
 - (b) A Contractor-delay: Any delay event caused by the Contractor, or the risk of which has been assigned solely to the Contractor. If the contractor-delay is on the longest path, in absence of other types of concurrent delays, Contractor is not granted extension of contract time, and classified as a non-compensable event. Where absent other types of delays, and having impact to project completion, Contractor must provide to Contracting Officer a Corrective Action Plan identifying plan to mitigate delay.
 - (c) A Government-delay: Any delay event caused by the Government, or the risk of which has been assigned solely to the Government. If the Government-delay is on the longest path, in absence of other types of concurrent delays, the Contractor is granted an extension of contract time, and classified as a compensable event.
- (2) Functional concurrency must be used to analyze concurrent delays, where: separate delay issues delay project completion, do not necessarily occur at same time, rather occur within same monthly schedule update period at minimum, or within same as-built period under review. If a combination of functionally concurrent delay types occurs, it is considered Concurrent Delay, which is defined in the following combinations:
- (a) Government-delay concurrent with contractor-delay: excusable time extension, classified non-compensable event.
 - (b) Government-delay concurrent with force majeure delay: excusable time extension, classified non-compensable event.
 - (c) Contractor-delay concurrent with force majeure delay: excusable time extension, classified non-compensable event.
- (3) Pacing delay reacting to another delay (parent delay) equally or more critical than paced activity must be identified prior to pacing. Contracting Officer will notify Contractor prior to pacing. Contractor must notify Contracting Officer prior to pacing. Notification must include identification of parent delay issue, estimated parent delay time period, paced activity(s) identity, and pacing reason(s). Pacing Concurrency is defined as follows:
- (a) Government-delay concurrent with contractor-pacing: excusable time extension, classified compensable event.
 - (b) Contractor-delay concurrent with Government-pacing: inexcusable time extension, classified non-compensable event
- d. Submit electronic file containing the narrative and the source schedule files used in the time impact analysis.

1.12 PROJECT FLOAT

Project Float is the length of time between the Contractor's Projected Completion Milestone and the Contract Completion Date. Project Float available in the schedule will not be for the exclusive use of either the Government or the Contractor.

The use of Resource Leveling or other techniques used for the purpose of artificially adjusting activity durations to consume float and influence longest path is prohibited.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 33 00.05 20

CONSTRUCTION SUBMITTAL PROCEDURES

05/14, CHG 4: 12/18

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

This section covers construction submittals that are not included in the design submittals. Submit design submittals in accordance with Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES. When using Unified Facility Guide Specifications (UFGS) sections that reference Section 01 33 00 SUBMITTAL PROCEDURES, change reference to this section, Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES.

1.2 SUBMITTAL DESCRIPTIONS (SD)

Submittal requirements are specified in UFGS in Part 2, GENERAL REQUIREMENTS; in references in Part 4 PERFORMANCE TECHNICAL SPECIFICATIONS; and in UFGS in Part 5, PRESCRIPTIVE SPECIFICATIONS. Submittals that are identified by SD numbers use descriptions of items included in submittal packages and titles as follows:

SD-01 Preconstruction Submittals

- Certificates of insurance.
- Surety bonds.
- List of proposed subcontractors.
- List of proposed products.
- Construction progress schedule.
- Network Analysis Schedule (NAS)
- Submittal register.
- Schedule of prices or earned value report.
- 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.

Manufacturer's data certifying and demonstrating that specific product, process, and/or conditions complies with applicable Guiding Principle (GP) criteria.

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 ensuing 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.

Text of posted operating instructions.

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 that is furnished by the manufacturer, or the system provider, to the equipment operating and maintenance personnel. This data is needed by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item.

SD-11 Closeout Submittals

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

Special requirements necessary to properly close out a construction contract. For example, Record Drawings, As-built drawings, DD Form 1354, Guiding Principles Validation or Sustainability Third Party Certification (TPC), Sustainability eNotebook (including all of components) and eOMSI submittals. Also, submittal requirements necessary to properly close out a major phase of construction on a multi-phase contract.

1.3 SUBMITTALS

Government or Contractor's Designer of Record (DOR) approval is required for all submittals.

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

SD-01 Preconstruction Submittals

Submittal Register Format

1.3.1 Submittal Register

The submittal register must be prepared during the initial design stages of the project and indicate each design and construction submittal. Maintain an electronic version of the submittal register as work progresses. The DOR must assist the DQC in preparing the submittal register by determining all project submittals that require DOR approval. The Contractor proposed submittal register format must include all types of information pertinent to the submittal process and be approved by the Contracting Officer prior to the first submission.

1.4 CONSTRUCTION QUALITY CONTROL

1.4.1 Contractor Reviewing, Certifying, Approving Authority

The QC organization is responsible for reviewing and certifying that submittals are in compliance with the contract requirements.

- a. In RFP PART 4 PERFORMANCE TECHNICAL SPECIFICATIONS (PTS), there are UFGS specification sections required to be submitted as part of the design submittal. Unless specified otherwise in this section, the Contractor's DOR is the approving authority for submittals listed in these specifications.
- b. If RFP PART 5 PRESCRIPTIVE SPECIFICATIONS are utilized in this RFP, the Contractor's DOR is the approving authority for these submittals.
- c. DOR must approve construction submittals that are incorporated in the design submittal prior to being submitted to the Government for design submittal approval. Indicate approval of these construction submittals on the accompanying submittal transmittal forms and the submittal register for each design submittal package. In addition, the DOR professional stamp on the final design submittal indicates approval of construction submittals combined with the design submittal.
- d. Construction submittals that are approved by the DOR or certified by the QC are not required to be submitted to the Government for surveillance, except when the RFP requires the design and construction submittals to be combined in Section 01 33 10.05 20, DESIGN SUBMITTAL PROCEDURES or where specified in the paragraph SUBMITTALS RESERVED FOR GOVERNMENT SURVEILLANCE of this section.
- e. In addition to other approvals that may be required, provide review and approval of Guiding Principles Validation and TPC Submittals by Design-Build team's Sustainability or TPC Professional. Provide this approval prior to including in any Government-reviewed submittal.

1.4.2 Submittals Reserved for Government Surveillance

Surveillance submittals are approved by the Contractor in accordance with paragraph CONTRACTOR REVIEWING, CERTIFYING, AND APPROVING AUTHORITY, but provide the Government the opportunity to oversee critical project issues.

If during the Government surveillance of construction submittals, items are brought to the Contractor's attention as non-compliant, the Contractor must correct the submittal and construction to comply with the requirements of the RFP. Stamp surveillance submittals "APPROVED" by the DOR and "FOR SURVEILLANCE ONLY." Submit the following Government surveillance submittals, prior to starting work for construction submittal items, and after the completion of the work for reports submittals items.

- a. Submit geotechnical related submittals pertaining to the soils investigations (reports and soils analysis), foundations (shallow and deep), pavements structure design, test pile and production pile testing and installation.
- b. Submit HVAC Testing, Adjusting, and Balancing required submittals.
- c. Submit Performance Verification and Acceptance Testing submittals listed in the PTS and referenced UFGS.
- d. Submit all Interim Special Inspection Reports on a bi-weekly basis until work requiring special inspections is complete.
- e. Submit all Structural Observation Reports and the Final Report of Special Inspections.

1.4.3 Submittals Reserved for Government Approval

The Government is the approving authority for submittals in RFP Part 2 GENERAL REQUIREMENTS specification sections. Comply with additional Government approval requirements for Environmental submittals, as specified in RFP Part 2, Section 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS.

1.4.3.1 Scheduling for Government Approved Submittals

Except as specified otherwise, allow review period, beginning when Government receives submittal from the QC organization, of 20 working days for return of submittal to the Contractor. Period of review for submittals with Contracting Officer approval begins when Government receives submittal from QC organization. Period of review for each resubmittal is the same as for initial submittal.

1.4.3.2 Government Approval Defined

Submittals marked "approved" indicate a quality assurance (QA) review has been performed. Government review or approval of any portion of the submittal does not relieve the Contractor from responsibility for meeting the contract requirements or for any error that may exist, because under the Quality Control (QC) requirements of this contract, the Contractor is responsible for ensuring information contained within each submittal accurately conforms with the requirements of the contract documents. Furthermore, Government review or approval of a submittal is not to be construed as a complete check.

1.4.4 Constraints

- a. Submittals must be complete for each definable feature of work; submit components of definable feature interrelated as a system at the same time.
- b. Approval of a separate material, product, or component does not imply

approval of assembly in which item functions.

1.4.5 Design Change and Variation

The Contractor must limit change and variation to items that will be advantageous to the Government. Submit proof that the change or variation is needed and provide the same or better level of quality as the design that the Government originally reviewed or approved. Design change is considered prior to Government approval of the final design and variation is considered after Government approval of final design.

1.4.5.1 Design Changes

Design changes must meet the minimum requirements of the solicitation and the accepted proposal. Any changes to the design from what was previously reviewed by the Government during any phase of the design process prior to Government approval of the Final Design must be approved by the DOR and Government before the design change may be incorporated into the design documents. Design changes must be requested in accordance with Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES.

1.4.5.2 Variations

Variations from contract requirements including the solicitation, the accepted proposal, and the final design, require Government approval. Variations must be approved by the DOR prior to submitting written request to the Government for approval.

a. Considering Variations

Discuss the proposed variation with the Contracting Officer after consulting with the DOR prior to submission to help ensure functional and quality requirements are met and minimize potential rejections and re-submittals. When contemplating a variation which results in lower cost, consider submitting the variation as a Value Engineering Change Proposal (VECP) in accordance with FAR 52.248-3. Specifically point out variations from contract requirements in transmittal letters as applicable. Failure to receive prior Government approval for deviations may result in the Government requiring rejection and removal of such work at no additional cost to the Government.

b. Submitting Variations

When submitting a variation, deliver the written request to the Contracting Officer in the form of a Request for Information (RFI) to include documentation illustrating the nature and features of the variation including any necessary technical submittals and why the variation is desirable and beneficial to Government. Request must also include any savings to the government and documented approval from the DOR.

The Contracting Officer will indicate an approval or disapproval of the variation request; and if not approved as submitted, will indicate the Government's reasons therefor. Any work done before such approval is received is performed at the Contractor's risk.

c. Warranting Variations Are Compatible

When proposing a variation for approval, the Contractor, including its

Designer(s) of Record, warrants that the contract documents have been reviewed to establish that the variation, if incorporated, is compatible with the design intent and operational requirements.

1.4.6 Contractor's Responsibilities

Ensure no work has begun until submittals for that work have been "approved" or "approved as noted."

1.4.7 QC Organization Responsibilities

Stamp each sheet of each submittal with QC certifying statement or approving statement, except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only.

- a. When approving authority is Contracting Officer, QC organization will certify submittals, assure proper signatures, and forward to Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with contract Number (insert contract number here), is in compliance with the contract documents, can be installed in the allocated spaces, and is submitted for Government approval.

RFP Part Two Submittals:

Certified by QC Manager _____, Date _____
(QC Manager)

RFP Part Four and Part Five Submittals:

Certified by DOR _____, Date _____

Certified by QC Manager _____, Date _____"

- (1) Sign certifying statement or approval statement. The person signing certifying statements must be QC organization member designated in the approved QC plan. The signatures must be in original ink. Stamped signatures are not acceptable.
 - (2) Update submittal register database as submittal actions occur and maintain the submittal register at project site until final acceptance of all work by Contracting Officer.
 - (3) Retain a copy of approved submittals at project site, including Contractor's copy of approved samples.
- b. When the Approving Authority is the Designer of Record, the DOR must approve, professionally stamp, sign, and date submittals. DOR stamp on construction submittals or submission of design documents that include construction submittals indicates DOR approval for construction. QC organization must certify submittals, assure proper signatures, and forward to Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with

contract Number (insert contract number here), is in compliance with the contract requirements, can be installed in the allocated spaces, and is submitted for DOR approval.

RFP Part Four and Part Five Submittals:

Approved by DOR _____, Date _____

Certified by QC Manager _____, Date _____"

- (1) Sign certifying statement or approval statement. The person signing certifying statements must be QC organization member designated in the approved QC plan. The signatures must be in original ink. Stamped signatures are not acceptable.
- (2) Update submittal register database as submittal actions occur and maintain the submittal register at project site until final acceptance of all work by Contracting Officer.
- (3) Send copies of final DOR or QC Specialist approved and signed submittals that are identified in this section for Government surveillance to the Contracting Officer. Stamp copies "For Surveillance Only."

1.4.8 Government's Responsibilities

When approving authority is the Contracting Officer, the Government will:

- a. Note date on which submittal was received from QC Manager, on each submittal.
- b. Review submittals for compliance with contract documents.

1.4.8.1 Government Actions

Submittals will be returned with one of the following notations:

- a. Submittals marked "approved" or "approved as submitted" authorize Contractor to proceed with work covered.
- b. A submittal marked "not reviewed" will be returned with an explanation of the reason it was not reviewed.
- c. Submittals marked "approved as noted" or "approval except as noted; resubmission not required" 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 must be resubmitted with appropriate changes. No work is allowed to proceed for this item until resubmittal is approved.
- e. Submittals required for surveillance will be returned only if corrective actions are required.

1.5 FORMAT OF SUBMITTALS

1.5.1 Transmittal Form

Transmit submittals with transmittal form prescribed by Contracting Officer and standard for the project.

1.5.1.1 Combined Design and Construction Submittal Notification

Indicate on the design submissions transmittal form, which construction submittals have been combined with the design documents. Coordinate transmittal form list of combined design and construction submittals with submittal register to indicate DOR approval of all combined submittals.

1.5.1.2 Sustainable Design and Construction Submittals

On all projects, provide sustainability submittals in accordance with requirements of this document, FC 1-300-09N, "Navy and Marine Corps Design Procedures". Specific submittal requirements are also identified in technical sections of the specifications. Separate out data demonstrating compliance with construction sustainability requirements and submit separately but concurrently.

1.5.2 Identifying Submittals

When submittals are provided by a Subcontractor, the Prime Contractor is to prepare, review and stamp with Contractor's approval all specified submittals prior to submitting for Government approval.

Identify submittals, except sample installations and sample panels, 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. Date of the drawings and revisions.
- d. Name, address, and telephone number of subcontractor, supplier, manufacturer and any other subcontractor associated with the submittal.
- e. Section number of the specification section by which submittal is required.
- f. Submittal description (SD) number of each component of submittal.
- g. When a resubmission, add alphabetic suffix on submittal description, for example, submittal 18 would become 18A, to indicate resubmission.
- h. Product identification and location in project.

1.5.3 Format for SD- 02 Shop Drawings

- a. Shop drawings are not to be less than 8 1/2 by 11 inches nor more than 30 by 42 inches, except for full size patterns or templates. Prepare drawings to accurate size, with scale indicated, unless other form is required. Drawings are to be suitable for reproduction and be of a

quality to produce clear, distinct lines and letters with dark lines on a white background.

- 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 IDENTIFYING SUBMITTALS of this section.
- d. Number drawings in a logical sequence. Each drawing is to bear the number of the submittal in a uniform location adjacent to the title block. Place the Government contract number in the margin, immediately below the title block, for each drawing.
- e. Dimension drawings, except diagrams and schematic drawings; prepare drawings demonstrating interface with other trades to scale. Use the same unit of measure for shop drawings as indicated on the contract drawings. Identify materials and products for work shown.
- f. Include the nameplate data, size and capacity on drawings. Also include applicable federal, military, industry and technical society publication references.

1.5.4 Format of SD - 03 Product Data and SD - 08 Manufacturer's Instructions

- 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, with information and format as required for submission of SD-07 Certificates.
- d. Provide product data in metric dimensions. Where product data are included in preprinted catalogs with English units only, submit metric dimensions on separate sheet.
- e. Include the manufacturer's name, trade name, place of manufacture, and catalog model or number on product data. Also include applicable federal, military, industry and technical society publication references. Should manufacturer's data require supplemental information for clarification, submit as specified for SD-07 Certificates.
- f. Where equipment or materials are specified to conform to industry and technical society reference standards of the organizations such as American National Standards Institute (ANSI), ASTM International (ASTM), National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL), and Association of Edison Illuminating Companies (AEIC) submit proof of such compliance. The label or

listing by the specified organization is acceptable evidence of compliance. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Contracting Officer. State on the certificate that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

- g. Collect required data submittals for each specific material, product, unit of work, or system into a single submittal and marked for choices, options, and portions applicable to the submittal. Mark each copy of the product data identically. Partial submittals will not be accepted for expedition of construction effort.
- h. Submit manufacturer's instructions prior to installation.

1.5.5 Format of SD - 04 Samples

Furnish samples in sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately same size as specified:

- a. Sample of Equipment or Device: Full size.
- b. Sample of Materials Less than 2 by 3 inches: Built up to 8 1/2 by 11 inches.
- c. 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.
- d. 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.
- e. Sample of Non-Solid Materials: 1.6 pints. Examples of non-solid materials are sand and paint.
- f. Color Selection Samples: 2 by 4 inches. Where samples are specified for selection of color, finish, pattern, or texture, submit the full set of available choices for the material or product specified. Sizes and quantities of samples are to represent their respective standard unit.
- g. Sample Panel: 4 by 4 feet.
- h. Sample Installation: 100 square feet.
- i. Samples Showing Range of Variation: Where variations in color, finish, pattern, or texture are unavoidable due to nature of the materials, submit sets of samples of not less than three units showing extremes and middle of range. Mark each unit to describe its relation to the range of the variation.
- j. Reusable Samples: Incorporate returned samples into work only if so specified or indicated. Incorporated samples are to be in undamaged condition at time of use. Recording of Sample Installation: Note and preserve the notation of area constituting sample installation but remove notation at final clean-up of project.

When color, texture or pattern is specified by naming a particular manufacturer and style, include one sample of that manufacturer and style, for comparison.

1.5.6 Format of SD - 05 Design Data and SD - 07 Certificates

Provide design data and certificates on 8 1/2 by 11 inches paper. Provide a bound volume for submittals containing numerous pages.

1.5.7 Format of SD-06 Test Reports and SD - 09 Manufacturer's Field Reports

Provide reports on 8 1/2 by 11 inches paper in a complete bound volume. Indicate by prominent notation, each report in the submittal. Indicate specification number and paragraph number to which it pertains.

1.5.8 Format of SD - 10 Operation and Maintenance Data (O&M)

Comply with the requirements specified in Section 01 78 23 OPERATION AND MAINTENANCE DATA for O&M Data format.

1.5.9 Format of SD - 01 Preconstruction Submittals and SD - 11 Closeout Submittals

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.

Provide all dimensions in administrative submittals in English.

1.6 QUANTITY OF SUBMITTALS

1.6.1 Electronic Submittals

Provide submittals in electronic format, with the exception of material samples required for SD-04 Samples items. Compile the submittal file as a single, complete document, to include the Transmittal Form described within. Name the electronic submittal file specifically according to its contents, and coordinate the file naming convention with the Contracting Officer. Electronic files must be of sufficient quality that all information is legible. Use PDF as the electronic format, unless otherwise specified or directed by the Contracting Officer. Generate PDF files from original documents with bookmarks so that the text included in the PDF file is searchable and can be copied. If documents are scanned, optical character resolution (OCR) routines are required. Index and bookmark files exceeding 30 pages to allow efficient navigation of the file. When required, the electronic file must include a valid electronic signature or a scan of a signature.

E-mail electronic submittal documents smaller than 10MB to an e-mail address as directed by the Contracting Officer. Provide electronic documents over 10 MB on an optical disc or through an electronic file sharing system such as the DoD SAFE Web Application located at the following website: <https://safe.apps.mil/>.

PART 2 PRODUCTS

Not used.

Replace Shop 940 P&Vs / Replace 300 PSIG FFHE, FRC-E
Building 137, MCAS, Cherry Point, NC

N40085-21-D-0016

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 33 10.05 20

DESIGN SUBMITTAL PROCEDURES

05/17, CHG 5: 03/19

PART 1 GENERAL

1.1 SUMMARY

This section includes requirements for Contractor-originated design documents and design submittals.

1.2 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.

U.S. DEPARTMENT OF DEFENSE (DOD)

FC 1-300-09N (2014; with Change 4, 2018) Navy and Marine Corps Design

UFC 1-200-01 (2019; with Change 1, 2020) DoD Building Code

1.3 GENERAL DESIGN REQUIREMENTS

Contractor-originated design documents must provide a project design that complies with the Request For Proposal (RFP), FC 1-300-09N, UFC 1-200-01, the Core UFCs, and other UFC's listed above.

1.4 SUBMITTALS

Submit all design submittals, including shop drawings used as design drawings, to the Government for approval. Submit the following in accordance with this section and Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES.

SD-01 Preconstruction Submittals

Consolidated RFP Documents

Submittal Register

SD-05 Design Data

Design Drawings

Specifications

Basis of Design

Design Submittals

SD-11 Closeout Submittals

Record Documents

1.5 DESIGN QUALITY CONTROL

1.5.1 Contractor Reviewing and Certifying Authority

The QC organization is responsible for reviewing and certifying that design submittals are in compliance with the contract requirements.

1.5.2 Government Approving Authority

The Contracting Officer is the approving authority for design submittals.

1.5.3 Designer of Record Certifying Authority

The Designer of Record (DOR), as registered and defined in FC 1-300-09N, is the design certifying authority. The DOR accepts responsibility for design of work in each respective design discipline, by stamping and approving final construction drawings submitted to the Government approval authority.

1.5.4 Contractor Construction Actions

Upon submission of sealed and signed design documents certified by the DOR, Design Quality Control (DQC) Manager and the Quality Control (QC) Managers, the Contractor may proceed with material and equipment purchases, fabrication and construction of any elements covered by that submittal, except as specified in the following paragraph.

1.5.4.1 Exception to Contractor Construction Actions

The Government will approve the following final submittals before the Contractor shall be allowed to proceed with construction:

- a. Any design submittal that includes or will be impacted by a design change to the contract. Final Government approval of the design change is required before construction can begin on the work included in that design submittal.

1.5.5 Contractor's Responsibilities

- a. Designate a lead engineer to be in responsible charge to coordinate the design effort of the entire project. This engineer must coordinate all design segments of the project to assure consistency of design between design disciplines.
- b. With the Designer of Record, verify site information provided in the RFP. In addition, provide additional field investigations and verification of existing site conditions as may be required to support the development of design and construction of the project.
- c. Indicate on the transmittal form accompanying submittal which design submittals are being submitted as shop drawings.
- d. Advise Contracting Officer of variations, as required by paragraph VARIATIONS.
- e. Provide an updated, cumulative submittal register with each design package that identifies the design and construction submittals required by that design package and previous submittals. The

submittal register needs be laid out and completed by design A&E. Completion requires all section work (design, calibration, product (valve, FFHE), testing, etc.) to be outlined and scheduled with appropriate reviews.

- f. Refer to Section 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI) for Contractor's eOMSI responsibilities.

1.5.6 QC Organization Responsibilities

- a. QC Manager must certify design submittals for compliance with the contract documents. The DOR stamp on drawings indicates approval from the DOR.
- b. QC organization must certify submittals forwarded by the Designer of Record (DOR) to the Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with Contract Number (insert contract number here), is in compliance with the contract documents, and is submitted for Government approval.

Certified by Design Quality Control (DQC) Manager

_____, Date _____

Certified by QC Manager _____,

Date _____"

- c. Sign certifying statement. The persons signing certifying statements must be the QC organization members designated in the approved QC plan. The signatures must be in original ink. Stamped signatures are not acceptable.
- d. Update submittal register as submittal actions occur and maintain the submittal register at project site until final approval of all work by Contracting Officer.
- e. Retain a copy of approved submittals at project site.

1.5.7 Government Responsibilities

The Government will:

- a. Note date on which submittal was received from QC manager, on each submittal.
- b. Perform a quality assurance (QA) review of submittals. Government will notify Contractor when comments for that design package are posted and ready for Contractor evaluation and resolution.
- c. Upon submittal of final design package and resolution of comments by the Contractor, the Government will sign final design package, when approved, and return electronic copy of signed design documents to the Contractor.
- d. Upon Government receipt and acceptance of the Designer of Record signed and stamped final design submission for all work, a no-cost unilateral modification will be issued to incorporate the final design

into the contract.

1.5.7.1 Actions Possible

Submittals will be returned with one of the following notations:

- a. Submittals may be marked "approved." Submittals marked "approved" indicate a quality assurance (QA) review has been performed. Government review or approval of any portion of the proposal or final design does not relieve the Contractor from responsibility for meeting the contract requirements or for any error that may exist, because under the Quality Control (QC) requirements of this contract, the Contractor is responsible for ensuring information contained within each submittal accurately conforms with the requirements of the contract documents. Furthermore, Government review or approval of a submittal is not to be construed as a complete check.
- b. Submittals marked "not reviewed" indicate submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and certified by Contractor, or is not complete. Submittal 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.
- c. 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 must be resubmitted with appropriate changes. If work has been started on the unacceptable portion of the design submittal, the Contractor must propose corrective action. No further work is allowed to proceed until the issue is resolved in a manner satisfactory to the Government.

1.6 DESIGN DOCUMENTS

Provide design documents that include basis of design, design drawings, and design specifications, reports, and submittal register in accordance with FC 1-300-09N, Navy and Marine Corps Design Procedures.

The Contractor is required to make product, material, and system selections during the project design and indicate these choices on the design documents. Accomplish this by submitting design drawings and specifications that include proprietary submittal information such as manufacturers name, product names, model numbers, product data, manufactures information, provided optional features, appropriate connections, fabrication, layout, and product specific drawings. Adherence to RFP submittal requirements and provision of DOR approved construction submittal information on the design submittals - eliminates the need for follow-on traditional construction submittals after the final design is approved.

The Contractor is required to submit proprietary information to describe the construction submittal information in the design documents for all products, materials, and systems submittals listed below:

All products, materials, and systems on the project.

Refer to Section 01 33 00.05 20, CONSTRUCTION SUBMITTAL PROCEDURES for requirements pertaining to Contractor proposed design changes or

variations.

1.7 DESIGN DRAWINGS

Prepare, organize, and present design drawings in accordance with the requirements of FC 1-300-09N, Navy and Marine Corps Design Procedures.

Submit all CAD files for the final drawings on CD-ROM or DVD disks in AutoCAD 2016 format. Drawing files must be full files, bound, uncompressed and unzipped.

1.7.1 Design Drawings Used as Shop Drawings

Design drawings may be prepared more like shop drawings to minimize construction submittals after final design is approved. If the Contractor chooses or is required to include the construction submittal information on the design documents, indicate proprietary information on the design drawings as necessary to describe the products, materials, or systems that are to be used on the project. Construction submittal information included directly in the design drawings must be approved by the DOR. All design documents must be professionally signed in accordance with FC 1-300-09N, Navy and Marine Corps Design Procedures.

1.7.2 Drawing Format For Design Drawings Used as Shop Drawings

The Contractor-originated drawings will be used as the basis for the record drawings. Shop drawings included as design documents must comply with the same drawing requirements such as drawing form, sheet size, layering, lettering, and title block used in design drawings.

1.7.3 Identification of Design Drawings Used as Shop Drawings

The Contractor's transmittal letter and submittal register must indicate which design drawings are being submitted as shop drawings.

1.7.4 Naval Facilities (NAVFAC) Engineering Command Drawing Numbers

Number the final Contractor-originated design drawings consecutively with NAVFAC drawing numbers. Determine the total number of sheets required for the complete set of drawings before requesting the NAVFAC drawing numbers from the Contracting Officer.

1.7.5 Seals and Signatures on Documents

All final Contractor-originated design drawings must be signed, dated, and bear the seal of the registered architect or the registered engineer of the respective discipline in accordance with FC 1-300-09N. This seal must be the seal of the Designer of Record for that drawing, and who is professionally registered for work in that discipline. A principal or authorized licensed or certified employee must electronically sign and date final drawings and cover sheet, in accordance with FC 1-300-09N. The design drawing coversheets must be sealed and signed by the lead licensed architect or engineer of the project design team. Indicate the Contractor's company name and address on the drawing coversheets of each design submittal. Application of the electronic seal and signature accepts responsibility for the work shown thereon.

1.7.6 Units of Measure

Utilize English Inch-Pound units of measure on the design documents

1.8 SPECIFICATIONS

Provide a Contractor-originated design specification that in conjunction with the drawings, demonstrates compliance with requirements of the RFP. The specified products, materials, systems, and equipment that are approved by the DOR; submitted to the Government by the Contractor; and reviewed by the Contracting Officer must be used to construct the project. UFGS sections contained in RFP Part 2 become a part of the Contractor-originated Division 01 specification without modification. Specification Sections contained in RFP Part 5 become a part of the Contractor-originated specification without modification.

1.8.1 Specifications Components and Format

The Contractor must prepare design specifications that include a UFGS specification for each product, material, or system on the project. If the Contractor chooses or is required above to combine design and construction submittal information on the design documents, provide a UFGS specification and also proprietary information such as catalog cuts and manufacturers data that demonstrates compliance with the RFP. Organize the specifications using Construction Specification Institute (CSI) MasterFormat™ unless the Contracting Officer requires a UniFormat organization. Navy's use of system specifications takes precedence over CSI MasterFormat component breakdown and related component specifications. Provide project specifications to include the following:

- a. Provide the specification cover sheet with the professional seal and signature of the lead licensed architect or engineer of the project design team. Indicate the Contractor's company name and address on the specification coversheet.
- b. Table of contents for entire specification.
- c. Individual UFGS specification sections for each product, material, and system required by the RFP. Edit UFGS sections in accordance with RFP Part 4, PTS Section Z-10, Design Submittals.
- d. If proprietary information is provided or required, include a coversheets for the product, material, or system information that is being proprietarily specified. This information is to follow the related UFGS specification.
- e. If proprietary information is provided or required, include highlighted and annotated Catalog Cuts, Manufacturer's Product Data, Tests, Certificates, Manufactures information and letters for each product, material, or system that is being proprietary specified.
- f. Coordinated submittal register for all products, materials and systems with each design submittal. Provide a cumulative register that identifies the design and construction submittals required by each design package along with previous design submittals. The DOR must assist in developing the submittal register by determining which submittal items are required to be approved by the DOR. Complete all fields in the final submittal register in order to obtain Government approval of the final design. Submittal register to include separate

but simultaneous delivery and approval of design or data required to fulfill sustainability requirements.

1.8.2 Specifications Section Source Priority

Choose UFGS sections that describe the products, materials, and systems that are used on the project. Use current UFGS sections that are available on the Whole Building Design Guide website (available at this website:

<https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs>) and give priority to the Unified Tri-Service UFGS sections (no spec number suffix) and UFGS that are prepared by NAVFAC (.00 20 suffix). Only use a UFGS section prepared by another DoD Component (.00 10, and .00 30 suffix), if an applicable NAVFAC prepared specification section does not exist. Do not use Army (.00 10 suffix) and NASA (.00 40 suffix) electrical and mechanical specifications. If no applicable UFGS technical specification exists to meet your project requirements, consult with the NAVFAC Component for guidance and create a new UFGS specification in accordance with UFC 1-300-02, Unified Facilities Guide Specifications (UFGS) Format Standard.

1.8.3 Identification of Manufacturer's Product Data Used with Specifications

Provide complete and legible catalog cut sheets, product data, installation instructions, operation and maintenance instructions, warranty, and certifications for products and equipment for which final material and equipment choices have been made. Indicate, by prominent notation, each product that is being submitted including optional manufacturer's features, and indicate where the product data shows compliance with the RFP.

Coordinate with Section 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI) for Contractor's eOMSI responsibilities.

1.8.4 Specification Software

Submit the final specification source files in SpecsIntact.

1.9 BASIS OF DESIGN

Prepare, organize, and present basis of design in accordance with the requirements of FC 1-300-09N. The basis of design must be a presentation of facts to demonstrate the concept of the project is fully understood and the design is based on sound engineering principles. Provide design analyses for each discipline and include the following:

a. Basis of design that includes:

- (1) An introductory description of the project concepts that addresses the salient points of the design;
- (2) An orderly and comprehensive documentation of criteria and rationale for system selection; and
- (3) The identification of any necessary licenses and permits that are anticipated to be required as a part of the design or construction process.

- b. Code and criteria search must identify all applicable codes and criteria and highlight specific requirements within these codes and criteria for critical issues in the facility design.
- c. Calculations as specified and as needed to support this design.
- d. Fall Protection Analysis
- e. Draft and Interim DD Form 1354 that document the real property assets of the project. Refer to RECORD DOCUMENTS paragraphs in this section for requirements.
- f. eOMSI Facility Data Workbook (FDW)

1.9.1 Basis of Design Format

The basis of design for each design discipline must include a cover page indicating the project title and locations, contract number, table of contents, tabbed separations for quick reference, and bound in separate volumes for each design discipline.

1.9.2 Design Calculations

Place the signature and seal of the designer responsible for the work on the cover page of the calculations for the respective design discipline.

1.9.3 Fall Protection Analysis

Eliminate fall hazards in the facility or if not feasible provide control measures to protect personnel conducting maintenance work after completion of the project. Identify fall hazards in the Basis of Design with the Design Development and Prefinal submittals. The analysis must describe how fall hazards are considered, eliminated, prevented or controlled to prevent maintenance personnel from exposure to fall hazards while performing work at heights. Refer to RFP Part 2, Section 01 35 26, GOVERNMENTAL SAFETY REQUIREMENTS for fall hazard protection requirements.

1.10 RECORD DOCUMENTS

1.10.1 Record Drawings

The as-built modifications must be accomplished by electronic drafting methods on the Contractor-originated. DWG design drawings to create a complete set of record drawings.

- a. For each record drawing, provide CAD drawing identical to signed Contractor-originated PDF drawing, that incorporates modifications to the as-built conditions. In addition, copy initials and dates from the Contracting Officer approved .PDF documents to the title block of the record CAD.DWG drawings. The RFP reference or definitive drawings are not required for inclusion in the record set of drawings.
- b. After all as-built conditions are recorded on the CAD.DWG files, produce a PDF file of each individual record drawing in conformance with FC 1-300-09N. Electronic signatures are not required on record drawings.
- c. Provide a searchable electronic copy of the photo documentation used

in the QC Daily Reports. Refer to Section 01 45 00.05 20, DESIGN AND CONSTRUCTION QUALITY CONTROL.

1.10.2 Source Documents

Provide the specifications, basis of design, reports, surveys, record model, calculations, and any other contracted documents on the CD-ROM or DVD disk with the record drawings.

1.10.3 Record Model

Provide Record Model in accordance with FC 1-300-09N.

PART 2 PRODUCTS

2.1 CONSOLIDATED RFP DOCUMENTS

Within four weeks after contract award, provide three electronic and hard copies of consolidated RFP documents incorporating the Contractor's Proposal and all RFP amendments and revisions that are contained in the contract award. Identify the changes to the RFP with the "Red-lining" or "Track Changes" feature of SpecsIntact or MS Word to highlight the pre-award modifications to the contract. Identify the amendment source at each addition and deletion by annotation, such as footnote or reference in parenthesis.

2.2 DESIGN SUBMITTALS

Complete the Contractor-originated design submittals as defined by this contract, and coordinate with the approved design network analysis schedule.

2.2.1 Design Submittal Packages

The Government prefers to review for Quality Assurance (QA) as few submittal packages as possible. Site and Building Design Submittal Packages are required, however Critical Path Design Submittals are acceptable if they are substantiated as having an impact to the critical path in the Government approved Network Analysis Schedule. A Critical Path submittal must include all design analyses, drawings, specifications and product data required to fully describe the project element for Government review.

Examples of project elements that may be submitted as Critical Path Design Submittal Packages are: Master Plan Design, Demolition Design, Foundation Design, Structural Design, Building Enclosure Design, Remaining Work Design, Furniture/Equipment Design, long lead items, or any other construction activity or project element that can be organized into a submittal package that can be reviewed and approved by the Government without being contingent upon subsequent design submittals.

2.2.1.1 Site Design

The Site Design typically includes the following components:

- a. Demolition
- b. Site work including Environmental

c. Geotechnical

2.2.1.2 Building Design

The Building Design typically includes the following components:

- a. Foundation
- b. Structural
- c. Remaining Work
- d. Equipment

2.2.2 Required Design Submittals

Provide the following Design Submittal packages. Provide comprehensive, multi-discipline design packages that include design documentation for project elements, fully developed to the design stage indicated, and in accordance with FC 1-300-09N, except where specified otherwise.

- a. Design Development - Government Progress QA. 21 calendar day Government review time.
- b. Prefinal (100 percent) Design - Government Progress QA. 21 calendar day Government review time.
- c. Final Design - Government QA. 21 calendar day Government review time for submittals requiring Government approval prior to construction.

2.2.3 Critical Path Design Submittals

Provide Critical Path Design Submittals that include design documents for the project elements involved. Include and provide full documentation that would normally have been provided in earlier submittal stages, such as Design Development Phase.

- a. 100 percent (Prefinal) Design - Government Progress QA. 21 calendar day Government review time.
- b. Final Design - Government QA. 21 calendar day Government review time for submittals requiring Government approval prior to construction.

2.2.4 Review Copies of Design Submittal Packages

- a. Provide bound copies of each design submittal package for review to the following reviewers. Addresses for mailing will be furnished at the PAK meeting.
 - (1) 8 paper copies to the NAVFAC component and 1 electronic copies of the Final submittals.
 - (2) 2 paper copies to the Activity claimant.
 - (3) 8 paper copies to the Activity Public Works Officer (PWO) and 1 electronic copies of the Final submittals.
- b. Provide the same quantities of copies for resubmittals, as required for each design submittal.

2.2.5 Design Submittal Review Schedule

Use the time frames for Government submittal review identified in the RFP. For construction scheduling purposes add additional time to the identified minimum review time periods to allow for the following scheduling conditions:

- (1) Submittals received after noon will be logged in on the following business day.
- (2) Federal holidays, including the period between Christmas and New Year's Day, will be considered non-working days for Government personnel in reviewing design submittals and attending design related meetings.
- (3) Postpone delivery if Government personnel to receive the submittal are unavailable. Assure in advance of the submittal delivery it can be received.
- (4) Postpone delivery when heightened security restricts access to the Base. Coordinate heightened security requirements in advance with the CM.
- (5) Period of review for a resubmittal is the same as the initial submittal. Review time for resubmittals caused by non-conformance, do not result in a change in contract duration or cost.

2.2.6 Distribution of Approved Final Design Drawings and Specification to Government Representatives

Submit within 14 calendar days of receiving the Government Approved Final Design Documents, which includes any Critical Path Final Design Document Packages, electronic and hardcopy(s) of these final documents to Government representatives for use during the construction of the project. If Critical Path Submittal Packages are used, provide coversheets and index to identify each sheet and how this Critical Path Submittal Package fits into the overall project. Provide the number and type of copies of the final design documents to the following Government representative:

- a. Two electronic and two hard copy(s) to the Project Manager (name, address, and phone number)
- b. Two electronic and two hard copy(s) to the Design Manager
- c. One electronic and one hard copy(s) to the Construction Manager
- d. One electronic and one hard copy(s) to the Contracting Officer
- e. One electronic and one hard copy(s) to the Public Works Officer

2.3 IDENTIFICATION OF DESIGN SUBMITTALS

Provide a title sheet to clearly identify each submittal, the completion status, and the date. The title sheet must use the standard format indicated in the FC 1-300-09N for title sheets. The title sheet must be unique to a particular design submittal. Submit the project title sheet

with design status and date for the design submittals.

2.3.1 Critical Path Submittal Title Sheet

Identify Critical Path submittals as such and include a title sheet indicating the type of critical path submittal, the level of completion of the individual drawings, and which drawings are approved for construction.

2.3.2 Construction Document Validation

All CAD design documents used to construct the facility must bear a visible and legible AutoCAD generated plotstamp in the lower right-hand margin of each drawing. The plotstamp information on the jobsite construction documents must match the plotstamp information contained on the following development stages of the design documents:

- a. The Final Critical Path Submittal or the Final Design Submittal professionally signed by the DOR and submitted for Government approval.
- b. The Final Critical Path Submittal or the Final Design Submittal drawings that have been approved by the Government. This development stage may be combined with "c." below, if issued at the same time.
- c. The Final Critical Path or Final Design drawings that have been included in the contract by modification.
- d. The Final Critical Path or Final Design drawings which include subsequent revisions to the design documents that have been included in the contract by modifications.

Issue new drawings for construction which bear the current plotstamp once a new development stage of the design documents has been accomplished. Design documents which do not bear a plotstamp that matches the corresponding plotstamp exhibited on the design documents described above, are not allowed to be used for the construction of the project. The plotstamp must bear the date and time of the plot, at a minimum. Maintain a plotstamp record at the jobsite that lists the applicable plotstamp information for each drawing through each stage of development described above.

PART 3 EXECUTION

3.1 CONTRACTOR'S RESOLUTION OF COMMENTS

Provide written responses to all written comments by the Government. Resubmittal of an unacceptable design submittal must be a complete package that includes all the required, specified components of that design submittal. When required by the Government, Contractor resubmittal of design package, due to nonconformance to the contract, is not a delay in the contract.

3.2 DESIGN CHANGE AND VARIATIONS

A design change is when the design is revised from what was reviewed by the Government during any phase of the design process prior to Government approval of the Final Design. A variation is any portion of the design that differs from the requirements of the solicitation, accepted proposal, or final design after Government approval of the Final Design. Design changes and variations require Government approval and only variations

that are advantageous to the Government will be considered. Refer to Section 01 33 00.05 20, CONSTRUCTION SUBMITTAL PROCEDURES for further explanation and requirements of design change and variation.

The Contractor must immediately notify the Government of all potential design changes and variations via a Request for Information (RFI) to the Contracting Officer. Design changes or variations that the Contractor asserts will require a contract modification to adjust the cost/price or schedule are not allowed to be incorporated in the design during any phase of the design process without prior documented approval from the Contracting Officer. Contractors will not receive compensation for any unauthorized design changes or variations which have been included in the Government approved Final Design. Include the following information in the design change and variation RFIs:

- a. Indicate the RFP Parts, sections, and paragraphs affected by this design change or variation,
- b. The scope of work of the design change or variation,
- c. The reason for the proposed change,
- d. Explanations of how the variation is advantageous to the Government.
- e. Indicate which upcoming design submittal will be affected by the subject design change,
- f. Explanation of contract cost/price and schedule impacts or provide an affirmative statement indicating that the design change or variation will not have an impact on the contract cost/price or schedule.
- g. Coordination measures proposed to incorporate the design change or variation into the construction.
- h. Upon request by the Contracting Officer, submit a cost proposal prepared using the UniFormat Work Breakdown Structure for all design changes and variations that have cost or schedule impacts. Submit a proposal that provides cost breakdown of each UniFormat system or subsystem that is applicable to the design change or variation. Utilize the units of measure indicated in the UniFormat Structure at the NAVFAC DB RFP website, <https://www.wbdg.org/ffc/navy-navfac/design-build-request-proposal>.

3.3 THE CONTRACT AND ORDER OF PRECEDENCE

3.3.1 Contract Components

The contract consists of the solicitation, the approved proposal, and the final design.

3.3.2 Order of Precedence

In the event of conflict or inconsistency between any of the below described portions of the conformed contract, precedence must be given in the following order:

- a. Any portions of the proposal or final design that exceed the requirements of the solicitation.

- (1) Any portion of the proposal that exceeds the final design.
 - (2) Any portion of the final design that exceeds the proposal.
 - (3) Where portions within either the proposal or the final design conflict, the portion that most exceeds the requirements of the solicitation has precedence.
- b. The requirements of the solicitation, in descending order of precedence:
- (1) Standard Form 1442, Price Schedule, and Davis Bacon Wage Rates.
 - (2) Part 1 - Contract Clauses.
 - (3) Part 2 - General Requirements.
 - (4) Part 3 - Project Program Requirements.
 - (5) Part 6 - Attachments (excluding Concept Drawings)
 - (6) Part 5 - Prescriptive Specifications exclusive of performance specifications.
 - (7) Part 4 - Performance Specifications exclusive of prescriptive specifications.
 - (8) Part 6 - Attachments (Concept Drawings).
- c. Within Part 3 - Project Program Requirements Section 5.0 ROOM REQUIREMENTS provides detailed requirements on a room by room basis that further defines requirements that are in addition to the ENGINEERING SYSTEMS REQUIREMENTS SECTION.

3.3.2.1 Government Review or Approval

Government review or approval of any portion of the proposal or final design does not relieve the Contractor from responsibility for errors or omissions with respect thereto.

-- End of Section --

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
EOD Complex

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASSIFICATION	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY					REMARKS	
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		MAILED TO CONTR/ DATE RCD FRM APPR AUTH
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01 14 00	SD-01 Preconstruction Submittals														
			List of Contact Personnel	1.3.1.1													
		01 20 00	SD-01 Preconstruction Submittals														
			Schedule of Prices	1.3													
		01 30 00	SD-01 Preconstruction Submittals														
			View Location Map	1.3													
			Progress and Completion	1.4													
			Pictures														
			Design Submittal Packaging	1.8.1													
			Performance Assessment Plan (PAP)	1.12													
		01 31 23.13 20	SD-01 Preconstruction Submittals														
			List of Contractor's Personnel	1.4.2													
		01 32 17.00 20	SD-01 Preconstruction Submittals														
			Baseline NAS	1.2.2.1													
			Construction Baseline NAS	1.2.2.3													
			Designated Project Scheduler	1.9													
			SD-07 Certificates														
			Three-Week Look Ahead	1.3													
			Schedule														
			Monthly Network Analysis	1.4.1													
			Updates														
			SD-11 Closeout Submittals														
			As-Built Schedule	1.4.2													
		01 33 00.05 20	SD-01 Preconstruction Submittals														
			Submittal Register	1.3.1													

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
EOD Complex

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASSIFICATION	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				MAILED TO CONTR/	REMARKS			
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/	DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER			ACTION CODE	DATE OF ACTION	DATE RCD FRM APPR AUTH
		01 33 10.05 20	SD-01 Preconstruction Submittals																
			Consolidated RFP Documents	2.1															
			Submittal Register	1.5.5															
			SD-05 Design Data																
			Design Drawings	1.7															
			Specifications	1.8															
			Basis of Design	1.9															
			Design Submittals	2.2															
			SD-11 Closeout Submittals																
			Record Documents	1.10															
		01 35 26	SD-01 Preconstruction Submittals																
			Accident Prevention Plan (APP)	1.8															
			Accident Prevention Plan (APP)	1.8															
			SD-06 Test Reports																
			Monthly Exposure Reports	1.4															
			Notifications and Reports	1.13															
			Accident Reports	1.13.2															
			LHE Inspection Reports	1.13.3															
			SD-07 Certificates																
			Contractor Safety Self-Evaluation Checklist	1.5															
			Crane Operators/Riggers	1.7.1.4															
			Standard Lift Plan	1.8.3.2															
			Critical Lift Plan	1.8.3.3															
			Activity Hazard Analysis (AHA)	1.9															
			Confined Space Entry Permit	1.10.1															

SUBMITTAL REGISTER

CONTRACT NO. _____

TITLE AND LOCATION
EOD Complex

CONTRACTOR _____

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASSIFICATION	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS		
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/	DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER			ACTION CODE	DATE OF ACTION
		01 35 26	Hot Work Permit	1.10.1														
			Certificate of Compliance	1.13.4														
		01 45 00.05 20	SD-01 Preconstruction Submittals															
			Design Quality Control (DQC) Plan	1.3.3														
			Construction Quality Control (CQC) Plan	1.3.3														
			Indoor Air Quality (IAQ) Management Plan	1.9														
			SD-05 Design Data															
			Design Quality Control Documentation	1.4.2														
		01 50 00	SD-01 Preconstruction Submittals															
			Construction Site Plan	1.3														
			Traffic Control Plan	3.3.1														
			Contractor Computer Cybersecurity Compliance Statements	1.5.1.4														
			Contractor Temporary Network Cybersecurity Compliance Statements	1.5.6														
		01 57 19	SD-01 Preconstruction Submittals															
			Preconstruction Survey	1.5.1														
			Solid Waste Management Permit	1.9														
			Regulatory Notifications	1.5.2														
			Environmental Protection Plan	1.6														

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
EOD Complex

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASSIFICATION	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS	
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE			DATE OF ACTION
		01 57 19	Employee Training Records	1.5.5													
			Environmental Manager	1.5.4													
			Qualifications														
			SD-06 Test Reports														
			Laboratory Analysis	3.5.1.1.2													
			Monthly Solid Waste Disposal	1.9.1													
			Report														
			SD-07 Certificates														
			Employee Training Records	1.5.5													
			ECATTS Certificate Of	1.4.1.2													
			Completion														
			Erosion and Sediment Control	1.5.5													
			Inspector														
			SD-11 Closeout Submittals														
			Waste Determination	3.5.1													
			Documentation														
			Disposal Documentation for	3.5.3.6													
			Hazardous and Regulated Waste														
			Assembled Employee Training	1.5.5													
			Records														
			Solid Waste Management Permit	1.9													
			Project Solid Waste Disposal	3.5.2.1													
			Documentation Report														
			Contractor Hazardous Material	3.6.1													
			Inventory Log														

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
EOD Complex

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASSIFICATION	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS		
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE			DATE OF ACTION	
																		(g)
		01 57 19	Hazardous Waste/Debris Management	3.5.3.1														
			Regulatory Notifications	1.5.2														
			Sales Documentation	3.5.2.1														
			Contractor Certification	3.5.2.1														
		01 74 19	SD-01 Preconstruction Submittals															
			Construction Waste Management Plan	1.5														
			SD-11 Closeout Submittals															
			Final Construction Waste Diversion Report	1.7														
		01 78 23	SD-10 Operation and Maintenance Data															
			O&M Database	1.4														
			Training Plan	3.1.1														
			Training Outline	3.1.3														
			Training Content	3.1.2														
			SD-11 Closeout Submittals															
			Training Video Recording	3.1.4														
			Validation of Training Completion	3.1.6														
		01 78 24.00 20	SD-11 Closeout Submittals															
			eOMSI, Progress Submittal	1.4.1														
			eOMSI, Prefinal Submittal	1.4.2														
			eOMSI, Final Submittal	1.4.3														
		01 91 00.15 20	SD-05 Design Data															

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
EOD Complex

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASSIFICATION	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS		
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/	DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER			ACTION CODE	DATE OF ACTION
		01 91 00.15 20	Design Phase Commissioning Plan	3.2														
			SD-06 Test Reports															
			Design Review Report	3.3														
			Interim Construction Phase Commissioning Plan	3.7														
			Final Construction Phase Commissioning Plan	3.7														
			Initial Commissioning Report	3.11														
			Issues Log	1.12														
			Completed Pre-Functional Checklists	3.8														
			SD-07 Certificates															
			Commissioning Firm	1.10														
			Certificate Of Readiness	1.13														
			SD-11 Closeout Submittals															
			Final Commissioning Report	3.11														
			Updated Final Commissioning Report	3.12														
			Final Commissioning Report (eNotebook)	3.11														
			Updated Final Commissioning Report (eNotebook)	3.12														

SECTION 01 35 26

GOVERNMENTAL SAFETY REQUIREMENTS

11/20, CHG 3: 02/22

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 SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B30.5	(2021) Mobile and Locomotive Cranes
ASME B30.9	(2018) Slings
ASME B30.20	(2018) Below-the-Hook Lifting Devices
ASME B30.22	(2016) Articulating Boom Cranes
ASME B30.26	(2015; R 2020) Rigging Hardware

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ASSP A10.34	(2021) Protection of the Public on or Adjacent to Construction Sites
ASSP A10.44	(2020) Control of Energy Sources (Lockout/Tagout) for Construction and Demolition Operations
ASSP Z244.1	(2016) The Control of Hazardous Energy Lockout, Tagout and Alternative Methods
ASSP Z359.0	(2018) Definitions and Nomenclature Used for Fall Protection and Fall Arrest
ASSP Z359.1	(2020) The Fall Protection Code
ASSP Z359.2	(2017) Minimum Requirements for a Comprehensive Managed Fall Protection Program
ASSP Z359.3	(2019) Safety Requirements for Lanyards and Positioning Lanyards
ASSP Z359.4	(2013) Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components
ASSP Z359.6	(2016) Specifications and Design Requirements for Active Fall Protection Systems
ASSP Z359.7	(2019) Qualification and Verification

Testing of Fall Protection Products

ASSP Z359.11	(2014) Safety Requirements for Full Body Harnesses
ASSP Z359.12	(2019) Connecting Components for Personal Fall Arrest Systems
ASSP Z359.13	(2013) Personal Energy Absorbers and Energy Absorbing Lanyards
ASSP Z359.14	(2014) Safety Requirements for Self-Retracting Devices for Personal Fall Arrest and Rescue Systems
ASSP Z359.15	(2014) Safety Requirements for Single Anchor Lifelines and Fall Arresters for Personal Fall Arrest Systems
ASSP Z359.16	(2016) Safety Requirements for Climbing Ladder Fall Arrest Systems
ASSP Z359.18	(2017) Safety Requirements for Anchorage Connectors for Active Fall Protection Systems

ASTM INTERNATIONAL (ASTM)

ASTM F855	(2019) Standard Specifications for Temporary Protective Grounds to Be Used on De-energized Electric Power Lines and Equipment
-----------	---

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 1048	(2016) Guide for Protective Grounding of Power Lines
IEEE C2	(2017; Errata 1-2 2017; INT 1 2017) National Electrical Safety Code

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10	(2022) Standard for Portable Fire Extinguishers
NFPA 51B	(2019; TIA 20-1) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70	(2020; ERTA 20-1 2020; ERTA 20-2 2020; TIA 20-1; TIA 20-2; TIA 20-3; TIA 20-4) National Electrical Code
NFPA 70E	(2021) Standard for Electrical Safety in the Workplace
NFPA 241	(2022) Standard for Safeguarding Construction, Alteration, and Demolition

Operations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2014) Safety and Health Requirements
Manual

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

29 CFR 1910 Occupational Safety and Health Standards
29 CFR 1910.147 The Control of Hazardous Energy (Lock
Out/Tag Out)
29 CFR 1910.333 Selection and Use of Work Practices
29 CFR 1915 Confined and Enclosed Spaces and Other
Dangerous Atmospheres in Shipyard
Employment
29 CFR 1915.89 Control of Hazardous Energy
(Lockout/Tags-Plus)
29 CFR 1926 Safety and Health Regulations for
Construction
29 CFR 1926.16 Rules of Construction
29 CFR 1926.450 Scaffolds
29 CFR 1926.500 Fall Protection
29 CFR 1926.1400 Cranes and Derricks in Construction
CPL 2.100 (1995) Application of the Permit-Required
Confined Spaces (PRCS) Standards, 29 CFR
1910.146

1.2 DEFINITIONS

1.2.1 Competent Person (CP)

The CP is a person designated in writing, who, through training, knowledge and experience, is capable of identifying, evaluating, and addressing existing and predictable hazards in the working environment or working conditions that are dangerous to personnel, and who has authorization to take prompt corrective measures with regards to such hazards.

1.2.2 Competent Person, Cranes and Rigging

The CP, Cranes and Rigging, as defined in EM 385-1-1 Appendix Q, is a person meeting the competent person requirements, who has been designated in writing to be responsible for the immediate supervision, implementation and monitoring of the Crane and Rigging Program, who through training, knowledge and experience in crane and rigging is capable of identifying, evaluating and addressing existing and potential hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.3 Competent Person, Fall Protection

The CP, Fall Protection, is a person meeting the competent person requirements as defined in EM 385-1-1 Appendix Q and in accordance with ASSP Z359.0, who has been designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the fall protection program, who through training, knowledge and experience in fall protection and rescue systems and equipment, is capable of identifying, evaluating and addressing existing and potential fall hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.4 Competent Person, Scaffolding

The CP, Scaffolding is a person meeting the competent person requirements in EM 385-1-1 Appendix Q, and designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the scaffolding program. The CP for Scaffolding has enough training, knowledge and experience in scaffolding to correctly identify, evaluate and address existing and potential hazards and also has the authority to take prompt corrective measures with regard to these hazards. CP qualifications must be documented including experience on the specific scaffolding systems/types being used, assessment of the base material that the scaffold will be erected upon, load calculations for materials and personnel, and erection and dismantling. The CP for scaffolding must have a documented minimum of 8-hours of scaffold training to include training on the specific type of scaffold being used (e.g. mast-climbing, adjustable, tubular frame), in accordance with EM 385-1-1 Section 22.B.02.

1.2.5 Competent Person (CP) Trainer

A competent person trainer as defined in EM 385-1-1 Appendix Q, who is qualified in the training material presented, and who possesses a working knowledge of applicable technical regulations, standards, equipment and systems related to the subject matter on which they are training Competent Persons. A competent person trainer must be familiar with the typical hazards and the equipment used in the industry they are instructing. The training provided by the competent person trainer must be appropriate to that specific industry. The competent person trainer must evaluate the knowledge and skills of the competent persons as part of the training process.

1.2.6 High Risk Activities

High Risk Activities are activities that involve work at heights, crane and rigging, excavations and trenching, scaffolding, electrical work, and confined space entry.

1.2.7 High Visibility Accident

A High Visibility Accident is any mishap which may generate publicity or high visibility.

1.2.8 Load Handling Equipment (LHE)

LHE is a term used to describe cranes, hoists and all other hoisting equipment (hoisting equipment means equipment, including cranes, derricks, hoists and power operated equipment used with rigging to raise, lower or horizontally move a load).

1.2.9 Medical Treatment

Medical Treatment is treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even when provided by a physician or registered personnel.

1.2.10 Near Miss

A Near Miss is a mishap resulting in no personal injury and zero property damage, but given a shift in time or position, damage or injury may have occurred (e.g., a worker falls off a scaffold and is not injured; a crane swings around to move the load and narrowly misses a parked vehicle).

1.2.11 Operating Envelope

The Operating Envelope is the area surrounding any crane or LHE. Inside this "envelope" is the crane, the operator, riggers and crane walkers, other personnel involved in the operation, rigging gear between the hook, the load, the crane's supporting structure (i.e. ground or rail), the load's rigging path, the lift and rigging procedure.

1.2.12 Qualified Person (QP)

The QP is a person designated in writing, who, by possession of a recognized degree, certificate, or professional standing, or extensive knowledge, training, and experience, has successfully demonstrated their ability to solve or resolve problems related to the subject matter, the work, or the project.

1.2.13 Qualified Person, Fall Protection (QP for FP)

A QP for FP is a person meeting the definition requirements of EM 385-1-1 Appendix Q, and ASSP Z359.2 standard, having a recognized degree or professional certificate and with extensive knowledge, training and experience in the fall protection and rescue field who is capable of designing, analyzing, and evaluating and specifying fall protection and rescue systems.

1.2.14 Recordable Injuries or Illnesses

Recordable Injuries or Illnesses are any work-related injury or illness that results in:

- a. Death, regardless of the time between the injury and death, or the length of the illness;
- b. Days away from work (any time lost after day of injury/illness onset);
- c. Restricted work;
- d. Transfer to another job;
- e. Medical treatment beyond first aid;
- f. Loss of consciousness; or
- g. A significant injury or illness diagnosed by a physician or other

licensed health care professional, even if it did not result in (a) through (f) above

1.2.15 Government Property and Equipment

Interpret "USACE" property and equipment specified in USACE EM 385-1-1 as Government property and equipment.

1.2.16 Load Handling Equipment (LHE) Accident or Load Handling Equipment Mishap

A LHE accident occurs when any one or more of the eight elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; or collision, including unplanned contact between the load, crane, or other objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents, even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, or roll over). Document an LHE mishap or accident using the NAVFAC prescribed Navy Crane Center (NCC) accident form.

1.3 SUBMITTALS

Government approval is required for all submittals.

SD-01 Preconstruction Submittals
Accident Prevention Plan (APP)

SD-06 Test Reports

Monthly Exposure Reports
Notifications and Reports
Accident Reports
LHE Inspection Reports

SD-07 Certificates

Contractor Safety Self-Evaluation Checklist
Crane Operators/Riggers
Standard Lift Plan
Critical Lift Plan
Activity Hazard Analysis (AHA)
Confined Space Entry Permit
Hot Work Permit
Certificate of Compliance

1.4 MONTHLY EXPOSURE REPORTS

Provide a Monthly Exposure Report and attach to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both Prime and subcontractor. Failure to submit the report may result in retention of up to 10 percent of the voucher.

1.5 CONTRACTOR SAFETY SELF-EVALUATION CHECKLIST

Contracting Officer will provide a "Contractor Safety Self-Evaluation Checklist" to the Contractor at the pre-construction meeting. Complete the checklist monthly and submit with each request for payment voucher. An acceptable score of 90 or greater is required. Failure to submit the completed safety self-evaluation checklist or achieve a score of at least 90 may result in retention of up to 10 percent of the voucher. The Contractor Safety Self-Evaluation Checklist can be found on the Whole Building Design Guide website at www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/ufgs-01-35-26

1.6 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this Contract, comply with the most recent edition of USACE EM 385-1-1, and all applicable federal, state, and local laws, ordinances, criteria, rules and regulations. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements govern.

1.6.1 Subcontractor Safety Requirements

For this Contract, neither Contractor nor any subcontractor may enter into Contract with any subcontractor that fails to meet the following requirements. The term subcontractor in this and the following paragraphs means any entity holding a Contract with the Contractor or with a subcontractor at any tier.

1.6.1.1 Experience Modification Rate (EMR)

Subcontractors on this Contract must have an effective EMR less than or equal to 1.10, as computed by the National Council on Compensation Insurance (NCCI) or if not available, as computed by the state agency's rating bureau in the state where the subcontractor is registered, when entering into a subcontract agreement with the Prime Contractor or a subcontractor at any tier. The Prime Contractor may submit a written request for additional consideration to the Contracting Officer where the specified acceptable EMR range cannot be achieved. Relaxation of the EMR range will only be considered for approval on a case-by-case basis for special conditions and must not be anticipated as tacit approval. Contractor's Site Safety and Health Officer (SSHO) must collect and maintain the certified EMR ratings for all subcontractors on the project and make them available to the Government at the Government's request.

1.6.1.2 OSHA Days Away from Work, Restricted Duty, or Job Transfer (DART) Rate

Subcontractors on this Contract must have a DART rate, calculated from the most recent, complete calendar year, less than or equal to 3.4 when entering into a subcontract agreement with the Prime Contractor or a subcontractor at any tier. The OSHA Dart Rate is calculated using the following formula:

$$(N/EH) \times 200,000$$

where:

N = number of injuries and illnesses with days away, restricted work, or job transfer

EH = total hours worked by all employees during most recent, complete calendar year

200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year)

The Prime Contractor may submit a written request for additional consideration to the Contracting Officer where the specified acceptable OSHA Dart rate range cannot be achieved for a particular subcontractor. Relaxation of the OSHA DART rate range will only be considered for approval on a case-by-case basis for special conditions and must not be anticipated as tacit approval. Contractor's SSHO must collect and maintain self-certified OSHA DART rates for all subcontractors on the project and make them available to the Government at the Government's request.

1.7 SITE QUALIFICATIONS, DUTIES, AND MEETINGS

1.7.1 Personnel Qualifications

1.7.1.1 Site Safety and Health Officer (SSHO)

Provide an SSHO that meets the requirements of EM 385-1-1 Section 1. The SSHO must ensure that the requirements of 29 CFR 1926.16 are met for the project. Provide a Safety oversight team that includes a minimum of one person at each project site to function as the SSHO. The SSHO, or an equally-qualified Alternate SSHO, must be at the work site at all times to implement and administer the Contractor's safety program and Government-accepted Accident Prevention Plan (APP). The SSHO and Alternate SSHO must have the required training, experience, and qualifications in accordance with EM 385-1-1 Section 01.A.17, and all associated sub-paragraphs.

If the SSHO is off-site for a period longer than 24 hours, an equally-qualified Alternate SSHO must be provided and must fulfill the same roles and responsibilities as the primary SSHO. When the SSHO is temporarily (up to 24 hours) off-site, a Designated Representative (DR), as identified in the AHA may be used in lieu of an Alternate SSHO, and must be on the project site at all times when work is being performed. Note that the DR is a collateral duty safety position, with safety duties in addition to their full time occupation.

1.7.1.1.1 Additional Site Safety and Health Officer (SSHO) Requirements and Duties

The SSHO may also serve as the Quality Control (QC) Manager. The SSHO may not serve as the Superintendent.

1.7.1.2 Competent Person Qualifications

Provide Competent Persons in accordance with EM 385-1-1, Appendix Q and herein. Competent Persons for high risk activities include cranes and rigging, fall protection, and electrical work. The CP for these activities must be designated in writing, and meet the requirements for the specific activity (i.e. competent person, fall protection).

The Competent Person identified in the Contractor's Safety and Health Program and accepted APP must be on-site at all times when the work that presents the hazards associated with their professional expertise is being performed. Provide the credentials of the Competent Persons(s) to the Contracting Officer for information in consultation with the Safety Office.

1.7.1.2.1 Competent Person for Scaffolding

Provide a Competent Person for Scaffolding who meets the requirements of EM 385-1-1, Section 22.B.02 and herein.

1.7.1.2.2 Competent Person for Fall Protection

Provide a Competent Person for Fall Protection who meets the requirements of EM 385-1-1, Section 21.C.04, 21.B.03, and herein.

1.7.1.3 Qualified Trainer Requirements

Individuals qualified to instruct the 40 hour contract safety awareness course, or portions thereof, must meet the definition of a Competent Person Trainer, and, at a minimum, possess a working knowledge of the following subject areas: EM 385-1-1, Electrical Standards, Lockout/Tagout, Fall Protection, Confined Space Entry for Construction; Excavation, Trenching and Soil Mechanics, and Scaffolds in accordance with 29 CFR 1926.450, Subpart L.

Instructors are required to:

- a. Prepare class presentations that cover construction-related safety requirements.
- b. Ensure that all attendees attend all sessions by using a class roster signed daily by each attendee. Maintain copies of the roster for at least five years. This is a certification class and must be attended 100 percent. In cases of emergency where an attendee cannot make it to a session, the attendee can make it up in another class session for the same subject.
- c. Update training course materials whenever an update of the EM 385-1-1 becomes available.
- d. Provide a written exam of at least 50 questions. Students are required to answer 80 percent correctly to pass.
- e. Request, review and incorporate student feedback into a continuous course improvement program.

1.7.1.4 Crane Operators/Riggers

Provide Operators, Signal Persons, and Riggers meeting the requirements in EM 385-1-1, Section 15.B for Riggers and Section 16.B for Crane Operators and Signal Persons. In addition, for mobile cranes with Original Equipment Manufacturer (OEM) rated capacities of 50,000 pounds or greater, designate crane operators qualified by a source that qualifies crane operators (i.e., union, a Government agency, or an organization that tests and qualifies crane operators). Provide proof of current qualification.

1.7.2 Personnel Duties

1.7.2.1 Duties of the Site Safety and Health Officer (SSHO)

The SSHO must:

- a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Attach safety inspection logs to the Contractors' daily production report.
- b. Conduct mishap investigations and complete required accident reports. Report mishaps and near misses.
- c. Use and maintain OSHA's Form 300 to log work-related injuries and illnesses occurring on the project site for Prime Contractors and subcontractors, and make available to the Contracting Officer upon request. Post and maintain the Form 300A on the site Safety Bulletin Board.
- d. Maintain applicable safety reference material on the job site.
- e. Attend the pre-construction meeting, pre-work meetings including preparatory meetings, and periodic in-progress meetings.
- f. Review the APP and AHAs for compliance with EM 385-1-1, and approve, sign, implement and enforce them.
- g. Establish a Safety and Occupational Health (SOH) Deficiency Tracking System that lists and monitors outstanding deficiencies until resolution.
- h. Ensure subcontractor compliance with safety and health requirements.
- i. Maintain a list of hazardous chemicals on site and their material Safety Data Sheets (SDS).
- j. Maintain a weekly list of high hazard activities involving energy, equipment, excavation, entry into confined space, and elevation, and be prepared to discuss details during QC Meetings.
- k. Provide and keep a record of site safety orientation and indoctrination for Contractor employees, subcontractor employees, and site visitors.

Superintendent, QC Manager, and SSHO are subject to dismissal if the above or any other required duties are not being effectively carried out. If either the Superintendent, QC Manager, or SSHO are dismissed, project work will be stopped and will not be allowed to resume until a suitable replacement is approved and the above duties are again being effectively carried out.

1.7.3 Meetings

1.7.3.1 Preconstruction Meeting

- a. Contractor representatives who have a responsibility or significant role in accident prevention on the project must attend the

preconstruction meeting. This includes the project superintendent, SSHO, QC manager, or any other assigned safety and health professionals who participated in the development of the APP (including the AHAs and special plans, program and procedures associated with it).

- b. Discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the Contract. This list of proposed AHAs will be reviewed and an agreement will be reached between the Contractor and the Contracting Officer as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, and Government review of AHAs to preclude project delays.
- c. Deficiencies in the submitted APP, identified during the Contracting Officer's review, must be corrected, and the APP re-submitted for review prior to the start of construction. Work is not permitted to begin until an APP is established that is acceptable to the Contracting Officer.

1.7.3.2 Safety Meetings

Conduct safety meetings to review past activities, plan for new or changed operations, review pertinent aspects of appropriate AHA (by trade), establish safe working procedures for anticipated hazards, and provide pertinent Safety and Occupational Health (SOH) training and motivation. Conduct meetings at least once a month for all supervisors at the project location. The SSHO, supervisors, or foremen must conduct meetings at least once a week for the trade workers. Document meeting minutes to include the date, persons in attendance, subjects discussed, and names of individual(s) who conducted the meeting. Maintain documentation on-site and furnish copies to the Contracting Officer on request. Notify the Contracting Officer of all scheduled meetings 7 calendar days in advance.

1.8 ACCIDENT PREVENTION PLAN (APP)

Provide a site-specific Accident Prevention Plan (APP), including AHAs, in accordance with EM 385-1-1 Appendix A, for the design team to follow during site visits and investigations. For subsequent visits, update the plan if there are changes in the personnel who will be attending, or the tasks to be performed. Submit the APP for review and acceptance by the Government at least 15 calendar days prior to the start of the design field work. Field work may not begin until the design APP is accepted by the Contracting Officer.

If the design scope includes borings or other subsurface investigations, include in the APP the type of field investigation and verification techniques, such as visual, local utility locating service scanning and third party/subcontractor scanning, potholing, or hand digging within two feet of a known utility that will be required. Mark underground utilities before starting any ground-disturbing actions. Notify the Contracting Officer 15 days prior to the start of soil borings or sub-surface investigations.

Prior to the start of construction incorporate the Design APP into the Construction APP so that one site specific APP exists for the project and submit to the Contracting Officer for acceptance.

1.8.1 APP - Construction

A qualified person must prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of EM 385-1-1, Appendix A, and as supplemented herein. Cover all paragraph and subparagraph elements in EM 385-1-1, Appendix A. The APP must be job-specific and address any unusual or unique aspects of the project or activity for which it is written. The APP must interface with the Contractor's overall safety and health program referenced in the APP in the applicable APP element, and made site-specific. Describe the methods to evaluate past safety performance of potential subcontractors in the selection process. Also, describe innovative methods used to ensure and monitor safe work practices of subcontractors. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the Contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP must be signed by an officer of the firm (Prime Contractor senior person), the individual preparing the APP, the on-site superintendent, the designated SSHO, the Contractor QC Manager, and any designated Certified Safety Professional (CSP) or Certified Health Physicist (CIH). The SSHO must provide and maintain the APP and a log of signatures by each subcontractor foreman, attesting that they have read and understand the APP, and make the APP and log available on-site to the Contracting Officer. If English is not the foreman's primary language, the Prime Contractor must provide an interpreter.

Submit the APP to the Contracting Officer 15 calendar days prior to the date of the preconstruction meeting for acceptance. Work cannot proceed without an accepted APP. Once reviewed and accepted by the Contracting Officer, the APP and attachments will be enforced as part of the Contract. Disregarding the provisions of this Contract or the accepted APP is cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified. Continuously review and amend the APP, as necessary, throughout the life of the Contract. Changes to the accepted APP must be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and QC Manager. Incorporate unusual or high-hazard activities not identified in the original APP as they are discovered. Should any severe hazard exposure (i.e. imminent danger) become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate and remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ASSP A10.34), and the environment.

1.8.2 Names and Qualifications

Provide plans in accordance with the requirements outlined in Appendix A of EM 385-1-1, including the following:

- a. Names and qualifications (resumes including education, training, experience and certifications) of site safety and health personnel designated to perform work on this project to include the designated SSHO and other competent and qualified personnel to be used. Specify

the duties of each position.

- b. Qualifications of competent and of qualified persons. As a minimum, designate and submit qualifications of competent persons for each of the following major areas: excavation; scaffolding; fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of chemical, physical and biological agents; and personal protective equipment and clothing to include selection, use and maintenance.

1.8.3 Plans

Provide plans in the APP in accordance with the requirements outlined in Appendix A of EM 385-1-1, including the following:

1.8.3.1 Confined Space Entry Plan

Develop a confined or enclosed space entry plan in accordance with EM 385-1-1, applicable OSHA standards 29 CFR 1910, 29 CFR 1915, and 29 CFR 1926, OSHA Directive CPL 2.100, and any other federal, state and local regulatory requirements identified in this Contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by Contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

1.8.3.2 Standard Lift Plan (SLP)

Plan lifts to avoid situations where the operator cannot maintain safe control of the lift. Prepare a written SLP in accordance with EM 385-1-1, Section 16.A.03, using Form 16-2 for every lift or series of lifts (if duty cycle or routine lifts are being performed). The SLP must be developed, reviewed and accepted by all personnel involved in the lift in conjunction with the associated AHA. Signature on the AHA constitutes acceptance of the plan. Maintain the SLP on the LHE for the current lift(s) being made. Maintain historical SLPs for a minimum of three months.

1.8.3.3 Critical Lift Plan - Crane or Load Handling Equipment

Provide a Critical Lift Plan as required by EM 385-1-1, Section 16.H.01, using Form 16-3. In addition, Critical Lift Plans are required for the following:

- a. Lifts over 50 percent of the capacity of barge mounted mobile crane's hoist.
- b. When working around energized power lines where the work will get closer than the minimum clearance distance in EM 385-1-1 Table 16-1.
- c. For lifts with anticipated binding conditions.
- d. When erecting cranes.

1.8.3.3.1 Critical Lift Plan Planning and Schedule

Critical lifts require detailed planning and additional or unusual safety

precautions. Develop and submit a critical lift plan to the Contracting Officer 30 calendar days prior to critical lift. Comply with load testing requirements in accordance with EM 385-1-1, Section 16.F.03.

1.8.3.3.2 Lifts of Personnel

In addition to the requirements of EM 385-1-1, Section 16.H.02, for lifts of personnel, demonstrate compliance with the requirements of 29 CFR 1926.1400 and EM 385-1-1, Section 16.T.

1.8.3.4 Multi-Purpose Machines, Material Handling Equipment, and Construction Equipment Lift Plan

Multi-purpose machines, material handling equipment, and construction equipment used to lift loads that are suspended by rigging gear, require proof of authorization from the machine OEM that the machine is capable of making lifts of loads suspended by rigging equipment. Written approval from a qualified registered professional engineer, after a safety analysis is performed, is allowed in lieu of the OEM's approval. Demonstrate that the operator is properly trained and that the equipment is properly configured to make such lifts and is equipped with a load chart.

1.8.3.5 Fall Protection and Prevention (FP&P) Plan

The plan must be in accordance with the requirements of EM 385-1-1, Section 21.D and ASSP Z359.2, be site specific, and address all fall hazards in the work place and during different phases of construction. Address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 6 feet. A competent person or qualified person for fall protection must prepare and sign the plan documentation. Include FP&P systems, equipment and methods employed for every phase of work, roles and responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Review and revise, as necessary, the FP&P Plan documentation as conditions change, but at a minimum every six months, for lengthy projects, reflecting any changes during the course of construction due to changes in personnel, equipment, systems or work habits. Keep and maintain the accepted FP&P Plan documentation at the job site for the duration of the project. Include the FP&P Plan documentation in the APP.

1.8.3.6 Rescue and Evacuation Plan

Provide a Rescue and Evacuation Plan in accordance with EM 385-1-1 Section 21.N and ASSP Z359.2, and include in the FP&P Plan and as part of the APP. Include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility.

1.8.3.7 Hazardous Energy Control Program (HECP)

Develop a HECP in accordance with EM 385-1-1 Section 12, 29 CFR 1910.147, 29 CFR 1910.333, 29 CFR 1915.89, ASSP Z244.1, and ASSP A10.44. Submit this HECP as part of the APP. Conduct a preparatory meeting and inspection with all effected personnel to coordinate all HECP activities. Document this meeting and inspection in accordance with EM 385-1-1, Section 12.A.02. Ensure that each employee is familiar with and complies with these procedures.

1.9 ACTIVITY HAZARD ANALYSIS (AHA)

Before beginning each activity, task or Definable Feature of Work (DFOW) involving a type of work presenting hazards not experienced in previous project operations, or where a new work crew or subcontractor is to perform the work, the Contractor(s) performing that work activity must prepare an AHA. AHAs must be developed by the Prime Contractor, subcontractor, or supplier performing the work, and provided for Prime Contractor review and approval before submitting to the Contracting Officer. AHAs must be signed by the SSHO, Superintendent, QC Manager and the subcontractor Foreman performing the work. Format the AHA in accordance with EM 385-1-1, Section 1 or as directed by the Contracting Officer. Submit the AHA for review at least 15 working days prior to the start of each activity task, or DFW. The Government reserves the right to require the Contractor to revise and resubmit the AHA if it fails to effectively identify the work sequences, specific anticipated hazards, site conditions, equipment, materials, personnel and the control measures to be implemented.

AHAs must identify competent persons required for phases involving high risk activities, including confined entry, crane and rigging, excavations, trenching, electrical work, fall protection, and scaffolding.

1.9.1 AHA Management

Review the AHA list periodically (at least monthly) at the Contractor supervisory safety meeting, and update as necessary when procedures, scheduling, or hazards change. Use the AHA during daily inspections by the SSHO to ensure the implementation and effectiveness of the required safety and health controls for that work activity.

1.9.2 AHA Signature Log

Each employee performing work as part of an activity, task or DFW must review the AHA for that work and sign a signature log specifically maintained for that AHA prior to starting work on that activity. The SSHO must maintain a signature log on site for every AHA. Provide employees whose primary language is other than English, with an interpreter to ensure a clear understanding of the AHA and its contents.

1.10 DISPLAY OF SAFETY INFORMATION

1.10.1 Safety Bulletin Board

Prior to commencement of work, erect a safety bulletin board at the job site. Where size, duration, or logistics of project do not facilitate a bulletin board, an alternative method, acceptable to the Contracting Officer, that is accessible and includes all mandatory information for employee and visitor review, may be deemed as meeting the requirement for a bulletin board. Include and maintain information on safety bulletin board as required by EM 385-1-1, Section 01.A.07. Additional items required to be posted include:

- a. Confined space entry permit.
- b. Hot work permit.

1.10.2 Safety and Occupational Health (SOH) Deficiency Tracking System

Establish a SOH deficiency tracking system that lists and monitors the

status of SOH deficiencies in chronological order. Use the tracking system to evaluate the effectiveness of the APP. A monthly evaluation of the data must be discussed in the QC or SOH meeting with everyone on the project. The list must be posted on the project bulletin board and updated daily, and provide the following information:

- a. Date deficiency identified;
- b. Description of deficiency;
- c. Name of person responsible for correcting deficiency;
- d. Projected resolution date;
- e. Date actually resolved.

1.11 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in paragraph REFERENCES. Maintain applicable equipment manufacturer's manuals.

1.12 EMERGENCY MEDICAL TREATMENT

Contractors must arrange for their own emergency medical treatment in accordance with EM 385-1-1. Government has no responsibility to provide emergency medical treatment.

1.13 NOTIFICATIONS and REPORTS

1.13.1 Mishap Notification

Notify the Contracting Officer as soon as practical, but no more than twenty-four hours, after any mishaps, including recordable accidents, incidents, and near misses, as defined in EM 385-1-1 Appendix Q, any report of injury, illness, or any property damage. For LHE or rigging mishaps, notify the Contracting Officer as soon as practical but not more than four hours after mishap. The Contractor is responsible for obtaining appropriate medical and emergency assistance and for notifying fire, law enforcement, and regulatory agencies. Immediate reporting is required for electrical mishaps, to include Arc Flash; shock; uncontrolled release of hazardous energy (includes electrical and non-electrical); LHE or rigging; fall from height (any level other than same surface). These mishaps must be investigated in depth to identify all causes and to recommend hazard control measures.

Within notification include Contractor name; Contract title; type of Contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (for example, type of construction equipment used and PPE used). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted. Assist and cooperate fully with the Government's investigation(s) of any mishap.

1.13.2 Accident Reports

- a. Conduct an accident investigation for recordable injuries and illnesses, property damage, and near misses as defined in EM 385-1-1, to establish the root cause(s) of the accident. Complete the applicable NAVFAC Contractor Incident Reporting System (CIRS), and electronically submit via the NAVFAC Enterprise Safety Applications

Management System (ESAMS). Complete and submit an accident investigation report in ESAMS within 5 days for mishaps defined in EM 385-1-1 01.D.03 and 10 days for accidents defined by EM 385-1-1 01.D.05. Complete an investigation report within 30 days for those mishaps defined by EM 385-1-1 01.D.04. Mishaps defined by EM 385-1-1 01.D.04 and 01.D.05 must include a written report submitted as an attachment in ESAMS using the following outline: (1) Mishap summary description to include process, findings and outcomes; (2) Root Cause; (3) Direct Factors; (4) Indirect and Contributing Factors; (5) Corrective Actions; and (6) Recommendations. The Contracting Officer will provide copies of any required or special forms.

- b. Near Misses: For Navy Projects, complete the applicable documentation in NAVFAC CIRS, and electronically submit via the NAVFAC ESAMS. Near miss reports are considered positive and proactive Contractor safety management actions.
- c. Conduct an accident investigation for any LHE accident (including rigging accidents) to establish the root cause(s) of the accident. Complete the LHE Accident Report (Crane and Rigging Accident Report) form and provide the report to the Contracting Officer within 30 calendar days of the accident. Do not proceed with crane operations until cause is determined and corrective actions have been implemented to the satisfaction of the Contracting Officer. The Contracting Officer will provide a blank copy of the accident report form.

1.13.3 LHE Inspection Reports

Submit LHE inspection reports required in accordance with EM 385-1-1 and as specified herein with Daily Reports of Inspections.

1.13.4 Certificate of Compliance and Pre-lift Plan/Checklist for LHE and Rigging

Provide a FORM 16-1 Certificate of Compliance for LHE entering an activity under this Contract and in accordance with EM 385-1-1. Post certifications on the crane.

Develop a Standard Lift Plan (SLP) in accordance with EM 385-1-1, Section 16.H.03 using Form 16-2 Standard Pre-Lift Crane Plan/Checklist for each lift planned. Submit SLP to the Contracting Officer for approval within 15 calendar days in advance of planned lift.

1.14 HOT WORK

1.14.1 Permit and Personnel Requirements

Submit and obtain a written permit prior to performing "Hot Work" (i.e. welding or cutting) or operating other flame-producing/spark producing devices, from the MCAS Cherry Point Fire Department. A permit is required from the Explosives Safety Office for work in and around where explosives are processed, stored, or handled. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. Provide at least two 20 pound 4A:20 BC rated extinguishers for normal "Hot Work". The extinguishers must be current inspection tagged, and contain an approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch must be trained in accordance with NFPA 51B and remain on-site for a minimum of one hour after completion of the task or as specified on the hot work permit.

When starting work in the facility, require personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency phone number (911). REPORT ANY FIRE, NO MATTER HOW SMALL, TO THE MCAS CHERRY POINT FIRE DEPARTMENT IMMEDIATELY.

1.14.2 Work Around Flammable Materials

Obtain permit approval from a NFPA Certified Marine Chemist, or Certified Industrial Hygienist for "HOT WORK" within or around flammable materials (such as fuel systems or welding/cutting on fuel pipes) or confined spaces (such as sewer wet wells, manholes, or vaults) that have the potential for flammable or explosive atmospheres.

Whenever these materials, except beryllium and chromium (VI), are encountered in indoor operations, local mechanical exhaust ventilation systems that are sufficient to reduce and maintain personal exposures to within acceptable limits must be used and maintained in accordance with manufacturer's instruction and supplemented by exceptions noted in EM 385-1-1, Section 06.H

1.15 SEVERE STORM PLAN

In the event of a severe storm warning, the Contractor must comply with the applicable Storm Plan and:

- a. Secure outside equipment and materials and place materials that could be damaged in protected areas.
- b. Check surrounding area, including roof, for loose material, equipment, debris, and other objects that could be blown away or against existing facilities.
- c. Ensure that temporary erosion controls are adequate.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 CONSTRUCTION AND OTHER WORK

Comply with EM 385-1-1, NFPA 70, NFPA 70E, NFPA 241, the APP, the AHA, Federal and State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard prevails.

PPE is governed in all areas by the nature of the work the employee is performing. Use personal hearing protection at all times in designated noise hazardous areas or when performing noise hazardous tasks. Safety glasses must be worn or carried/available on each person. Mandatory PPE includes:

- a. Hard Hat
- b. Long Pants
- c. Appropriate Safety Shoes
- d. Appropriate Class Reflective Vests

3.1.1 Worksite Communication

Employees working alone in a remote location or away from other workers must be provided an effective means of emergency communications (i.e., cellular phone, two-way radios, land-line telephones or other acceptable means). The selected communication must be readily available (easily within the immediate reach) of the employee and must be tested prior to the start of work to verify that it effectively operates in the area/environment. Develop an employee check-in/check-out communication procedure to ensure employee safety.

3.1.2 Hazardous Material Use

Each hazardous material must receive approval from the Contracting Office or their designated representative prior to being brought onto the job site or prior to any other use in connection with this Contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material.

3.1.3 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this Contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, lead-based paint, and hexavalent chromium, are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials. Low mercury lamps used within fluorescent lighting fixtures are allowed as an exception without further Contracting Officer approval. Notify the RSO prior to excepted items of radioactive material and devices being brought on base.

3.1.4 Unforeseen Hazardous Material

Contract documents identify materials such as PCB, lead paint, and friable and non-friable asbestos and other OSHA regulated chemicals (i.e. 29 CFR Part 1910.1000). If material(s) that may be hazardous to human health upon disturbance are encountered during construction operations, stop that portion of work and notify the Contracting Officer immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If 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.

3.2 UTILITY OUTAGE REQUIREMENTS

Apply for utility outages at least 15 days in advance. At a minimum, the written request must include the location of the outage, utilities being affected, duration of outage, any necessary sketches, and a description of the means to fulfill energy isolation requirements in accordance with EM 385-1-1, Section 11.A.02 (Isolation). Some examples of energy isolation devices and procedures are highlighted in EM 385-1-1, Section 12.D. In accordance with EM 385-1-1, Section 12.A.01, where outages involve Government or Utility personnel, coordinate with the Government on

all activities involving the control of hazardous energy.

These activities include, but are not limited to, a review of HECP and HEC procedures, as well as applicable AHAs. In accordance with EM 385-1-1, Section 11.A.02 and NFPA 70E, work on energized electrical circuits must not be performed without prior Government authorization. Government permission is considered through the permit process and submission of a detailed AHA. Energized work permits are considered only when de-energizing introduces additional or increased hazard or when de-energizing is infeasible.

3.3 OUTAGE COORDINATION MEETING

After the utility outage request is approved and prior to beginning work on the utility system requiring shut-down, conduct a pre-outage coordination meeting in accordance with EM 385-1-1, Section 12.A. This meeting must include the Prime Contractor, the Prime and subcontractors performing the work, the Contracting Officer, and the Public Works representative. All parties must fully coordinate HEC activities with one another. During the coordination meeting, all parties must discuss and coordinate on the scope of work, HEC procedures (specifically, the lock-out/tag-out procedures for worker and utility protection), the AHA, assurance of trade personnel qualifications, identification of competent persons, and compliance with HECP training in accordance with EM 385-1-1, Section 12.C. Clarify when personal protective equipment is required during switching operations, inspection, and verification.

3.4 CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

Provide and operate a Hazardous Energy Control Program (HECP) in accordance with EM 385-1-1 Section 12, 29 CFR 1910.333, 29 CFR 1915.89, ASSP A10.44, NFPA 70E, and paragraph HAZARDOUS ENERGY CONTROL PROGRAM (HECP).

3.4.1 Safety Preparatory Inspection Coordination Meeting with the Government or Utility

For electrical distribution equipment that is to be operated by Government or Utility personnel, the Prime Contractor and the subcontractor performing the work must attend the safety preparatory inspection coordination meeting, which will also be attended by the Contracting Officer's Representative, and required by EM 385-1-1, Section 12.A.02. The meeting will occur immediately preceding the start of work and following the completion of the outage coordination meeting. Both the safety preparatory inspection coordination meeting and the outage coordination meeting must occur prior to conducting the outage and commencing with lockout/tagout procedures.

3.4.2 Lockout/Tagout Isolation

Where the Government or Utility performs equipment isolation and lockout/tagout, the Contractor must place their own locks and tags on each energy-isolating device and proceed in accordance with the HECP. Before any work begins, both the Contractor and the Government or Utility must perform energy isolation verification testing while wearing required PPE detailed in the Contractor's AHA and required by EM 385-1-1, Sections 05.I and 11.B. Install personal protective grounds, with tags, to eliminate the potential for induced voltage in accordance with EM 385-1-1, Section 12.E.06.

3.4.3 Lockout/Tagout Removal

Upon completion of work, conduct lockout/tagout removal procedure in accordance with the HECF. In accordance with EM 385-1-1, Section 12.E.08, each lock and tag must be removed from each energy isolating device by the authorized individual or systems operator who applied the device. Provide formal notification to the Government (by completing the Government form if provided by Contracting Officer's Representative), confirming that steps of de-energization and lockout/tagout removal procedure have been conducted and certified through inspection and verification. Government or Utility locks and tags used to support the Contractor's work will not be removed until the authorized Government employee receives the formal notification.

3.5 FALL PROTECTION PROGRAM

Establish a fall protection program, for the protection of all employees exposed to fall hazards. Within the program include company policy, identify roles and responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures in accordance with ASSP Z359.2 and EM 385-1-1, Sections 21.A and 21.D.

3.5.1 Training

Institute a fall protection training program. As part of the Fall Protection Program, provide training for each employee who might be exposed to fall hazards and using personal fall protection equipment. Provide training by a competent person for fall protection in accordance with EM 385-1-1, Section 21.C. Document training and practical application of the competent person in accordance with EM 385-1-1, Section 21.C.04 and ASSP Z359.2 in the AHA.

3.5.2 Fall Protection Equipment and Systems

Enforce use of personal fall protection equipment and systems designated (to include fall arrest, restraint, and positioning) for each specific work activity in the Site Specific FP&P Plan and AHA at all times when an employee is exposed to a fall hazard. Protect employees from fall hazards as specified in EM 385-1-1, Section 21.

Provide personal fall protection equipment, systems, subsystems, and components that comply with EM 385-1-1 Section 21.I, 29 CFR 1926.500 Subpart M, ASSP Z359.0, ASSP Z359.1, ASSP Z359.2, ASSP Z359.3, ASSP Z359.4, ASSP Z359.6, ASSP Z359.7, ASSP Z359.11, ASSP Z359.12, ASSP Z359.13, ASSP Z359.14, ASSP Z359.15, ASSP Z359.16 and ASSP Z359.18.

3.5.2.1 Additional Personal Fall Protection Measures

Personal fall protection systems and equipment are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall protection systems are required when operating other equipment such as scissor lifts. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, travel, or while performing work.

3.5.2.2 Personal Fall Protection Equipment

Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. The use of body belts is not acceptable. Harnesses must have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Snap hooks and carabineers must be self-closing and self-locking, capable of being opened only by at least two consecutive deliberate actions and have a minimum gate strength of 3,600 lbs in all directions. Use webbing, straps, and ropes made of synthetic fiber. The maximum free fall distance when using fall arrest equipment must not exceed 6 feet, unless the proper energy absorbing lanyard is used. Always take into consideration the total fall distance and any swinging of the worker (pendulum-like motion), that can occur during a fall, when attaching a person to a fall arrest system. Equip all full body harnesses with Suspension Trauma Preventers such as stirrups, relief steps, or similar in order to provide short-term relief from the effects of orthostatic intolerance in accordance with EM 385-1-1, Section 21.I.06.

3.5.3 Fall Protection for Roofing Work

Implement fall protection controls based on the type of roof being constructed and work being performed. Evaluate the roof area to be accessed for its structural integrity including weight-bearing capabilities for the projected loading.

a. Low Sloped Roofs:

- (1) For work within 6 feet from unprotected edge of a roof having a slope less than or equal to 4:12 (vertical to horizontal), protect personnel from falling by the use of conventional fall protection systems (personal fall arrest/restraint systems, guardrails, or safety nets) in accordance with EM 385-1-1, Section 21 and 29 CFR 1926.500. A safety monitoring system is not adequate fall protection and is not authorized.
- (2) For work greater than 6 feet from the unprotected roof edge, addition to the use of conventional fall protection systems the use of a warning line system is also permitted, in accordance with 29 CFR 1926.500 and EM 385-1-1, Section 21.L.

b. Steep-Sloped Roofs: Work on a roof having a slope greater than 4:12 (vertical to horizontal) requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also applies to residential or housing type construction.

3.5.4 Horizontal Lifelines (HLL)

Provide HLL in accordance with EM 385-1-1, Section 21.I.08.d.2. Commercially manufactured HLL must be designed, installed, certified and used, under the supervision of a qualified person for fall protection as part of a complete fall arrest system which maintains a safety factor of 2 (29 CFR 1926.500). The competent person for fall protection may (if deemed appropriate by the qualified person) supervise the assembly, disassembly, use and inspection of the HLL system under the direction of the qualified person. Locally manufactured HLLs are not acceptable unless they are custom designed for limited or site specific applications by a Registered Professional Engineer who is qualified in designing HLL systems.

3.5.5 Guardrails and Safety Nets

Design, install and use guardrails and safety nets in accordance with EM 385-1-1, Section 21.F.01 and 29 CFR 1926 Subpart M.

3.5.6 Rescue and Evacuation Plan and Procedures

When personal fall arrest systems are used, ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. Prepare a Rescue and Evacuation Plan and include a detailed discussion of the following: methods of rescue; methods of self-rescue or assisted-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. Include the Rescue and Evacuation Plan within the AHA for the phase of work, in the FP&P Plan, and the APP. The plan must be in accordance with the requirements of EM 385-1-1, ASSP Z359.2, and ASSP Z359.4.

3.6 WORK PLATFORMS

3.6.1 Scaffolding

Provide employees with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Comply with the following requirements:

- a. Scaffold platforms greater than 20 feet in height must be accessed by use of a scaffold stair system.
- b. Ladders commonly provided by scaffold system manufacturers are prohibited for accessing scaffold platforms greater than 20 feet maximum in height.
- c. An adequate gate is required.
- d. Employees performing scaffold erection and dismantling must be qualified.
- e. Scaffold must be capable of supporting at least four times the maximum intended load, and provide appropriate fall protection as delineated in the accepted FP&P plan.
- f. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward.
- g. Special care must be given to ensure scaffold systems are not overloaded.
- h. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material are prohibited. The first tie-in must be at the height equal to 4 times the width of the smallest dimension of the scaffold base.
- i. Scaffolding other than suspended types must bear on base plates upon wood mudsills (2 in x 10 in x 8 in minimum) or other adequate firm foundation.
- j. Scaffold or work platform erectors must have fall protection during

the erection and dismantling of scaffolding or work platforms that are more than 6 feet.

- k. Delineate fall protection requirements when working above 6 feet or above dangerous operations in the FP&P Plan and AHA for the phase of work.

3.6.2 Elevated Aerial Work Platforms (AWPs)

Workers must be anchored to the basket or bucket in accordance with manufacturer's specifications and instructions (anchoring to the boom may only be used when allowed by the manufacturer and permitted by the CP). Lanyards used must be sufficiently short to prohibit worker from climbing out of basket. The climbing of rails is prohibited. Lanyards with built-in shock absorbers are acceptable. Self-retracting devices are not acceptable. Tying off to an adjacent pole or structure is not permitted unless a safe device for 100 percent tie-off is used for the transfer.

Use of AWPs must be operated, inspected, and maintained as specified in the operating manual for the equipment and delineated in the AHA. Operators of AWPs must be designated as qualified operators by the Prime Contractor. Maintain proof of qualifications on site for review and include in the AHA.

3.7 EQUIPMENT

3.7.1 Material Handling Equipment (MHE)

- a. Material Handling Equipment (MHE) such as forklifts must not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions. MHE fitted with personnel work platform attachments are prohibited from traveling or positioning while personnel are working on the platform.
- b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions. MHE Operators must be trained in accordance with OSHA 29 CFR 1910, Subpart N.
- c. Operators of forklifts or power industrial trucks must be licensed in accordance with OSHA.

3.7.2 Load Handling Equipment (LHE)

The following requirements apply. In exception, these requirements do not apply to commercial truck mounted and articulating boom cranes used solely to deliver material and supplies (not prefabricated components, structural steel, or components of a systems-engineered metal building) where the lift consists of moving materials and supplies from a truck or trailer to the ground; to cranes installed on mechanics trucks that are used solely in the repair of shore-based equipment; to crane that enter the activity but are not used for lifting; nor to other machines not used to lift loads suspended by rigging equipment. However, LHE accidents occurring during such operations must be reported.

- a. Equip cranes and derricks as specified in EM 385-1-1, Section 16.
- b. Notify the Contracting Officer 15 working days in advance of any LHE entering the activity, in accordance with EM 385-1-1, Section 16.A.02,

so that necessary quality assurance spot checks can be coordinated. Prior to cranes entering federal activities, a Crane Access Permit must be obtained from the Contracting Officer. A copy of the permitting process will be provided at the Preconstruction Meeting. Contractor's operator must remain with the crane during the spot check. Rigging gear must be in accordance with OSHA and ASME B30.9 Standards.

- c. Comply with the LHE manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Perform erection under the supervision of a designated person (as defined in ASME B30.5). Perform all testing in accordance with the manufacturer's recommended procedures.
- d. Comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes, ASME B30.9 for slings, ASME B30.20 for below the hook lifting devices and ASME B30.26 for rigging hardware.
- e. When operating in the vicinity of overhead transmission lines, operators and riggers must be alert to this special hazard and follow the requirements of EM 385-1-1 Section 11, and ASME B30.5 or ASME B30.22 as applicable.
- f. Do not use crane suspended personnel work platforms (baskets) unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Do not lift personnel with a line hoist or friction crane. Additionally, submit a specific AHA for this work to the Contracting Officer. Ensure the activity and AHA are thoroughly reviewed by all involved personnel.
- g. Inspect, maintain, and recharge portable fire extinguishers as specified in NFPA 10, Standard for Portable Fire Extinguishers.
- h. All employees must keep clear of loads about to be lifted and of suspended loads, except for employees required to handle the load.
- i. Use cribbing when performing lifts on outriggers.
- j. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.
- k. A physical barricade must be positioned to prevent personnel access where accessible areas of the LHE's rotating superstructure poses a risk of striking, pinching or crushing personnel.
- l. Maintain inspection records in accordance by EM 385-1-1, Section 16.D, including shift, monthly, and annual inspections, the signature of the person performing the inspection, and the serial number or other identifier of the LHE that was inspected. Records must be available for review by the Contracting Officer.
- m. Maintain written reports of operational and load testing in accordance with EM 385-1-1, Section 16.F, listing the load test procedures used along with any repairs or alterations performed on the LHE. Reports must be available for review by the Contracting Officer.
- n. Certify that all LHE operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

- o. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. At wind speeds greater than 20 mph, the operator, rigger and lift supervisor must cease all crane operations, evaluate conditions and determine if the lift may proceed. Base the determination to proceed or not on wind calculations per the manufacturer and a reduction in LHE rated capacity if applicable. Include this maximum wind speed determination as part of the activity hazard analysis plan for that operation.
- p. On mobile cranes, lifts where the load weight is greater than 90 percent of the equipment's capacity are prohibited.
- q. Follow FAA guidelines when required based on project location.

3.7.3 Machinery and Mechanized Equipment

- a. Proof of qualifications for operator must be kept on the project site for review.
- b. Manufacture specifications or owner's manual for the equipment must be on-site and reviewed for additional safety precautions or requirements that are sometimes not identified by OSHA or USACE EM 385-1-1. Incorporate such additional safety precautions or requirements into the AHAs.

3.7.4 Use of Explosives

Explosives must not be used or brought to the project site without prior written approval from the Contracting Officer. Such approval does not relieve the Contractor of responsibility for injury to persons or for damage to property due to blasting operations.

Storage of explosives, when permitted on Government property, must be only where directed and in approved storage facilities. These facilities must be kept locked at all times except for inspection, delivery, and withdrawal of explosives.

3.8 ELECTRICAL

Perform electrical work in accordance with EM 385-1-1, Sections 11 and 12.

3.8.1 Conduct of Electrical Work

As delineated in EM 385-1-1, electrical work is to be conducted in a de-energized state unless there is no alternative method for accomplishing the work. In those cases obtain an energized work permit from the Contracting Officer. The energized work permit application must be accompanied by the AHA and a summary of why the equipment/circuit needs to be worked energized. Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Attach temporary grounds in accordance with ASTM F855 and IEEE 1048. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator is allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method.

When working in energized substations, only qualified electrical workers are permitted to enter. When work requires work near energized circuits as defined by NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves and electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA. Ensure that each employee is familiar with and complies with these procedures and 29 CFR 1910.147.

3.8.2 Qualifications

Electrical work must be performed by QP with verifiable credentials who are familiar with applicable code requirements. Verifiable credentials consist of State, National and Local Certifications or Licenses that a Master or Journeyman Electrician may hold, depending on work being performed, and must be identified in the appropriate AHA. Journeyman/Apprentice ratio must be in accordance with State and Local requirements applicable to where work is being performed.

3.8.3 Arc Flash

Conduct a hazard analysis/arc flash hazard analysis whenever work on or near energized parts greater than 50 volts is necessary, in accordance with NFPA 70E.

All personnel entering the identified arc flash protection boundary must be QPs and properly trained in NFPA 70E requirements and procedures. Unless permitted by NFPA 70E, no Unqualified Person is permitted to approach nearer than the Limited Approach Boundary of energized conductors and circuit parts. Training must be administered by an electrically qualified source and documented.

3.8.4 Grounding

Ground electrical circuits, equipment and enclosures in accordance with NFPA 70 and IEEE C2 to provide a permanent, continuous and effective path to ground unless otherwise noted by EM 385-1-1.

Check grounding circuits to ensure that the circuit between the ground and a grounded power conductor has a resistance low enough to permit sufficient current flow to allow the fuse or circuit breaker to interrupt the current.

3.8.5 Testing

Temporary electrical distribution systems and devices must be inspected, tested and found acceptable for Ground-Fault Circuit Interrupter (GFCI) protection, polarity, ground continuity, and ground resistance before initial use, before use after modification and at least monthly. Monthly inspections and tests must be maintained for each temporary electrical distribution system, and signed by the electrical CP or QP.

-- End of Section --

SECTION 01 45 00.05 20

DESIGN AND CONSTRUCTION QUALITY CONTROL

06/15, CHG 6: 11/20

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 SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ASHRAE 52.2 (2017) Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size

ASTM INTERNATIONAL (ASTM)

ASTM D6245 (2012) Using Indoor Carbon Dioxide Concentrations to Evaluate Indoor Air Quality and Ventilation

ASTM D6345 (2010) Standard Guide for Selection of Methods for Active, Integrative Sampling of Volatile Organic Compounds in Air

SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)

ANSI/SMACNA 008 (2007) IAQ Guidelines for Occupied Buildings Under Construction, 2nd Edition

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2014) Safety -- Safety and Health Requirements Manual

1.2 SUBMITTALS

Government approval is required for all submittals. Submit the following in accordance with Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES and 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Design Quality Control (DQC) Plan

Submit a DQC Plan prior to the Post Award Kickoff Meeting.

Construction Quality Control (CQC) Plan

Submit a Construction QC Plan prior to start of construction.

Indoor Air Quality (IAQ) Management Plan

SD-05 Design Data

Design Quality Control Documentation

1.3 QC PROGRAM REQUIREMENTS

Establish and maintain a QC program that is administered by a Design and Construction Quality Control organization, using Quality Control (Design and Construction) Plans, Commissioning Plans and Reports, meetings, a Coordination and Mutual Understanding Meeting, three phases of control, submittal review and approval, testing, completion inspections, and QC certifications, and documentation necessary to provide design, materials, equipment, workmanship, fabrication, construction and operations which comply with the requirements of this Contract. The QC program must cover on-site and off-site work. No construction work or testing may be performed unless the QC Manager is on the work site.

1.3.1 QC Plan Meeting

Prior to submission of the QC Plan, the QC Manager may request a meeting with the Contracting Officer to discuss the QC Plan requirements of this Contract.

The purpose of this meeting is to develop a mutual understanding of the QC Plan requirements prior to plan development and submission and to agree on the Contractor's list of Definable Features of Work (DFOWs).

1.3.2 Mutual Understanding Meeting

The purpose of this meeting is to develop a mutual understanding of the QC Plans, including documentation, administration, requirements and procedures, coordination of activities to be performed, and the coordination of the contractor's management, production and QC personnel. At the meeting, the contractor will explain in detail how the three phases of quality control will be implemented for each DFOW.

1.3.3 Design and Construction Quality Control Plans

The contractor must provide a project specific Design Quality Control (DQC) Plan and Construction Quality Control (CQC) Plan, for review and approval by the Contracting Officer. The Contractor must perform no design until the DQC Plan is approved and no construction until the CQC Plan is approved. The Contractor's plans must include the following:

- a. The QC organization for this contract, including member resumes.
- b. A letter from an officer of the company designating the QC Manager, Alternate QC Manager, DQC Manager, and their authority.
- c. QC Manager and DQC Manager qualifications in resume format.
- d. Names of the individuals, including their respective firm names, who will be serving as the DOR in their respective design discipline.
- e. List of DFOW including list of design submittal packaging. DFOW is a task that is separate and distinct from other tasks and has control requirements and work crews unique to the task.

- f. For the CQC Plan, a plan to implement the "Three Phases of Control" for each DFOV.
- g. For the CQC Plan, a testing Plan, log and list of personnel and accredited laboratories that will perform tests. Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation with the testing plan.
- h. Submittal Register including design submittals, listing personnel who will review submittals and noting submittals for Contracting Officer review.
- i. Procedures for submitting and reviewing design changes/ variations prior to submission to the Contracting Officer.
- j. As part of the Contractor's DQC plan, a statement of Life Safety and Fire Protection Features Inspections and Testing must be prepared by the Fire Protection Designer of Record (DOR). Examples of life safety and fire protection features include, but are not limited to, water distribution systems including fire pumps and fire hydrants, fire resistive assemblies such as fire rated walls/partitions, through-penetration firestop systems, spray-applied fire proofing of structural components, fire alarm and detection systems, fire suppression and standpipe systems, means of egress components, emergency and exit lighting fixtures. The plan must include a listing of the individuals, approved agencies or firms that will be retained for conducting the required inspections and tests accompanied by a description of individual inspector's experience and a copy of all required certifications. Additional copies of this plan must be submitted to the NAVFAC Fire Protection Engineer and the Installation Fire Chief. This plan must include the following:
 - (1) Comprehensive list of systems, components or features to be inspected and tested.
 - (2) Description of performance verification testing activities for each system or component.
 - (3) Procedures and schedules for functional performance tests of all systems requiring functional testing.
- k. For the DQC plan, submit a formal Communication Plan that indicates the frequency of design meetings and what information is covered in those meetings, key design decision points tied to the Network Analysis Schedule and how the DOR plans to include the Government in those decisions, peer review procedures, interdisciplinary coordination, design review procedures, comment resolution, etc.

The Communication Plan must emphasize key decisions and possible problems the Contractor and Government may encounter during the design phase of the project. Provide a plan to discuss design alternatives and design coordination with the stakeholders at the key decision points as they arise on the project. Identify individual stakeholders and suggested communication methods that will be employed to expedite and facilitate each anticipated critical decision. Communication methods may include: Concept Design Workshop, over-the-shoulder review meetings, presentation at client's office, lifecycle cost

analysis presentation, technical phone conversation, and formal review meeting. The design portion of the Communication Plan must be written by the DQC Manager and confirmed during the Post Award Kick off Partnering. Update the Communication Plan at every Partnering meeting.

- l. For the DQC Plan, procedures for insuring the design documents are submitted in accordance with FC 1-300-09N, Navy and Marine Corps Design Procedures and other procedures to ensure disciplines have been properly coordinated to eliminate conflicts.
- m. For the DQC Plan, provide Quality Control Documentation procedures such as QC review sets and QC comments to demonstrate that cross checking of all engineering discipline's design drawings and specifications has taken place. The QC review documentation must exhibit a checking process of the design documents for completeness, accuracy, and constructability.
- n. For the DQC Plan, a list of design subcontractors and the scope of the work which each firm will accomplish.

1.4 QC ORGANIZATION

Provide a QC Manager at the work site to implement and manage the QC program, and to serve as the Site Safety and Health Officer (SSHO) as detailed in Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS. The QC Manager must manage the QC organization and must report to an officer of the firm and must not be subordinate to the Project Superintendent or the Project Manager.

The QC Manager, Project Superintendent and Project Manager must work together effectively. Although the QC Manager is the primary individual responsible for quality control, all individuals must be held responsible for the quality of work on the job.

Designate an alternate for the QC Manager at the work site to serve in the event of the designated QC Manager's absence. The period of absence may not exceed two weeks at one time, and not more than 30 workdays during a calendar year. Only one Alternate QC Manager will be allowed per Task Order.

1.4.1 QC and Alternate QC Manager

QC and Alternate QC Manager qualifications:

- a. Complete the course entitled "Construction Quality Management (CQM) for Contractors" and maintain a current certificate. The QC Manager that does not have a current certification must obtain the CQM for Contractors course certification within 90 days of award. This course is periodically offered by the Naval Facilities Engineering Command and the Army Corps of Engineers. Contact the Contracting Officer for class schedule information.
- b. Familiar with requirements of USACE EM 385-1-1, and experience in the areas of hazard identification, safety compliance, and sustainability.
- c. Five years of combined experience as a Superintendent, QC Manager, Project Manager, Construction Manager or Project Engineer on similar size and type construction contracts which included the major trades that are part of this contract, and at least two years' experience as

a QC Manager.

QC and Alternate QC Manager responsibilities:

- a. Participate in the Post Award Kick-off, Partnering, Preconstruction, Design Development, and Coordination and Mutual Understanding Meetings.
- b. Implement the "Three Phase of Control" plan for each DFOW and notify the Contracting Officer at least 3 business days in advance of each Preparatory and Initial Phase meeting. Submit respective checklists to the Contracting Officer the next business day.
- c. Ensure that no construction begins before the DOR has finalized the design for that segment of work, and construction submittals are approved as required.
- d. Inspect all work and rework, using International Conference of Building Officials certified QC specialists as applicable, to ensure its compliance with contract requirements. Maintain a rework log.
- e. Immediately stop any segment of work, which does not comply with the contract requirements and direct the removal and replacement of any defective work.
- f. Remove any individual from the site who fails to perform their work in a skillful, safe and workmanlike manner or whose work does not comply with the contract plans and specifications.
- g. Prepare daily QC Reports.
- h. Ensure that Contractor Production Reports are prepared daily.
- i. Hold weekly QC meetings with the DQC Manager, DOR (or representative), Superintendent and the Contracting Officer; participation must be suitable for the phase of work. Distribute minutes of these meetings.
- j. Ensure that design and construction submittals are reviewed and approved, as required by the contract, prior to allowing material on site and work to proceed with these items. Maintain a submittal register.
- k. Update As-built drawings daily, maintaining up-to-date set on site.
- l. Maintain a testing plan and log. Ensure that all testing is performed in accordance with the contract. Review all test reports and notify the Contracting Officer of all deficiencies, along with a proposal for corrective action.
- m. Maintain rework log on site, noting dates deficiency identified, and date corrected.
- n. Certify and sign statement on each invoice that all work to be paid under the invoice has been completed in accordance with contract requirements.
- o. Perform Punch-out and participate in Pre-final and Final acceptance Inspections. Submit list of deficiencies to the Contracting Officer for each inspection. Correct all deficiencies prior to the Final inspection. Notify Contracting Officer prior to final inspection to

establish a schedule date acceptable by the Contracting Officer.

- p. Ensure that all required keys, operation and maintenance manuals, warranty certificates, and the As-built drawings are correct and complete, in accordance with the contract, and submitted to the Contracting Officer.
- q. Assure that all applicable tests, and observations required by the contract are performed.
- r. Coordinate all factory and on-site testing, Testing Laboratory personnel, QC Specialists, and any other inspection and testing personnel required by this Contract.
- s. Notify the Contracting Officer of any proposed changes to the QC plan.
- t. Retain a copy of approved submittals at project site, including Contractor's copy of approved samples.

1.4.2 DQC Manager

The DQC Manager must be a member of the QC organization, must coordinate actions with the QC Manager, and must not be subordinate to the Project Superintendent or the Project Manager.

DQC Manager qualifications:

- a. A minimum of 5 years experience as a design Architect or Engineer on similar size and type designs / or design-build contracts. Provide education, experience, and management capabilities on similar size and type contracts.
- b. Be a registered professional engineer or architect with an active registration. Provide proof of registration as part of the resume submittal package.
- c. Complete the US Army Corps of Engineers (USACE) course entitled "Construction Quality Management (CQM) for Contractors."

DQC Manager responsibilities:

- a. Be responsible for the design integrity, professional design standards, and all design services required.
- b. Be a member of the Designer of Record's (DOR) firm, but may not be the DOR or the person stamping and approving final construction drawings or approving submittals.
- c. Be responsible for development of the design portion of the QC Plan, incorporation and maintenance of the approved Design Schedule, and the preparation of DQC Reports and minutes of all design meetings.
- d. Participate in the Post Award Kick-Off, all design planning meetings, design presentations, partnering, and QC meetings.
- e. Implement the DQC plan and must remain on staff involved with the project until completion of the project.
- f. Be cognizant of and assure that all design documents on the project

have been developed in accordance with the Contract.

- g. Provide Design Quality Control Documentation (DQCD) which indicates design coordination of the engineering disciplines. Submit DQCD with the pre-final and final design submittals as required in Section 01 33 10.05 20, DESIGN SUBMITTAL PROCEDURES.
- h. Develop the submittal register. Coordinate with each DOR to determine what items need to be submitted, and who needs to approve.
- i. Provide QC certification for design compliance.
- j. Certify and sign statement on each invoice that all work to be paid to the DOR under the invoice has been completed in accordance with the contract requirements.
- k. Prepare weekly DQC Reports that document the work the design team accomplished that week.
- l. Coordinate all training requirements with the QC and in accordance with 01 78 23 OPERATION AND MAINTENANCE DATA.

1.4.3 Designer of Record (DOR) Qualifications

The DOR must be a registered design professional, retained by the prime contractor, responsible for the overall design and review of submittal documents prepared by others. The DOR is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws in the state in which the design professional works. The DOR cannot serve as the DQC.

1.5 TESTING

1.5.1 Accreditation Requirements

Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation. The laboratory's scope of accreditation must include the appropriate ASTM standards (E 329, C 1077, D 3666, D 3740, A 880, E 543) listed in the technical sections of the specifications. Laboratories engaged in Hazardous Materials Testing must meet the requirements of OSHA and EPA. The policy applies to the specific laboratory performing the actual testing, not just the Corporate Office.

1.5.2 Laboratory Accreditation Authorities

Laboratory Accreditation Authorities include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology at <https://www.nist.gov/nvlap/about-nvlap>, the American Association of State Highway and Transportation Officials (AASHTO) program at <http://aashtoresource.org/>, International Accreditation Services (IAS) at <https://www.iasonline.org>, U.S. Army Corps of Engineers Materials Testing Center (MTC) at <https://mtc.erdcdren.mil/>, the American Association for Laboratory Accreditation (A2LA) program at <https://www.a2la.org/>, the Washington Association of Building Officials (WABO) at <https://www.wabo.org/> (Approval authority for WABO is limited to projects within Washington State), and the Washington Area Council of Engineering

Laboratories (WACEL) at <https://www.wacel.org/lab-accreditation-and-inspection-agency-audit-programs/laboratory-accreditation-program/> (Approval authority by WACEL is limited to projects within Facilities Engineering Command (FEC) Washington geographical area).

1.5.3 Capability Check

The Contracting Officer retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this Contract.

1.5.4 Test Results

Cite applicable Contract requirements, tests or analytical procedures used. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. If the item fails to conform, notify the Contracting Officer immediately. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. Test results must be signed by a testing laboratory representative authorized to sign certified test reports. Furnish the signed reports, certifications, and other documentation to the Contracting Officer via the QC Manager. Furnish a summary report of field tests at the end of each month, in accordance with paragraph INFORMATION FOR THE CONTRACTING OFFICER.

1.5.5 Test Reports and Monthly Summary Report of Tests

Furnish the signed reports, certifications, and a summary report of field tests at the end of each month to the Contracting Officer. Attach a copy of the summary report to the last daily Contractor Quality Control Report of each month. Provide a copy of the signed test reports and certifications to the preparer of the Operation & Maintenance (O&M) documentation.

1.6 THREE PHASES OF CONTROL

The Three Phases of Control must adequately cover both on-site and off-site work and must include the following for each DFOV.

1.6.1 Preparatory Phase

Notify the Contracting Officer at least two work days in advance of each preparatory phase meeting. The meeting must be conducted by the QC Manager and attended by the Project Superintendent, QC Specialists, and the foreman responsible for the DFOV. When the DFOV will be accomplished by a subcontractor, that subcontractor's foreman must attend the preparatory phase meeting. Document the results of the preparatory phase actions in the daily Contractor Quality Control Report and in the Preparatory Phase Checklist. Perform the following prior to beginning work on each DFOV:

- a. Review each paragraph of the applicable specification sections;
- b. Review the Contract drawings;
- c. Verify that appropriate shop drawings and submittals for materials and

equipment have been submitted and approved. Verify receipt of approved factory test results, when required;

- d. Review the testing plan and ensure that provisions have been made to provide the required QC testing;
- e. Examine the work area to ensure that the required preliminary work has been completed;
- f. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data;
- g. Discuss the specific controls used in construction methods, construction tolerances, workmanship standards, and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each DFW; and
- h. Review the APP and appropriate Activity Hazard Analysis (AHA) to ensure that applicable safety requirements are met, and that required Safety Data Sheets (SDS) are submitted.

1.6.2 Initial Phase

Notify the Contracting Officer at least two work days in advance of each initial phase. When construction crews are ready to start work on a DFW, conduct the initial phase with the Project Superintendent, QC Specialists, and the foreman responsible for that DFW. Observe the initial segment of the DFW to ensure that the work complies with Contract requirements. Document the results of the initial phase in the daily CQC Report and in Initial Phase Checklist. Repeat the initial phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met. Perform the following for each DFW:

- a. Establish the quality of workmanship required;
- b. Resolve conflicts;
- c. Ensure that testing is performed by the approved laboratory, and
- d. Check work procedures for compliance with the APP and the appropriate AHA to ensure that applicable safety requirements are met.
- e. Ensure manufacturer's representative has performed necessary inspections, if required.

1.6.3 Follow-Up Phase

Perform the following for on-going work daily, or more frequently as necessary, until the completion of each DFW and document in the daily CQC Report:

- a. Ensure the work is in compliance with Contract requirements;
- b. Maintain the quality of workmanship required;
- c. Ensure that testing is performed by the approved laboratory; and
- d. Ensure that rework items are being corrected.

1.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases must be conducted on the same DFOW if the quality of on-going work is unacceptable, if there are changes in the applicable QC organization, if there are changes in the on-site production supervision or work crew, if work on a DFOW is resumed after substantial period of inactivity, or if other problems develop.

1.6.5 Notification of Three Phases of Control for Off-Site Work

Notify the Contracting Officer at least two weeks prior to the start of the preparatory and initial phases.

1.7 COMPLETION INSPECTIONS

The Contractor must perform the necessary punch-out, pre-final, and final inspections, compile punch lists, and correct deficiencies.

1.7.1 Punch-Out Inspection

Near the completion of all work or any increment thereof, established by a completion time stated in the Contract Clause entitled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the QC Manager and the CA must conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings, specifications and Contract. Include in the punch list any remaining items on the "Rework Items List", which were not corrected prior to the Punch-Out Inspection. Include within the punch list the estimated date by which the deficiencies will be corrected. Provide a copy of the punch list to the Contracting Officer. The QC Manager, or staff, must make follow-on inspections to ascertain that all deficiencies have been corrected. Once this is accomplished, notify the Contracting Officer that the facility is ready for the Government "Pre-Final Inspection".

1.7.2 Pre-Final Inspection

The Government and QC Manager will perform this inspection to verify that the facility is complete and ready to be occupied. A Government "Pre-Final Punch List" will be documented by the QC Manager as a result of this inspection. The QC Manager will ensure that all items on this list are corrected prior to notifying the Government that a "Final" inspection with the Client can be scheduled. Any items noted on the "Pre-Final" inspection must be corrected in a timely manner and be accomplished before the contract completion date for the work or any particular increment thereof, if the project is divided into increments by separate completion dates.

1.7.3 Final Acceptance Inspection

Notify the Contracting Officer at least 14 calendar days prior to the date a final acceptance inspection can be held. State within the notice that all items previously identified on the pre-final punch list will be corrected and acceptable, along with any other unfinished Contract work, by the date of the final acceptance inspection. The Contractor must be represented by the QC Manager, the Project Superintendent, the CA, and others deemed necessary. Attendees for the Government will include the Contracting Officer, other FEAD/ROICC personnel, and personnel

representing the Client. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the Contract Clause entitled "Inspection of Construction."

1.8 DOCUMENTATION

Maintain current and complete records of on-site and off-site QC program operations and activities.

1.9 CONSTRUCTION INDOOR AIR QUALITY (IAQ) MANAGEMENT PLAN

Submit an IAQ Management Plan within 15 days after notice to proceed and not less than 10 days before the preconstruction meeting. Revise and resubmit Plan as required by the Contracting Officer. Make copies of the final plan available to all workers on site. Include provisions in the Plan to meet the requirements specified below and to ensure safe, healthy air for construction workers and building occupants.

1.9.1 Requirements During Construction

Provide for evaluation of indoor Carbon Dioxide concentrations in accordance with ASTM D6245. Provide for evaluation of volatile organic compounds (VOCs) in indoor air in accordance with ASTM D6345. Use filters with a Minimum Efficiency Reporting Value (MERV) of 8 in permanently installed air handlers during construction.

1.9.1.1 Control Measures

Meet or exceed the requirements of ANSI/SMACNA 008, Chapter 3, to help minimize contamination of the building from construction activities. The five requirements of this manual which must be adhered to are described below:

- a. HVAC protection: Isolate return side of HVAC system from surrounding environment to prevent construction dust and debris from entering the duct work and spaces.
- b. Source control: Use low emitting paints and other finishes, sealants, adhesives, and other materials as specified. When available, cleaning products must have a low VOC content and be non-toxic to minimize building contamination. Utilize cleaning techniques that minimize dust generation. Cycle equipment off when not needed. Prohibit idling motor vehicles where emissions could be drawn into building. Designate receiving/storage areas for incoming material that minimize IAQ impacts.
- c. Pathway interruption: When pollutants are generated use strategies such as 100 percent outside air ventilation or erection of physical barriers between work and non-work areas to prevent contamination.
- d. Housekeeping: Clean frequently to remove construction dust and debris. Promptly clean up spills. Remove accumulated water and keep work areas dry to discourage the growth of mold and bacteria. Take extra measures when hazardous materials are involved.
- e. Scheduling: Control the sequence of construction to minimize the absorption of VOCs by other building materials.

1.9.1.2 Moisture Contamination

- a. Remove accumulated water and keep work dry.
- b. Use dehumidification to remove moist, humid air from a work area.
- c. Do not use combustion heaters or generators inside the building.
- d. Protect porous materials from exposure to moisture.
- e. Remove and replace items which remain damp for more than a few hours.

1.9.2 Requirements after Construction

After construction ends and prior to occupancy, conduct a building flush-out or test the indoor air contaminant levels. Flush-out must be a minimum two-weeks with MERV-13 filtration media as determined by ASHRAE 52.2 at 100 percent outside air. Air contamination testing must be consistent with EPA's current Compendium of Methods for the Determination of Air Pollutants in Indoor Air. After building flush-out or testing and prior to occupancy, replace filtration media. Filtration media must have a MERV of 13 as determined by ASHRAE 52.2.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 50 00

TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS
11/20, CHG 1: 08/21

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.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2020; ERTA 20-1 2020; ERTA 20-2 2020; TIA 20-1; TIA 20-2; TIA 20-3; TIA 20-4)
National Electrical Code

NFPA 241 (2022) Standard for Safeguarding
Construction, Alteration, and Demolition
Operations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2014) Safety and Health Requirements
Manual

U.S. FEDERAL HIGHWAY ADMINISTRATION (FHWA)

MUTCD (2009; Rev 2012) Manual on Uniform Traffic
Control Devices

1.2 SUBMITTALS

Government approval is required for all submittals.

SD-01 Preconstruction Submittals

Construction Site Plan
Traffic Control Plan
Contractor Computer Cybersecurity Compliance Statements
Contractor Temporary Network Cybersecurity Compliance Statements

1.3 CONSTRUCTION SITE PLAN

Prior to the start of work, submit for Government approval a site plan showing the locations and dimensions of temporary facilities (including layouts and details, equipment and material storage area (onsite and offsite), and access and haul routes, avenues of ingress/egress to the fenced area and details of the fence installation. Identify any areas which may have to be graveled to prevent the tracking of mud. Indicate if the use of a supplemental or other staging area is desired. Show locations of safety and construction fences, site trailers, construction entrances, trash dumpsters, temporary sanitary facilities, and worker parking areas.

1.4 DOD CONDITION OF READINESS (COR)

DOD will set the Condition of Readiness (COR) based on the weather forecast for sustained winds 50 knots (58 mph) or greater. Contact the Contracting Officer for the current COR setting.

Monitor weather conditions a minimum of twice a day and take appropriate actions according to the approved Emergency Plan in the accepted APP, EM 385-1-1 Section 01 Emergency Planning and the instructions below.

Unless otherwise directed by the Contracting Officer, comply with:

- a. Condition FOUR (Sustained winds of 58 mph or greater expected within 72 hours): Normal daily jobsite cleanup and good housekeeping practices. Collect and store in piles or containers scrap lumber, waste material, and rubbish for removal and disposal at the close of each work day. Maintain the construction site, including storage areas, free of accumulation of debris. Stack form lumber in neat piles less than 3.3 feet high. Remove all debris, trash, or objects that could become missile hazards. Review requirements pertaining to "Condition THREE" and continue action as necessary to attain "Condition FOUR" readiness. Contact Contracting Officer for weather and COR updates and completion of required actions.
- b. Condition THREE (Sustained winds of 58 mph or greater expected within 48 hours): Maintain "Condition FOUR" requirements and commence securing operations necessary for "Condition ONE" which cannot be completed within 18 hours. Cease all routine activities which might interfere with securing operations. Commence securing and stow all gear and portable equipment. Make preparations for securing buildings. Reinforce or remove formwork and scaffolding. Secure machinery, tools, equipment, materials, or remove from the jobsite. Expend every effort to clear all missile hazards and loose equipment from general base areas. Contact Contracting Officer for weather and COR updates and completion of required actions. Review requirements pertaining to "Condition TWO" and continue action as necessary to attain "Condition THREE" readiness.
- c. Condition TWO (Sustained winds of 58 mph or greater expected within 24 hours): Secure the jobsite, and leave Government premises.
- d. Condition ONE. (Sustained winds of 58 mph or greater expected within 12 hours): Contractor access to the jobsite and Government premises is prohibited.

1.5 CYBERSECURITY DURING CONSTRUCTION

{For Reference Only: This subpart (and its subparts) relates to AC-18, SA-3, CCI-00258.} Meet the following requirements throughout the construction process.

1.5.1 Contractor Computer Equipment

Contractor owned computers may be used for construction. When used, contractor computers must meet the following requirements:

1.5.1.1 Operating System

The operating system must be an operating system currently supported by

the manufacturer of the operating system. The operating system must be current on security patches and operating system manufacturer required updates.

1.5.1.2 Anti-Malware Software

The computer must run anti-malware software from a reputable software manufacturer. Anti-malware software must be a version currently supported by the software manufacturer, must be current on all patches and updates, and must use the latest definitions file. All computers used on this project must be scanned using the installed software at least once per day.

1.5.1.3 Passwords and Passphrases

The passwords and passphrases for all computers must be changed from their default values. Passwords must be a minimum of eight characters with a minimum of one uppercase letter, one lowercase letter, one number and one special character.

1.5.1.4 Contractor Computer Cybersecurity Compliance Statements

Provide a single submittal containing completed Contractor Computer Cybersecurity Compliance Statements for each company using contractor owned computers. Contractor Computer Cybersecurity Compliance Statements must use the template published at <http://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/forms-graphics-tables>. Each Statement must be signed by a cybersecurity representative for the relevant company.

1.5.2 Temporary IP Networks

Temporary contractor-installed IP networks may be used during construction. When used, temporary contractor-installed IP networks must meet the following requirements:

1.5.2.1 Network Boundaries and Connections

The network must not extend outside the project site and must not connect to any IP network other than IP networks provided under this project or Government furnished IP networks provided for this purpose. Any and all network access from outside the project site is prohibited.

1.5.3 Government Access to Network

Government personnel must be allowed to have complete and immediate access to the network at any time in order to verify compliance with this specification.

1.5.4 Temporary Wireless IP Networks

In addition to the other requirements on temporary IP networks, temporary wireless IP (WiFi) networks must not interfere with existing wireless network and must use WPA2 security. Network names (SSID) for wireless networks must be changed from their default values.

1.5.5 Passwords and Passphrases

The passwords and passphrases for all network devices and network access must be changed from their default values. Passwords must be a minimum 8

characters with a minimum of one uppercase letter, one lowercase letter, one number and one special character.

1.5.6 Contractor Temporary Network Cybersecurity Compliance Statements

Provide a single submittal containing completed Contractor Temporary Network Cybersecurity Compliance Statements for each company implementing a temporary IP network. Contractor Temporary Network Cybersecurity Compliance Statements must use the template published at <http://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/forms-graphics-tables>. Each Statement must be signed by a cybersecurity representative for the relevant company. If no temporary IP networks will be used, provide a single copy of the Statement indicating this.

PART 2 PRODUCTS

2.1 TEMPORARY SIGNAGE

2.1.1 Bulletin Board

Prior to the commencement of work activities, provide a clear weatherproof covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the Contract, Wage Rate Information poster, Safety and Health Information as required by EM 385-1-1 Section 01 and other information approved by the Contracting Officer. Coordinate requirements herein with 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS. Locate the bulletin board at the project site in a conspicuous place easily accessible to all employees, and in location as approved by the Contracting Officer.

2.1.2 Warning Signs

Post temporary signs, tags, and labels to give workers and the public adequate warning and caution of construction hazards according to the EM 385-1-1 Section 04. Attach signs to the perimeter fencing every 150 feet warning the public of the presence of construction hazards. Signs must require unauthorized persons to keep out of the construction site. Correct the data required by safety signs daily. Post signs at all points of entry designating the construction site as a hard hat area.

2.2 TEMPORARY TRAFFIC CONTROL

2.2.1 Barricades

Erect and maintain temporary barricades to limit public access to hazardous areas. Barricades are required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Securely place barricades clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

2.3 FENCING

Provide fencing along the construction site and at all open excavations and tunnels to control access by unauthorized personnel. Safety fencing must be highly visible to be seen by pedestrians and vehicular traffic. All fencing must meet the requirements of EM 385-1-1. Remove the fence

upon completion and acceptance of the work.

2.3.1 Polyethylene Mesh Safety Fencing

Temporary safety fencing must be a high visibility orange colored, high density polyethylene grid, a minimum of 48 inches high and maximum mesh size of 2 inches. Fencing must extend from the grade to a minimum of 48 inches above the grade and be tightly secured to T-posts spaced as necessary to maintain a rigid and taut fence. Fencing must remain rigid and taut with a minimum of 200 pounds of force exerted on it from any direction with less than 4 inches of deflection.

2.4 TEMPORARY WIRING

Provide temporary wiring in accordance with EM 385-1-1 Section 11, NFPA 241 and NFPA 70. Include monthly inspection and testing of all equipment and apparatus.

PART 3 EXECUTION

3.1 EMPLOYEE PARKING

Construction Contract employees must park privately owned vehicles in an area designated by the Contracting Officer. Employee parking must not interfere with existing and established parking requirements of the Government installation.

3.2 AVAILABILITY AND USE OF UTILITY SERVICES

3.2.1 Temporary Utilities

Provide temporary utilities required for construction. Materials may be new or used, must be adequate for the required usage, not create unsafe conditions, and not violate applicable codes and standards.

3.2.2 Payment for Utility Services

- a. The Government will make all reasonably required utilities available from existing outlets and supplies, as specified in the Contract. Unless otherwise provided in the Contract, the amount of each utility service consumed will be charged to or paid at prevailing rates charged to the Government or, where the utility is produced by the Government, at reasonable rates determined by the Contracting Officer. Carefully conserve utilities furnished without charge.
- b. The point at which the Government will deliver such utilities or services and the quantity available must be coordinated with the Contracting Officer. Pay all costs incurred in connecting, converting, and transferring the utilities to the work. Make connections, including providing backflow-preventing devices on connections to domestic water lines; providing meters; and providing transformers; and make disconnections. Under no circumstances will taps to base fire hydrants be allowed for obtaining domestic water.

3.2.3 Meters and Temporary Connections

Provide and maintain necessary temporary connections, distribution lines, and meter bases (Government will provide meters) required to measure the amount of each utility used for the purpose of determining charges.

Notify the Contracting Officer, in writing, 5 working days before final electrical connection is desired so that a utilities contract can be established. The Government will provide a meter and make the final hot connection after inspection and approval of the Contractor's temporary wiring installation. Do not make the final electrical connection.

3.2.4 Advance Deposit

An advance deposit for utilities consisting of an estimated month's usage or a minimum of \$300.00 by certified check payable to the U.S. Treasury will be required. The last monthly bills for the fiscal year will normally be offset by the deposit and adjustments will be billed or returned as appropriate. Services to be rendered for the next fiscal year, beginning 1 October, will require a new deposit. Notification of the due date for this deposit will be mailed prior to the end of the current fiscal year.

3.2.5 Final Meter Reading

Before completion of the work and final acceptance of the work by the Government, notify the Contracting Officer, in writing, 5 working days before termination is desired. The Government will take a final meter reading, disconnect service, and remove the meters. Then remove all the temporary distribution lines, meter bases, and associated appurtenances. Pay all outstanding utility bills before final acceptance of the work by the Government.

3.2.6 Sanitation

Provide and maintain within the construction area minimum field-type sanitary facilities in accordance with EM 385-1-1 Section 02. Locate the facilities behind the construction fence or out of the public view. Clean units and empty wastes at least once a week or more frequently into a municipal, district, or station sanitary sewage system, or remove waste to a commercial facility. Obtain approval from the system owner prior to discharge into a municipal, district, or commercial sanitary sewer system. Penalties or fines associated with improper discharge will be the responsibility of the Contractor. Coordinate with the Contracting Officer and follow station regulations and procedures when discharging into the station sanitary sewer system. Maintain these conveniences at all times. Include provisions for pest control and elimination of odors. Government toilet facilities will not be available to Contractor's personnel.

3.2.7 Telephone

Make arrangements and pay all costs for telephone facilities desired. Contact Century Link to arrange telephone service if desired. The Station Telephone Officer, located in Building 4397, may need to be contacted if excess phone lines are not available in the area.

3.2.8 Fire Protection

Provide temporary fire protection equipment for the protection of personnel and property during construction. Remove debris and flammable materials daily to minimize potential hazards.

3.3 TRAFFIC PROVISIONS

3.3.1 Maintenance of Traffic

- a. Conduct operations in a manner that will not close a thoroughfare or interfere with traffic on railways or highways except with written permission of the Contracting Officer at least 15 calendar days prior to the proposed modification date, and provide a Traffic Control Plan for Government approval detailing the proposed controls to traffic movement for approval. The plan must be in accordance with State and local regulations and the MUTCD, Part VI. Make all notifications and obtain all permits required for modification to traffic movements outside Station's jurisdiction. Contractor may move oversized and slow-moving vehicles to the worksite provided requirements of the highway authority have been met.
- b. Conduct work so as to minimize obstruction of traffic, and maintain traffic on at least half of the roadway width at all times. Obtain approval from the Contracting Officer prior to starting any activity that will obstruct traffic.
- c. Provide, erect, and maintain, at Contractor's expense, lights, barriers, signals, passageways, detours, and other items, that may be required by the Life Safety Signage, overhead protection authority having jurisdiction.
- d. Provide cones, signs, barricades, lights, or other traffic control devices and personnel required to control traffic. Do not use foil-backed material for temporary pavement marking because of its potential to conduct electricity during accidents involving downed power lines.

3.3.2 Protection of Traffic

Maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment the work, and the erection and maintenance of adequate warning, danger, and direction signs, will be as required by the State and local authorities having jurisdiction. Provide self-illuminated (lighted) barricades during hours of darkness. Brightly-colored (orange) vests are required for all personnel working in roadways. Protect the traveling public from damage to person and property. Minimize the interference with public traffic on roads selected for hauling material to and from the site. Investigate the adequacy of existing roads and their allowable load limit. Contractor is responsible for the repair of damage to roads caused by construction operations.

3.3.3 Rush Hour Restrictions

Do not interfere with the peak traffic flows preceding and during normal operations for MCAS Cherry Point without notification to and approval by the Contracting Officer.

3.3.4 Dust Control

Dust control methods and procedures must be approved by the Contracting Officer. Coordinate dust control methods with 01 57 19 TEMPORARY

ENVIRONMENTAL CONTROLS.

3.4 CONTRACTOR'S TEMPORARY FACILITIES

Temporary facilities must meet requirements as identified in EM 385-1-1 Section 04.

Contractor is responsible for security of their property. Provide adequate outside security lighting at the temporary facilities. Trailers must be anchored to resist high winds and meet applicable state or local standards for anchoring mobile trailers. Coordinate anchoring with EM 385-1-1 Section 04. The Contract Clause entitled "FAR 52.236-10, Operations and Storage Areas" and the following apply:

3.4.1 Administrative Field Offices

Provide and maintain administrative field office facilities within the construction area at the designated site. Government office and warehouse facilities will not be available to the Contractor's personnel.

In the event a new building is constructed for the temporary project field office, it must be a minimum 12 feet in width, 16 feet in length and have a minimum of 7 feet headroom. Equip the building with approved electrical wiring, at least one double convenience outlet and the required switches and fuses to provide 120 volt power. Provide a work table with stool, desk with chair, two additional chairs, and one legal size file cabinet that can be locked. The building must be waterproof, supplied with a heater, have a minimum of two doors, electric lights, a telephone, a battery-operated smoke detector alarm, a sufficient number of adjustable windows for adequate light and ventilation, and a supply of approved drinking water. Provide approved sanitary facilities. Screen the windows and doors and provide the doors with deadbolt type locking devices or a padlock and heavy-duty hasp bolted to the door. Door hinge pins must be non-removable. Arrange the windows to open and to be securely fastened from the inside. Protect glass panels in windows by bars or heavy mesh screens to prevent easy access. In warm weather, provide air conditioning capable of maintaining the office at 50 percent relative humidity and a room temperature 20 degrees F below the outside temperature when the outside temperature is 95 degrees F. Unless otherwise directed by the Contracting Officer, remove the building from the site upon completion and acceptance of the work.

3.4.2 Storage Area

Construct a temporary 6 foot high chain link fence around trailers and materials. Include plastic strip inserts so that visibility through the fence is obstructed. Fence posts may be driven, in lieu of concrete bases, where soil conditions permit. Do not place or store trailers, materials, or equipment outside the fenced area unless such trailers, materials, or equipment are assigned a separate and distinct storage area by the Contracting Officer away from the vicinity of the construction site but within the installation boundaries. Trailers, equipment, or materials must not be open to public view with the exception of those items which are in support of ongoing work on the current day. Do not stockpile materials outside the fence in preparation for the next day's work. Park mobile equipment, such as tractors, wheeled lifting equipment, cranes, trucks, and like equipment within the fenced area at the end of each work day.

Keep fencing in a state of good repair and proper alignment. Grassed or unpaved areas, which are not established roadways, and will be traversed with construction equipment or other vehicles, must be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways, should the Contractor elect to traverse them with construction equipment or other vehicles. Mow and maintain grass located within the boundaries of the construction site for the duration of the project. Grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers must be edged or trimmed neatly.

3.4.3 Supplemental Storage Area

Upon request, and pending availability, the Contracting Officer will designate another or supplemental area for the use and storage of trailers, equipment, and materials. This area may not be in close proximity of the construction site but will be within the installation boundaries. Maintain the area in a clean and orderly fashion and secured if needed to protect supplies and equipment. Utilities will not be provided to this area by the Government.

3.4.4 Appearance of Trailers

- a. Trailers must be roadworthy and comply with all appropriate state and local vehicle requirements. Trailers which are rusted, have peeling paint or are otherwise in need of repair will not be allowed on Installation property. Trailers must present a clean and neat exterior appearance and be in a state of good repair.
- b. Maintain the temporary facilities. Failure to do so will be sufficient reason to require their removal at the Contractor's expense.

3.4.5 Safety Systems

Protect the integrity of all installed safety systems or personnel safety devices. Obtain prior approval from the Contracting Officer if entrance into systems serving safety devices is required. If it is temporarily necessary to remove or disable personnel safety devices in order to accomplish Contract requirements, provide alternative means of protection prior to removing or disabling any permanently installed safety devices or equipment and obtain approval from the Contracting Officer.

3.4.6 Weather Protection of Temporary Facilities and Stored Materials

Take necessary precautions to ensure that roof openings and other critical openings in the building are monitored carefully. Take immediate actions required to seal off such openings when rain or other detrimental weather is imminent, and at the end of each workday. Ensure that the openings are completely sealed off to protect materials and equipment in the building from damage.

3.4.6.1 Building and Site Storm Protection

When a warning of gale force winds is issued, take precautions to minimize danger to persons, and protect the work and nearby Government property. Precautions must include, but are not limited to, closing openings; removing loose materials, tools and equipment from exposed locations; and removing or securing scaffolding and other temporary work. Close openings in the work when storms of lesser intensity pose a threat to the work or

any nearby Government property.

3.5 PLANT COMMUNICATIONS

Whenever the individual elements of the plant are located so that operation by normal voice between these elements is not satisfactory, install a satisfactory means of communication, such as telephone or other suitable devices and make available for use by Government personnel.

3.6 TEMPORARY PROJECT SAFETY FENCING

As soon as practicable, but not later than 15 days after the date established for commencement of work, furnish and erect temporary project safety fencing at the work site. Maintain the safety fencing during the life of the Contract and, upon completion and acceptance of the work, remove from the work site.

3.7 CLEANUP

Remove construction debris, waste materials, packaging material and the like from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways must be cleaned away. Store all salvageable materials resulting from demolition activities within the fenced area described above or at the supplemental storage area. Neatly stack stored materials not in trailers, whether new or salvaged.

3.8 RESTORATION OF STORAGE AREA

Upon completion of the project remove the bulletin board, signs, barricades, haul roads, and all other temporary products from the site. After removal of trailers, materials, and equipment from within the fenced area, remove the fence. Restore areas used during the performance of the Contract to the original or better condition. Remove gravel used to traverse grassed areas and restore the area to its original condition, including top soil and seeding as necessary.

-- End of Section --

SECTION 01 57 19

TEMPORARY ENVIRONMENTAL CONTROLS

11/15, CHG 5: 08/21

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.

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA SW-846 (Third Edition; Update IV) Test Methods
for Evaluating Solid Waste:
Physical/Chemical Methods

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

29 CFR 1910.120 Hazardous Waste Operations and Emergency
Response

29 CFR 1910.1053 Respirable Crystalline Silica

29 CFR 1926.1153 Respirable Crystalline Silica

40 CFR 50 National Primary and Secondary Ambient Air
Quality Standards

40 CFR 60 Standards of Performance for New
Stationary Sources

40 CFR 63 National Emission Standards for Hazardous
Air Pollutants for Source Categories

40 CFR 64 Compliance Assurance Monitoring

40 CFR 112 Oil Pollution Prevention

40 CFR 241 Guidelines for Disposal of Solid Waste

40 CFR 243 Guidelines for the Storage and Collection
of Residential, Commercial, and
Institutional Solid Waste

40 CFR 258 Subtitle D Landfill Requirements

40 CFR 260 Hazardous Waste Management System: General

40 CFR 261 Identification and Listing of Hazardous
Waste

40 CFR 261.7 Residues of Hazardous Waste in Empty
Containers

40 CFR 262 Standards Applicable to Generators of

	Hazardous Waste
40 CFR 262.31	Standards Applicable to Generators of Hazardous Waste-Labeling
40 CFR 262.34	Standards Applicable to Generators of Hazardous Waste-Accumulation Time
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 266	Standards for the 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 273.2	Standards for Universal Waste Management - Batteries
40 CFR 273.4	Standards for Universal Waste Management - Mercury Containing Equipment
40 CFR 273.5	Standards for Universal Waste Management - Lamps
40 CFR 279	Standards for the Management of Used Oil
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
40 CFR 300.125	National Oil and Hazardous Substances Pollution Contingency Plan - Notification and Communications
40 CFR 355	Emergency Planning and Notification
40 CFR 403	General Pretreatment Regulations for Existing and New Sources of Pollution
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 172.101	Hazardous Material Regulation-Purpose and

Use of Hazardous Material Table

49 CFR 173	Shippers - General Requirements for Shipments and Packagings
49 CFR 178	Specifications for Packagings

1.2 DEFINITIONS

1.2.1 Class I and II Ozone Depleting Substance (ODS)

Class I ODS is defined in Section 602(a) of The Clean Air Act. A list of Class I ODS can be found on the EPA website at the following weblink.
<https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances>.

Class II ODS is defined in Section 602(s) of The Clean Air Act. A list of Class II ODS can be found on the EPA website at the following weblink.
<https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances>.

1.2.2 Contractor Generated Hazardous Waste

Contractor generated hazardous waste is materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene), waste thinners, excess paints, excess solvents, waste solvents, excess pesticides, and contaminated pesticide equipment rinse water.

1.2.3 Electronics Waste

Electronics waste is discarded electronic devices intended for salvage, recycling, or disposal.

1.2.4 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally or historically.

1.2.5 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.6 Hazardous Debris

As defined in paragraph SOLID WASTE, debris that contains listed hazardous waste (either on the debris surface, or in its interstices, such as pore structure) in accordance with 40 CFR 261. Hazardous debris also includes debris that exhibits a characteristic of hazardous waste in accordance

with 40 CFR 261.

1.2.7 Hazardous Materials

Hazardous materials as defined in 49 CFR 171 and listed in 49 CFR 172.

Hazardous material is any material that: Is regulated as a hazardous material in accordance with 49 CFR 173; or requires a Safety Data Sheet (SDS) in accordance with 29 CFR 1910.120; or during end use, treatment, handling, packaging, storage, transportation, or disposal meets or has components that meet or have potential to meet the definition of a hazardous waste as defined by 40 CFR 261 Subparts A, B, C, or D. Designation of a material by this definition, when separately regulated or controlled by other sections or directives, does not eliminate the need for adherence to that hazard-specific guidance which takes precedence over this section for "control" purposes. Such material includes ammunition, weapons, explosive actuated devices, propellants, pyrotechnics, chemical and biological warfare materials, medical and pharmaceutical supplies, medical waste and infectious materials, bulk fuels, radioactive materials, and other materials such as asbestos, mercury, and polychlorinated biphenyls (PCBs).

1.2.8 Hazardous Waste

Hazardous Waste is any material that meets the definition of a solid waste and exhibit a hazardous characteristic (ignitability, corrosivity, reactivity, or toxicity) as specified in 40 CFR 261, Subpart C, or contains a listed hazardous waste as identified in 40 CFR 261, Subpart D.

1.2.9 Land Application

Land Application means spreading or spraying discharge water at a rate that allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" must occur. Comply with federal, state, and local laws and regulations.

1.2.10 Municipal Separate Storm Sewer System (MS4) Permit

MS4 permits are those held by installations to obtain NPDES permit coverage for their stormwater discharges.

1.2.11 National Pollutant Discharge Elimination System (NPDES)

The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

1.2.12 Oily Waste

Oily waste are those materials that are, or were, mixed with Petroleum, Oils, and Lubricants (POLs) and have become separated from that POLs. Oily wastes also means materials, including wastewaters, centrifuge solids, filter residues or sludges, bottom sediments, tank bottoms, and sorbents which have come into contact with and have been contaminated by, POLs and may be appropriately tested and discarded in a manner which is in compliance with other state and local requirements.

This definition includes materials such as oily rags, "kitty litter" sorbent clay and organic sorbent material. These materials may be land

filled provided that: It is not prohibited in other state regulations or local ordinances; the amount generated is "de minimus" (a small amount); it is the result of minor leaks or spills resulting from normal process operations; and free-flowing oil has been removed to the practicable extent possible. Large quantities of this material, generated as a result of a major spill or in lieu of proper maintenance of the processing equipment, are a solid waste. As a solid waste, perform a hazardous waste determination prior to disposal. As this can be an expensive process, it is recommended that this type of waste be minimized through good housekeeping practices and employee education.

1.2.13 Regulated Waste

Regulated waste are solid wastes that have specific additional federal, state, or local controls for handling, storage, or disposal.

1.2.14 Sediment

Sediment is soil and other debris that have eroded and have been transported by runoff water or wind.

1.2.15 Solid Waste

Solid waste is a solid, liquid, semi-solid or contained gaseous waste. A solid waste can be a hazardous waste, non-hazardous waste, or non-Resource Conservation and Recovery Act (RCRA) regulated waste. Types of solid waste typically generated at construction sites may include:

1.2.15.1 Debris

Debris is non-hazardous solid material generated during the construction, demolition, or renovation of a structure that exceeds 2.5-inch particle size that is: a manufactured object; plant or animal matter; or natural geologic material (for example, cobbles and boulders), broken or removed concrete, masonry, and rock asphalt paving; ceramics; roofing paper and shingles. Inert materials may be reinforced with or contain ferrous wire, rods, accessories and weldments. 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.

1.2.15.2 Green Waste

Green waste is the vegetative matter from landscaping, land clearing and grubbing, including, but not limited to, grass, bushes, scrubs, small trees and saplings, tree stumps and plant roots. Marketable trees, grasses and plants that are indicated to remain, be re-located, or be re-used are not included.

1.2.15.3 Material Not Regulated As Solid Waste

Material not regulated as solid waste is 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.

1.2.15.4 Non-Hazardous Waste

Non-hazardous waste is waste that is excluded from, or does not meet, hazardous waste criteria in accordance with 40 CFR 263.

1.2.15.5 Recyclables

Recyclables are materials, equipment and assemblies such as doors, windows, door and window frames, plumbing fixtures, glazing and mirrors that are recovered and sold as recyclable, wiring, insulated/non-insulated copper wire cable, wire rope, and structural components. It also includes commercial-grade refrigeration equipment with Freon removed, household appliances where the basic material content is metal, clean polyethylene terephthalate bottles, cooking oil, used fuel oil, textiles, high-grade paper products and corrugated cardboard, stackable pallets in good condition, clean crating material, and clean rubber/vehicle tires. 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 that meet the definition of empty containers in accordance with 40 CFR 261.7 may be included as recyclable if sold to a scrap metal company.

1.2.15.6 Surplus Soil

Surplus soil is existing soil that is in excess of what is required for this work, including aggregates intended, but not used, for on-site mixing of concrete, mortars, and paving. Contaminated soil meeting the definition of hazardous material or hazardous waste is not included and must be managed in accordance with paragraph HAZARDOUS MATERIAL MANAGEMENT.

1.2.15.7 Scrap Metal

This includes scrap and excess ferrous and non-ferrous metals such as reinforcing 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.

1.2.15.8 Wood

Wood is dimension and non-dimension lumber, plywood, chipboard, and hardboard. Treated or painted wood that meets the definition of lead contaminated or lead based contaminated paint is not included. Treated wood includes, but is not limited to, lumber, utility poles, crossties, and other wood products with chemical treatment.

1.2.16 Surface Discharge

Surface discharge means discharge of water into drainage ditches, storm sewers, creeks or "waters of the United States". Surface discharges are discrete, identifiable sources and require a permit from the governing agency. Comply with federal, state, and local laws and regulations.

1.2.17 Wastewater

Wastewater is the used water and solids from a community that flow to a treatment plant.

1.2.17.1 Stormwater

Stormwater is any precipitation in an urban or suburban area that does not evaporate or soak into the ground, but instead collects and flows into storm drains, rivers, and streams.

1.2.18 Waters of the United States

Waters of the United States means Federally jurisdictional waters, including wetlands, that are subject to regulation under Section 404 of the Clean Water Act or navigable waters, as defined under the Rivers and Harbors Act.

1.2.19 Wetlands

Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

1.2.20 Universal Waste

The universal waste regulations streamline collection requirements for certain hazardous wastes in the following categories: batteries, pesticides, mercury-containing equipment (for example, thermostats), and lamps (for example, fluorescent bulbs). The rule is designed to reduce hazardous waste in the municipal solid waste (MSW) stream by making it easier for universal waste handlers to collect these items and send them for recycling or proper disposal. These regulations can be found at 40 CFR 273.

1.3 SUBMITTALS

Government approval is required for all submittals.

SD-01 Preconstruction Submittals

Preconstruction Survey
Solid Waste Management Permit
Regulatory Notifications
Environmental Protection Plan
Employee Training Records
Environmental Manager Qualifications

SD-06 Test Reports

Laboratory Analysis
Monthly Solid Waste Disposal Report

SD-07 Certificates

Employee Training Records
ECATTS Certificate Of Completion
Erosion and Sediment Control Inspector Qualifications

SD-11 Closeout Submittals

Waste Determination Documentation
Disposal Documentation for Hazardous and Regulated Waste

Assembled Employee Training Records
Solid Waste Management Permit
Project Solid Waste Disposal Documentation Report
Contractor Hazardous Material Inventory Log
Hazardous Waste/Debris Management
Regulatory Notifications
Sales Documentation
Contractor Certification

1.4 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 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. Protect the environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire duration of this Contract. 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.

Tests and procedures assessing whether construction operations comply with Applicable Environmental Laws may be required. Analytical work must be performed by qualified laboratories; and where required by law, the laboratories must be certified.

1.4.1 Training in Environmental Compliance Assessment Training and Tracking System (ECATTS)

1.4.1.1 Personnel Requirements

The Environmental Manager is responsible for environmental compliance on projects. The Environmental Manager must complete applicable ECATTS training modules (installation specific or general) prior to starting respective portions of on-site work under this Contract. If personnel changes occur for any of these positions after starting work, replacement personnel must complete applicable ECATTS training within 14 days of assignment to the project.

1.4.1.2 Certification

Submit an ECATTS certificate of completion for personnel who have completed the required ECATTS training. This training is web-based and can be accessed from any computer with Internet access using the following instructions.

Register for NAVFAC ECATTS by logging on to <https://environmentaltraining.ecatts.com/>. Obtain the password for registration from the Contracting Officer.

1.4.1.3 Refresher Training

This training has been structured to allow contractor personnel to receive credit under this contract and to carry forward credit to future contracts. Ensure the Environmental Manager review their training plans for new modules or updated training requirements prior to beginning work. Some training modules are tailored for specific state regulatory

requirements; therefore, Contractors working in multiple states will be required to retake modules tailored to the state where the contract work is being performed.

1.4.2 Conformance with the Environmental Management System

Perform work under this contract consistent with the policy and objectives identified in the installation's Environmental Management System (EMS). Perform work in a manner that conforms to objectives and targets of the environmental programs and operational controls identified by the EMS. Support Government personnel when environmental compliance and EMS audits are conducted by escorting auditors at the Project site, answering questions, and providing proof of records being maintained. Provide monitoring and measurement information as necessary to address environmental performance relative to environmental, energy, and transportation management goals. In the event an EMS nonconformance or environmental noncompliance associated with the contracted services, tasks, or actions occurs, take corrective and preventative actions. In addition, employees must be aware of their roles and responsibilities under the installation EMS and of how these EMS roles and responsibilities affect work performed under the contract.

Coordinate with the installation's EMS coordinator to identify training needs associated with environmental aspects and the EMS, and arrange training or take other action to meet these needs. Provide training documentation to the Contracting Officer. The Installation Environmental Office will retain associated environmental compliance records. Make EMS Awareness training completion certificates available to Government auditors during EMS audits and include the certificates in the Employee Training Records. See paragraph EMPLOYEE TRAINING RECORDS.

1.5 QUALITY ASSURANCE

1.5.1 Preconstruction Survey and Protection of Features

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, 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. Include in the report a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. The Contractor and the Contracting Officer will sign this survey report upon mutual agreement regarding its accuracy and completeness. Protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference that their preservation may cause to the work under the Contract.

1.5.2 Regulatory Notifications

Provide regulatory notification requirements in accordance with federal, state and local regulations. In cases where the Government will also provide public notification (such as stormwater permitting), coordinate with the Contracting Officer. Submit copies of regulatory notifications to the Contracting Officer at least 15 days 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, construction, removal or use of a permitted air emissions source, and remediation of controlled substances (asbestos, hazardous waste, lead paint).

1.5.3 Environmental Brief

Attend an environmental brief to be included in the preconstruction meeting. Provide the following information: types, quantities, and use of hazardous materials that will be brought onto the installation; and types and quantities of wastes/wastewater that may be generated during the Contract. Discuss the results of the Preconstruction Survey at this time.

Prior to initiating any work on site, meet with the Contracting Officer and installation Environmental Office to discuss the proposed Environmental Protection Plan (EPP). Develop a mutual understanding relative to the details of environmental protection, including measures for protecting natural and cultural resources, required reports, required permits, permit requirements (such as mitigation measures), and other measures to be taken.

1.5.4 Environmental Manager

Appoint in writing an Environmental Manager for the project site. The Environmental Manager is directly responsible for coordinating contractor compliance with federal, state, local, and installation requirements. The Environmental Manager must ensure compliance with Hazardous Waste Program requirements (including hazardous waste handling, storage, manifesting, and disposal); implement the EPP; ensure environmental permits are obtained, maintained, and closed out; ensure compliance with Stormwater Program requirements; ensure compliance with Hazardous Materials (storage, handling, and reporting) requirements; 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 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. Submit Environmental Manager Qualifications to the Contracting Officer.

1.5.5 Employee Training Records

Prepare and maintain Employee Training Records throughout the term of the contract meeting applicable 40 CFR requirements. Provide Employee Training Records in the Environmental Records Binder. Ensure every employee completes a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures compliance with federal, state and local regulatory requirements for RCRA Large Quantity Generator. Provide a Position Description for each employee, by subcontractor, based on the Davis-Bacon Wage Rate designation or other equivalent method, evaluating the employee's association with hazardous and regulated wastes. This Position Description will include training requirements as defined in 40 CFR 265 for a Large Quantity Generator facility. Submit these Assembled Employee Training Records to

the Contracting Officer at the conclusion of the project, unless otherwise directed.

Train personnel to meet EPA and state requirements. Conduct environmental protection/pollution control meetings for personnel prior to commencing construction activities. Contact additional meetings for new personnel and when site conditions change. Include in the training and meeting agenda: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, waters of the United States, and endangered species and their habitat that are known to be in the area. Provide copy of the Erosion and Sediment Control Inspector Certification as required by the State of North Carolina.

1.5.6 Non-Compliance Notifications

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with federal, state or local environmental laws or regulations, permits, and other elements of the Contractor's EPP. After receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. FAR 52.242-14 Suspension of Work provides that a suspension, delay, or interruption of work due to the fault or negligence of the Contractor allows for no adjustments to the contract for time extensions or equitable adjustments. In addition to a suspension of work, the Contracting Officer may use additional authorities under the contract or law.

1.6 ENVIRONMENTAL PROTECTION PLAN

The purpose of the EPP is to present an overview of known or potential environmental issues that must be considered and addressed during construction. Incorporate construction related objectives and targets from the installation's EMS into the EPP. Include in the EPP measures for protecting natural and cultural resources, required reports, and other measures to be taken. Meet with the Contracting Officer or Contracting Officer Representative to discuss the EPP and develop a mutual understanding relative to the details for environmental protection including measures for protecting natural resources, required reports, and other measures to be taken. Submit the EPP within 15 days after notice to proceed and not less than 10 days before the preconstruction meeting. Revise the EPP throughout the project to include any reporting requirements, changes in site conditions, or contract modifications that change the project scope of work in a way that could have an environmental impact. No requirement in this section will relieve the Contractor of any applicable federal, state, and local environmental protection laws and regulations. During Construction, identify, implement, and submit for approval any additional requirements to be included in the EPP. Maintain the current version onsite.

The EPP includes, but is not limited to, the following elements:

1.6.1 General Overview and Purpose

1.6.1.1 Descriptions

A brief description of each specific plan required by environmental permit or elsewhere in this Contract such as stormwater pollution prevention plan, spill control plan, solid waste management plan, wastewater management plan, air pollution control plan, contaminant prevention plan, traffic control plan Non-Hazardous Solid Waste Disposal Plan.

1.6.1.2 Duties

The duties and level of authority assigned to the person(s) on the job site who oversee environmental compliance, such as who is responsible for adherence to the EPP, who is responsible for spill cleanup and training personnel on spill response procedures, who is responsible for manifesting hazardous waste to be removed from the site (if applicable), and who is responsible for training the Contractor's environmental protection personnel.

1.6.1.3 Procedures

A copy of any standard or project-specific operating procedures that will be used to effectively manage and protect the environment on the project site.

1.6.1.4 Communications

Communication and training procedures that will be used to convey environmental management requirements to Contractor employees and subcontractors.

1.6.1.5 Contact Information

Emergency contact information contact information (office phone number, cell phone number, and e-mail address).

1.6.2 General Site Information

1.6.2.1 Drawings

Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, jurisdictional wetlands, material storage areas, structures, sanitary facilities, storm drains and conveyances, and stockpiles of excess soil.

1.6.2.2 Work Area

Work area plan showing the proposed activity in each portion of the area and identify the areas of limited use or nonuse. Include measures for marking the limits of use areas, including methods for protection of features to be preserved within authorized work areas and methods to control runoff and to contain materials on site, and a traffic control plan.

1.6.2.3 Documentation

A letter signed by an officer of the firm appointing the Environmental Manager and stating that person is responsible for managing and

implementing the Environmental Program as described in this contract. Include in this letter the Environmental Manager's authority to direct the removal and replacement of non-conforming work.

1.6.3 Management of Natural Resources

- a. Land resources
- b. Tree protection
- c. Replacement of damaged landscape features
- d. Temporary construction
- e. Stream crossings
- f. Fish and wildlife resources
- g. Wetland areas

1.6.4 Protection of Historical and Archaeological Resources

- a. Objectives
- b. Methods

1.6.5 Stormwater Management and Control

- a. Ground cover
- b. Erodible soils
- c. Temporary measures
 - (1) Structural Practices
 - (2) Temporary and permanent stabilization
- d. Effective selection, implementation and maintenance of Best Management Practices (BMPs).

1.6.6 Protection of the Environment from Waste Derived from Contractor Operations

Control and disposal of solid and sanitary waste. Control and disposal of hazardous waste.

This item consists of the management procedures for hazardous waste to be generated. The elements of those procedures will coincide with the Installation Hazardous Waste Management Plan. The Contracting Officer will provide a copy of the Installation Hazardous Waste Management Plan. As a minimum, include the following:

- a. List of the types of hazardous wastes expected to be generated
- b. Procedures to ensure a written waste determination is made for appropriate wastes that are to be generated
- c. Sampling/analysis plan, including laboratory method(s) that will be used for waste determinations and copies of relevant laboratory certifications
- d. Methods and proposed locations for hazardous waste accumulation/storage (that is, in tanks or containers)
- e. Management procedures for storage, labeling, transportation, and disposal of waste (treatment of waste is not allowed unless specifically noted)
- f. Management procedures and regulatory documentation ensuring disposal of hazardous waste complies with Land Disposal Restrictions (40 CFR 268

)

- g. Management procedures for recyclable hazardous materials such as lead-acid batteries, used oil, and similar
- h. Used oil management procedures in accordance with 40 CFR 279; Hazardous waste minimization procedures
- i. Plans for the disposal of hazardous waste by permitted facilities; and Procedures to be employed to ensure required employee training records are maintained.

1.6.7 Prevention of Releases to the Environment

Procedures to prevent releases to the environment

Notifications in the event of a release to the environment

1.6.8 Regulatory Notification and Permits

List what notifications and permit applications must be made. Some permits require up to 180 days to obtain. Demonstrate that those permits have been obtained or applied for by including copies of applicable environmental permits. The EPP will not be approved until the permits have been obtained.

1.6.9 Clean Air Act Compliance

1.6.9.1 Pollution Generating Equipment

Identify air pollution generating equipment or processes that may require federal, state, or local permits under the Clean Air Act. Determine requirements based on any current installation permits and the impacts of the project. Provide a list of all fixed or mobile equipment, machinery or operations that could generate air emissions during the project to the Installation Environmental Office (Air Program Manager).

1.6.9.2 Stationary Internal Combustion Engines

Identify portable and stationary internal combustion engines that will be supplied, used or serviced. Comply with 40 CFR 60 Subpart IIII, 40 CFR 60 Subpart JJJJ, 40 CFR 63 Subpart ZZZZ, and local regulations as applicable. At minimum, include the make, model, serial number, manufacture date, size (engine brake horsepower), and EPA emission certification status of each engine. Maintain applicable records and log hours of operation and fuel use. Logs must include reasons for operation and delineate between emergency and non-emergency operation.

1.6.9.3 Air Pollution-engineering Processes

Identify planned air pollution-generating processes and management control measures (including, but not limited to, spray painting, abrasive blasting, demolition, material handling, fugitive dust, and fugitive emissions). Log hours of operations and track quantities of materials used.

1.6.9.4 Compliant Materials

Provide the Government a list of SDSs for all hazardous materials proposed

for use on site. Materials must be compliant with all Clean Air Act regulations for emissions including solvent and volatile organic compound contents, and applicable National Emission Standards for Hazardous Air Pollutants requirements. The Government may alter or limit use of specific materials as needed to meet installation permit requirements for emissions.

1.7 LICENSES AND PERMITS

Obtain licenses and permits required for the construction of the project and in accordance with FAR 52.236-7 Permits and Responsibilities. Notify the Government of all general use permitted equipment the Contractor plans to use on site. This paragraph supplements the Contractor's responsibility under FAR 52.236-7 Permits and Responsibilities.

1.8 ENVIRONMENTAL RECORDS BINDER

Maintain on-site a separate three-ring Environmental Records Binder and submit at the completion of the project. Make separate parts within the binder that correspond to each submittal listed under paragraph CLOSEOUT SUBMITTALS in this section.

1.9 SOLID WASTE MANAGEMENT PERMIT

Provide the Contracting Officer with written notification of the quantity of anticipated solid waste or debris that is anticipated or estimated to be generated by construction. Include in the report the locations where various types of waste will be disposed or recycled. Include letters of acceptance from the receiving location or as applicable; submit one copy of the receiving location state and local Solid Waste Management Permit or license showing such agency's approval of the disposal plan before transporting wastes off Government property.

1.9.1 Monthly Solid Waste Disposal Report

Monthly, submit a solid waste disposal report to the Contracting Officer. For each waste, the report will state the classification (using the definitions provided in this section), amount, location, and name of the business receiving the solid waste.

1.10 FACILITY HAZARDOUS WASTE GENERATOR STATUS

MCAS Cherry Point is designated as a Large Quantity Generator. Meet the regulatory requirements of this generator designation for any work conducted within the boundaries of this Installation. Comply with provisions of federal, state, and local regulatory requirements applicable to this generator status regarding training and storage, handling, and disposal of construction derived wastes.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Minimize interference with, disturbance to, and damage to fish, wildlife, and plants, including their habitats. Prior to the commencement of

activities, consult with the Installation Environmental Office, regarding rare species or sensitive habitats that need to be protected. The protection of rare, threatened, and endangered animal and plant species identified, including their habitats, is the Contractor's responsibility.

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 that is consistent with the requirements of the Installation Environmental Office or as otherwise specified. Confine construction activities to within the limits of the work indicated or specified.

3.1.1 Flow Ways

Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as specified and permitted.

3.1.2 Vegetation

Except in areas to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without the Contracting Officer's permission. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages unless authorized by the Contracting Officer. Where such use of attached ropes, cables, or guys is authorized, the Contractor is responsible for any resultant damage.

Protect existing trees that are to remain to ensure they are not injured, bruised, defaced, or otherwise damaged by construction operations. Remove displaced rocks from uncleared areas. Coordinate with the Contracting Officer and Installation Environmental Office to determine appropriate action for trees and other landscape features scarred or damaged by equipment operations.

3.1.3 Streams

Stream crossings must allow movement of materials or equipment without violating water pollution control standards of the federal, state, and local governments. Construction of stream crossing structures must be in compliance with any required permits including, but not limited to, Clean Water Act Section 404, and Section 401 Water Quality.

The Contracting Officer's approval and appropriate permits are required before any equipment will be permitted to ford live streams. In areas where frequent crossings are required, install temporary culverts or bridges. Obtain Contracting Officer's approval prior to installation. Remove temporary culverts or bridges upon completion of work, and repair the area to its original condition unless otherwise required by the Contracting Officer.

3.2 STORMWATER

Do not discharge stormwater from construction sites to the sanitary sewer. If the water is noted or suspected of being contaminated, it may only be released to the storm drain system if the discharge is specifically permitted. Obtain authorization in advance from the Installation Environmental Office for any release of contaminated water.

3.2.1 Work Area Limits

Mark the areas that need not be disturbed under this Contract prior to commencing construction activities. Mark or fence isolated areas within the general work area that are not to be disturbed. Protect monuments and markers before construction operations commence. Where construction operations are to be conducted during darkness, any markers must be visible in the dark. Personnel must be knowledgeable of the purpose for marking and protecting particular objects.

3.2.2 Contractor Facilities and Work Areas

Place field offices, staging areas, stockpile storage, and temporary buildings in areas designated on the drawings or as directed by the Contracting Officer. Move or relocate the Contractor facilities only when approved by the Government. Provide erosion and sediment controls for onsite borrow and spoil areas to prevent sediment from entering nearby waters. Control temporary excavation and embankments for plant or work areas to protect adjacent areas.

3.3 AIR RESOURCES

Equipment operation, activities, or processes will be in accordance with 40 CFR 64 and state air emission and performance laws and standards.

3.3.1 Preconstruction Air Permits

Notify the Air Program Manager, through the Contracting Officer, at least 6 months prior to bringing equipment, assembled or unassembled, onto the Installation, so that air permits can be secured. Necessary permitting time must be considered in regard to construction activities. Clean Air Act (CAA) permits must be obtained prior to bringing equipment, assembled or unassembled, onto the Installation.

3.3.2 Burning

Burning is prohibited on the Government premises.

3.3.3 Class I and II ODS Prohibition

Class I and II ODS are Government property and must be returned to the Government for appropriate management. Coordinate with the Installation Environmental Office to determine the appropriate location for turn in of all reclaimed refrigerant.

3.3.4 Accidental Venting of Refrigerant

Accidental venting of a refrigerant is a release and must be reported immediately to the Contracting Officer.

3.3.5 EPA Certification Requirements

Heating and air conditioning technicians must be certified through an EPA-approved program. Maintain copies of certifications at the employees' places of business; technicians must carry certification wallet cards, as provided by environmental law.

3.3.6 Dust Control

Keep dust down at all times, including during nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing will be permitted only for cleaning nonparticulate debris such as steel reinforcing bars. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous concrete. Do not unnecessarily shake bags of cement, concrete mortar, or plaster. Since these products contain Crystalline Silica, comply with the applicable OSHA standard, 29 CFR 1910.1053 or 29 CFR 1926.1153 for controlling exposure to Crystalline Silica Dust.

3.3.6.1 Particulates

Dust particles, aerosols and gaseous by-products from construction activities, and processing and preparation of materials (such as from asphaltic batch plants) must be controlled at all times, including weekends, holidays, and hours when work is not in progress. Maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates that would exceed 40 CFR 50, state, and local air pollution standards or that would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators, or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp. Provide sufficient, competent equipment available to accomplish these tasks. Perform particulate control as the work proceeds and whenever a particulate nuisance or hazard occurs. Comply with state and local visibility regulations.

3.3.6.2 Abrasive Blasting

Blasting operations cannot be performed without prior approval of the Installation Air Program Manager. The use of silica sand is prohibited in sandblasting.

Provide tarpaulin drop cloths and windscreens to enclose abrasive blasting operations to confine and collect dust, abrasive agent, paint chips, and other debris. Perform work involving removal of hazardous material in accordance with 29 CFR 1910.

3.3.7 Odors

Control odors from construction activities. The odors must be in compliance with state regulations and local ordinances and may not constitute a health hazard.

3.4 WASTE MINIMIZATION

Minimize the use of hazardous materials and the generation of waste. Include procedures for pollution prevention/hazardous waste minimization in the Hazardous Waste Management Section of the EPP. Obtain a copy of the installation's Pollution Prevention/Hazardous Waste Minimization Plan for reference material when preparing this part of the EPP. If no written plan exists, obtain information by contacting the Contracting Officer. Describe the anticipated types of the hazardous materials to be used in

the construction when requesting information.

3.4.1 Salvage, Reuse and Recycle

Identify anticipated materials and waste for salvage, reuse, and recycling. Describe actions to promote material reuse, resale or recycling. To the extent practicable, all scrap metal must be sent for reuse or recycling and will not be disposed of in a landfill.

Include the name, physical address, and telephone number of the hauler, if transported by a franchised solid waste hauler. Include the destination and, unless exempted, provide a copy of the state or local permit (cover) or license for recycling.

3.4.2 Nonhazardous Solid Waste Diversion Report

Maintain an inventory of nonhazardous solid waste diversion and disposal of construction and demolition debris. Submit a report to the Contracting Officer on the first working day after each fiscal year quarter, starting the first quarter that nonhazardous solid waste has been generated. Include the following in the report:

Construction and Demolition (C&D) Debris Disposed	(____) cubic yards or tons, as appropriate
C&D Debris Recycled	(____) cubic yards or tons, as appropriate
C&D Debris Composted	(____) cubic yards or tons, as appropriate
Total C&D Debris Generated	(____) cubic yards or tons, as appropriate
Waste Sent to Waste-To-Energy Incineration Plant (This amount should not be included in the recycled amount)	(____) cubic yards or tons, as appropriate

3.5 WASTE MANAGEMENT AND DISPOSAL

3.5.1 Waste Determination Documentation

Complete a Waste Determination form (provided at the pre-construction conference) for Contractor-derived wastes to be generated. All potentially hazardous solid waste streams that are not subject to a specific exclusion or exemption from the hazardous waste regulations (e.g. scrap metal, domestic sewage) or subject to special rules, (lead-acid batteries and precious metals) must be characterized in accordance with the requirements of 40 CFR 261 or corresponding applicable state or local regulations. Base waste determination on user knowledge of the processes and materials used, and analytical data when necessary. Consult with the Installation environmental staff for guidance on specific requirements. Attach support documentation to the Waste Determination form. As a minimum, provide a Waste Determination form for the following waste (this listing is not inclusive): oil- and latex-based painting and caulking products, solvents, adhesives, aerosols, petroleum products, and containers of the original materials.

3.5.1.1 Sampling and Analysis of Waste

3.5.1.1.1 Waste Sampling

Sample waste in accordance with EPA SW-846. Clearly mark each sampled drum or container with the Contractor's identification number, and cross reference to the chemical analysis performed.

3.5.1.1.2 Laboratory Analysis

Follow the analytical procedure and methods in accordance with the 40 CFR 261. Provide analytical results and reports performed to the Contracting Officer.

3.5.1.1.3 Analysis Type

Identify hazardous waste by analyzing for the following characteristics: ignitability, corrosivity, reactivity, toxicity based on TCLP results.

3.5.2 Solid Waste Management

3.5.2.1 Project Solid Waste Disposal Documentation Report

Provide copies of the waste handling facilities' weight tickets, receipts, bills of sale, and other sales documentation. In lieu of sales documentation, a statement indicating the disposal location for the solid waste that is signed by an employee authorized to legally obligate or bind the firm may be submitted. The sales documentation Contractor certification must 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 for the Contractor's own use, submit the information previously described in this paragraph on the solid waste disposal report. Prices paid or received do not have to be reported to the Contracting Officer unless required by other provisions or specifications of this Contract or public law.

3.5.2.2 Control and Management of Solid Wastes

Pick up solid wastes, and place in covered containers that are regularly emptied. Do not prepare or cook food on the project site. Prevent contamination of the site or other areas when handling and disposing of wastes. At project completion, leave the areas clean. Employ segregation measures so that no hazardous or toxic waste will become co-mingled with non-hazardous solid waste. Transport solid waste off Government property and dispose of it in compliance with 40 CFR 260, state, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill is the minimum acceptable offsite solid waste disposal option. Verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. Segregate and separate treated wood components disposed at a lined landfill approved to accept this waste in accordance with local and state regulations. Solid waste disposal offsite must comply with most stringent local, state, and federal requirements, including 40 CFR 241, 40 CFR 243, and 40 CFR 258.

Manage hazardous material used in construction, including but not limited to, aerosol cans, waste paint, cleaning solvents, contaminated brushes, and used rags, in accordance with 49 CFR 173.

3.5.3 Control and Management of Hazardous Waste

Do not dispose of hazardous waste on Government property. Do not discharge any waste to a sanitary sewer, storm drain, or to surface waters or conduct waste treatment or disposal on Government property without written approval of the Contracting Officer.

3.5.3.1 Hazardous Waste/Debris Management

Identify construction activities that will generate hazardous waste or debris. Provide a documented waste determination for resultant waste streams. Identify, label, handle, store, and dispose of hazardous waste or debris in accordance with federal, state, and local regulations, including 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, and 40 CFR 268.

Manage hazardous waste in accordance with the approved Hazardous Waste Management Section of the EPP. Store hazardous wastes in approved containers in accordance with 49 CFR 173 and 49 CFR 178. Hazardous waste

generated within the confines of Government facilities is identified as being generated by the Government. Prior to removal of any hazardous waste from Government property, hazardous waste manifests must be signed by personnel from the Installation Environmental Office. Do not bring hazardous waste onto Government property. Provide the Contracting Officer with 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.

3.5.3.2 Waste Storage/Satellite Accumulation/90 Day Storage Areas

Accumulate hazardous waste at satellite accumulation points and in compliance with 40 CFR 262.34 and applicable state or local regulations. Individual waste streams will be limited to 55 gallons of accumulation (or 1 quart for acutely hazardous wastes). If the Contractor expects to generate hazardous waste at a rate and quantity that makes satellite accumulation impractical, the Contractor may request a temporary 90 day accumulation point be established. Submit a request in writing to the Contracting Officer and provide the following information (Attach Site Plan to the Request):

Contract Number	(____)
Contractor	(____)
Haz/Waste or Regulated Waste POC	(____)
Phone Number	(____)
Type of Waste	(____)
Source of Waste	(____)
Emergency POC	(____)
Phone Number	(____)
Location of the Site	(____)

Attach a Waste Determination form for the expected waste streams. Allow 10 working days for processing this request. Additional compliance requirements (e.g. training and contingency planning) that may be required are the responsibility of the Contractor. Barricade the designated area where waste is being stored and post a sign identifying as follows:

"DANGER - UNAUTHORIZED PERSONNEL KEEP OUT"

3.5.3.3 Hazardous Waste Disposal

3.5.3.3.1 Responsibilities for Contractor's Disposal

Provide hazardous waste manifest to the Installations Environmental Office for review, approval, and signature prior to shipping waste off Government property.

3.5.3.3.1.1 Services

Provide service necessary for the final treatment or disposal of the

hazardous material or waste in accordance with 40 CFR 260, local, and state, laws and regulations, and the terms and conditions of the Contract within 60 days after the materials have been generated. These services include necessary personnel, labor, transportation, packaging, detailed analysis (if required for disposal or transportation, include manifesting or complete waste profile sheets, equipment, and compile documentation).

3.5.3.3.1.2 Samples

Obtain a representative sample of the material generated for each job done to provide waste stream determination.

3.5.3.3.1.3 Analysis

Analyze each sample taken and provide analytical results to the Contracting Officer. See paragraph WASTE DETERMINATION DOCUMENTATION.

3.5.3.3.1.4 Labeling

Determine the Department of Transportation's (DOT's) proper shipping names for waste (each container requiring disposal) and demonstrate to the Contracting Officer how this determination is developed and supported by the sampling and analysis requirements contained herein. Label all containers of hazardous waste with the words "Hazardous Waste" or other words to describe the contents of the container in accordance with 40 CFR 262.31 and applicable state or local regulations.

3.5.3.3.2 Contractor Disposal Turn-In Requirements

Hazardous waste generated must be disposed of in accordance with the following conditions to meet installation requirements:

- a. Drums must be compatible with waste contents and drums must meet DOT requirements for 49 CFR 173 for transportation of materials.
- b. Band drums to wooden pallets.
- c. No more than three 55 gallon drums or two 85 gallon over packs are to be banded to a pallet.
- d. Band using 1-1/4 inch minimum band on upper third of drum.
- e. Provide label in accordance with 49 CFR 172.101.
- f. Leave 3 to 5 inches of empty space above volume of material.

3.5.3.4 Universal Waste Management

Manage the following categories of universal waste in accordance with federal, state, and local requirements and installation instructions:

- a. Batteries as described in 40 CFR 273.2
- b. Lamps as described in 40 CFR 273.5
- c. Mercury-containing equipment as described in 40 CFR 273.4

Mercury is prohibited in the construction of this facility, unless specified otherwise, and with the exception of mercury vapor lamps and fluorescent lamps. Dumping of mercury-containing materials and devices such as mercury vapor lamps, fluorescent lamps, and mercury switches, in

rubbish containers is prohibited. Remove without breaking, pack to prevent breakage, and transport out of the activity in an unbroken condition for disposal as directed.

3.5.3.5 Electronics End-of-Life Management

Recycle or dispose of electronics waste, including, but not limited to, used electronic devices such as computers, monitors, hard-copy devices, televisions, mobile devices, in accordance with 40 CFR 260-262, state, and local requirements, and installation instructions.

3.5.3.6 Disposal Documentation for Hazardous and Regulated Waste

Contact the Contracting Officer for the facility RCRA identification number that is to be used on each manifest.

3.5.4 Releases/Spills of Oil and Hazardous Substances

3.5.4.1 Response and Notifications

Exercise due diligence to prevent, contain, and respond to spills of hazardous material, hazardous substances, hazardous waste, sewage, regulated gas, petroleum, lubrication oil, and other substances regulated in accordance with 40 CFR 300. Maintain spill cleanup equipment and materials at the work site. In the event of a spill, take prompt, effective action to stop, contain, curtail, or otherwise limit the amount, duration, and severity of the spill/release. In the event of any releases of oil and hazardous substances, chemicals, or gases; immediately (within 15 minutes) notify the Installation Fire Department, the Installation Command Duty Officer, the Installation Environmental Office, the Contracting Officer and the state or local authority.

Submit verbal and written notifications as required by the federal (40 CFR 300.125 and 40 CFR 355), state, local regulations and instructions. Provide copies of the written notification and documentation that a verbal notification was made within 20 days. Spill response must be in accordance with 40 CFR 300 and applicable state and local regulations. Contain and clean up these spills without cost to the Government.

3.5.4.2 Clean Up

Clean up hazardous and non-hazardous waste spills. Reimburse the Government for costs incurred including sample analysis materials, clothing, equipment, and labor if the Government will initiate its own spill cleanup procedures, for Contractor- responsible spills, when: Spill cleanup procedures have not begun within one hour of spill discovery/occurrence; or, in the Government's judgment, spill cleanup is inadequate and the spill remains a threat to human health or the environment.

3.5.5 Mercury Materials

Immediately report to the Environmental Office and the Contracting Officer instances of breakage or mercury spillage. Clean mercury spill area to the satisfaction of the Contracting Officer.

Do not recycle a mercury spill cleanup; manage it as a hazardous waste for disposal.

3.5.6 Wastewater

3.5.6.1 Disposal of Wastewater

Disposal of wastewater must be as specified below.

3.5.6.1.1 Treatment

Do not allow wastewater from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, and forms to enter water ways or to be discharged prior to being treated to remove pollutants. Dispose of the construction-related waste water off-Government property in accordance with 40 CFR 403, state, regional, and local laws and regulations.

3.5.6.1.2 Surface Discharge

For discharge of ground water, obtain a state or federal permit specific for pumping and discharging ground water prior to surface discharging. Surface discharge in accordance with federal, state, and local laws and regulations.

3.5.6.1.3 Land Application

Water generated from the flushing of lines after disinfection or disinfection in conjunction with hydrostatic testing must be discharged into the sanitary sewer with prior approval and notification to the Wastewater Treatment Plant's Operator.

3.6 HAZARDOUS MATERIAL MANAGEMENT

Include hazardous material control procedures in the Safety Plan, in accordance with Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS. Address procedures and proper handling of hazardous materials, including the appropriate transportation requirements. Do not bring hazardous material onto Government property that does not directly relate to requirements for the performance of this contract. Submit an SDS and estimated quantities to be used for each hazardous material to the Contracting Officer prior to bringing the material on the installation. Typical materials requiring SDS and quantity reporting include, but are not limited to, oil and latex based painting and caulking products, solvents, adhesives, aerosol, and petroleum products. Use hazardous materials in a manner that minimizes the amount of hazardous waste generated. Containers of hazardous materials must have NFPA labels or their equivalent. Certify that hazardous materials removed from the site are hazardous materials and do not meet the definition of hazardous waste, in accordance with 40 CFR 261.

3.6.1 Contractor Hazardous Material Inventory Log

Submit the "Contractor Hazardous Material Inventory Log" (found at: <http://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/forms-graphic>), which provides information required by (EPCRA Sections 312 and 313) along with corresponding SDS, to the Contracting Officer at the start and at the end of construction (30 days from final acceptance), and update no later than January 31 of each calendar year during the life of the contract. Keep copies of the SDSs for hazardous materials onsite. At the end of the project, provide the Contracting Officer with copies of the

SDSs, and 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 Contracting Officer may request documentation for any spills or releases, environmental reports, or off-site transfers.

3.7 PREVIOUSLY USED EQUIPMENT

Clean previously used construction equipment prior to bringing it onto the project site. Equipment must be free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. Consult with the U.S. Department of Agriculture jurisdictional office for additional cleaning requirements.

3.8 MILITARY MUNITIONS

In the event military munitions, as defined in 40 CFR 260, are discovered or uncovered, immediately stop work in that area and immediately inform the Contracting Officer.

3.9 PETROLEUM, OIL, LUBRICANT (POL) STORAGE AND FUELING

POL products include flammable or combustible liquids, such as gasoline, diesel, lubricating oil, used engine oil, hydraulic oil, mineral oil, and cooking oil. Store POL products and fuel equipment and motor vehicles in a manner that affords the maximum protection against spills into the environment. Manage and store POL products in accordance with EPA 40 CFR 112, and other federal, state, regional, and local laws and regulations. Use secondary containments, dikes, curbs, and other barriers, to prevent POL products from spilling and entering the ground, storm or sewer drains, stormwater ditches or canals, or navigable waters of the United States. Describe in the EPP (see paragraph ENVIRONMENTAL PROTECTION PLAN) how POL tanks and containers must be stored, managed, and inspected and what protections must be provided. Storage of oil, including fuel, on the project site is not allowed. Fuel must be brought to the project site each day that work is performed.

3.9.1 Used Oil Management

Manage used oil generated on site in accordance with 40 CFR 279. Determine if any used oil generated while onsite exhibits a characteristic of hazardous waste. Used oil containing 1,000 parts per million of solvents is considered a hazardous waste and disposed of at the Contractor's expense. Used oil mixed with a hazardous waste is also considered a hazardous waste. Dispose in accordance with paragraph HAZARDOUS WASTE DISPOSAL.

3.9.2 Oil Storage Including Fuel Tanks

Provide secondary containment and overfill protection for oil storage tanks. A berm used to provide secondary containment must be of sufficient size and strength to contain the contents of the tanks plus 5 inches freeboard for precipitation. Construct the berm to be impervious to oil for 72 hours that no discharge will permeate, drain, infiltrate, or otherwise escape before cleanup occurs. Use drip pans during oil transfer operations; adequate absorbent material must be onsite to clean up any spills and prevent releases to the environment. Cover tanks and drip pans

during inclement weather. Provide procedures and equipment to prevent overfilling of tanks. If tanks and containers with an aggregate aboveground capacity greater than 1320 gallons will be used onsite (only containers with a capacity of 55 gallons or greater are counted), provide and implement a SPCC plan meeting the requirements of 40 CFR 112. Do not bring underground storage tanks to the installation for Contractor use during a project. Submit the SPCC plan to the Contracting Officer for approval.

Monitor and remove any rainwater that accumulates in open containment dikes or berms. Inspect the accumulated rainwater prior to draining from a containment dike to the environment, to determine there is no oil sheen present.

3.10 INADVERTENT DISCOVERY OF PETROLEUM-CONTAMINATED SOIL OR HAZARDOUS WASTES

If petroleum-contaminated soil, or suspected hazardous waste is found during construction that was not identified in the Contract documents, immediately notify the Contracting Officer. Do not disturb this material until authorized by the Contracting Officer.

3.11 CHLORDANE

Evaluate excess soils and concrete foundation debris generated during the demolition of housing units or other wooden structures for the presence of chlordane or other pesticides prior to reuse or final disposal.

3.12 SOUND INTRUSION

Make the maximum use of low-noise emission products, as certified by the EPA. Blasting or use of explosives are not permitted without written permission from the Contracting Officer, and then only during the designated times.

Keep construction activities under surveillance and control to minimize environment damage by noise. Comply with the provisions of the State of North Carolina rules.

3.13 POST CONSTRUCTION CLEANUP

Clean up areas used for construction in accordance with Contract Clause: "Cleaning Up". Unless otherwise instructed in writing by the Contracting Officer, remove traces of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. Grade parking area and similar temporarily used areas to conform with surrounding contours.

-- End of Section --

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
02/19, CHG 3: 11/21

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Co-mingle

The practice of placing unrelated materials together in a single container, usually for benefits of convenience and speed.

1.1.2 Construction Waste

Waste generated by construction activities, such as scrap materials, damaged or spoiled materials, temporary and expendable construction materials, and other waste generated by the workforce during construction activities.

1.1.3 Demolition Debris/Waste

Waste generated from demolition activities, including minor incidental demolition waste materials generated as a result of Intentional dismantling of all or portions of a building, to include clearing of building contents that have been destroyed or damaged.

1.1.4 Disposal

Depositing waste in a solid waste disposal facility, usually a managed landfill or incinerator, regulated in the US under the Resource Conservation and Recovery Act (RCRA).

1.1.5 Diversion

The practice of diverting waste from disposal in a landfill or incinerator, by means of eliminating or minimizing waste, or reuse of materials.

1.1.6 Final Construction Waste Diversion Report

A written assertion by a material recovery facility operator identifying constituent materials diverted from disposal, usually including summary tabulations of materials, weight in short-ton.

1.1.7 Recycling

The series of activities, including collection, separation, and processing, by which products or other materials are diverted from the solid waste stream for use in the form of raw materials in the manufacture of new products sold or distributed in commerce, or the reuse of such materials as substitutes for goods made of virgin materials, other than fuel.

1.1.8 Reuse

The use of a product or materials again for the same purpose, in its

original form or with little enhancement or change.

1.1.9 Salvage

Usable, salable items derived from buildings undergoing demolition or deconstruction, parts from vehicles, machinery, other equipment, or other components.

1.1.10 Source Separation

The practice of administering and implementing a management strategy to identify and segregate unrelated waste at the first opportunity.

1.2 CONSTRUCTION WASTE (INCLUDES DEMOLITION DEBRIS/WASTE)

Divert a minimum of 60 percent by weight of the project construction waste and demolition debris/waste from the landfill or incinerator. Follow applicable industry standards in the management of waste. Apply sound environmental principles in the management of waste. (1) Practice efficient waste management when sizing, cutting, and installing products and materials and (2) use all reasonable means to divert construction waste and demolition debris/waste from landfills and incinerators and to facilitate the recycling or reuse of excess construction materials.

1.3 CONSTRUCTION WASTE MANAGEMENT

Implement a Construction Waste Management Program for the project. Take a pro-active, responsible role in the management of construction construction waste, recycling process, disposal of demolition debris/waste, and require all subcontractors, vendors, and suppliers to participate in the Construction Waste Management Program. Establish a process for clear tracking, and documentation of construction waste and demolition debris/waste.

1.3.1 Implementation of Construction Waste Management Program

Develop and document how the Construction Waste Management Program will be implemented in a Construction Waste Management Plan. Submit a Construction Waste Management Plan to the Contracting Officer for approval. Construction waste and demolition debris/waste materials include un-used construction materials not incorporated in the final work, as well as demolition debris/waste materials from demolition activities or deconstruction activities. In the management of waste, consider the availability of viable markets, the condition of materials, the ability to provide material in suitable condition and in a quantity acceptable to available markets, and time constraints imposed by internal project completion mandates.

1.3.2 Oversight

The Environmental Manager, as specified in Section 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS, is responsible for overseeing and documenting results from executing the Construction Waste Management Plan for the project.

1.3.3 Special Programs

Implement special programs involving rebates or similar incentives related to recycling of construction waste and demolition debris/waste materials.

Retain revenue or savings from salvaged or recycling, unless otherwise directed. Ensure firms and facilities used for recycling, reuse, and disposal are permitted for the intended use to the extent required by federal, state, and local regulations.

1.3.4 Special Instructions

Provide on-site instruction of appropriate separation, handling, recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the projects. Designation of single source separating or commingling will be clearly marked on the containers.

1.3.5 Waste Streams

Delineate waste streams and characterization, including estimated material types and quantities of waste, in the Construction Waste Management Plan. Manage all waste streams associated with the project. Typical waste streams are listed below. Include additional waste streams not listed:

- a. Land Clearing Debris
- b. Asphalt
- c. Masonry and CMU
- d. Concrete
- e. Metals (Includes, but is not limited to, banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized, stainless steel, aluminum, copper, zinc, bronze.)
- f. Wood (nails and staples allowed)
- g. Glass
- h. Paper
- i. Plastics (PET, HDPE, PVC, LDPE, PP, PS, Other)
- j. Gypsum
- k. Non-hazardous paint and paint cans
- l. Carpet
- m. Ceiling Tiles
- n. Insulation
- o. Beverage Containers

1.4 SUBMITTALS

Government approval is required for all submittals.

SD-01 Preconstruction Submittals

Construction Waste Management Plan

SD-11 Closeout Submittals

Final Construction Waste Diversion Report

1.5 CONSTRUCTION WASTE MANAGEMENT PLAN

Submit Construction Waste Management Plan within 15 calendar days after notice to proceed. Revise and resubmit Construction Waste Management Plan as necessary, in order for construction to begin.

An approved Construction Waste Management Plan will not relieve the Contractor of responsibility for compliance with applicable environmental regulations or meeting project cumulative waste diversion requirement. Ensure all subcontractors receive a copy of the approved Construction Waste Management Plan. The plan demonstrates how to meet the project waste diversion requirement. Also, include the following in the plan:

- a. Identify the names of individuals responsible for waste management and waste management tracking, along with roles and responsibilities on the project.
- b. Actions that will be taken to reduce solid waste generation, including coordination with subcontractors to ensure awareness and participation.
- c. Description of the regular meetings to be held to address waste management.
- d. Description of the specific approaches to be used in recycling/reuse of the various materials generated, including the areas on site and equipment to be used for processing, sorting, and temporary storage of materials.
- e. Name of landfill and incinerator to be used.
- f. Identification of local and regional re-use programs, including non-profit organizations such as schools, local housing agencies, and organization that accept used materials such as material exchange networks and resale stores. Include the name, location, phone number for each re-use facility identified, and provide a copy of the permit or license for each facility.
- g. List of specific materials, by type and quantity, that will be salvaged for resale, salvaged and reused on the current project, salvaged and stored for reuse on a future project, or recycled. Identify the recycling facilities by name, address, and phone number.
- h. Identification of materials that cannot be recycled or reused with an explanation or justification, to be approved by the Contracting Officer.
- i. Description of the means by which materials identified in item (g) above will be protected from contamination.
- j. Description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site).
- k. Copy of training plan for subcontractors and other services to prevent

contamination by co-mingling materials identified for diversion and waste materials.

Distribute copies of the waste management plan to each subcontractor, Environmental Manager, and the Contracting Officer.

1.6 RECORDS (DOCUMENTATION)

1.6.1 General

Maintain records to document the types and quantities of waste generated and diverted through re-use, recycling and sale to third parties; through disposal to a landfill or incinerator facility. Provide explanations for materials not recycled, reused or sold. Collect and retain manifests, weight tickets, sales receipts, and invoices specifically identifying diverted project waste materials or disposed materials.

1.6.2 Accumulated

Maintain a running record of materials generated and diverted from landfill disposal, including accumulated diversion rates for the project. Make records available to the Contracting Officer during construction or incidental demolition activities. Provide a copy of the diversion records to the Contracting Officer upon completion of the construction, incidental demolitions or minor deconstruction activities.

1.7 FINAL CONSTRUCTION WASTE DIVERSION REPORT

A Final Construction Waste Diversion Report is required at the end of the project. Provide Final Construction Waste Diversion Report 60 days prior to the Beneficial Occupancy Date (BOD).

1.8 COLLECTION

Collect, store, protect, and handle reusable and recyclable materials at the site in a manner which prevents contamination, and provides protection from the elements to preserve their usefulness and monetary value. Provide receptacles and storage areas designated specifically for recyclable and reusable materials and label them clearly and appropriately to prevent contamination from other waste materials. Keep receptacles or storage areas neat and clean.

Train subcontractors and other service providers to either separate waste streams or use the co-mingling method as described in the Construction Waste Management Plan. Handle hazardous waste and hazardous materials in accordance with applicable regulations and coordinate with Section 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS. Separate materials by one of the following methods described herein:

1.8.1 Source Separation Method

Separate waste products and materials that are recyclable from trash and sort as described below into appropriately marked separate containers and then transport to the respective recycling facility for further processing. Deliver materials in accordance with recycling or reuse facility requirements (e.g., free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process). Separate materials into the category types as defined in the Construction Waste Management Plan.

1.8.2 Co-Mingled Method

Place waste products and recyclable materials into a single container and then transport to an authorized recycling facility, which meets all applicable requirements to accept and dispose of recyclable materials in accordance with all applicable local, state and federal regulations. The Co-mingled materials must be sorted and processed in accordance with the approved Construction Waste Management Plan.

1.8.3 Other Methods

Other methods proposed by the Contractor may be used when approved by the Contracting Officer.

1.9 DISPOSAL

Control accumulation of waste materials and trash. Recycle or dispose of collected materials off-site at intervals approved by the Contracting Officer and in compliance with waste management procedures as described in the waste management plan. Except as otherwise specified in other sections of the specifications, dispose of in accordance with the following:

1.9.1 Reuse

Give first consideration to reusing construction and demolition materials as a disposition strategy. Recover for reuse materials, products, and components as described in the approved Construction Waste Management Plan. Coordinate with the Contracting Officer to identify onsite reuse opportunities or material sales or donation available through Government resale or donation programs. Sale of recovered materials is not allowed on the Installation. Consider the use of surplus industrial supply broker services, who match entities with reusable or repurpose industrial materials with entities with need of such materials.

1.9.2 Recycle

Recycle non-hazardous construction and demolition/debris materials that are not suitable for reuse. Track rejection of contaminated recyclable materials by the recycling facility. Rejected recyclables materials will not be counted as a percentage of diversion calculation. Recycle all fluorescent lamps, HID lamps, mercury (Hg) -containing thermostats and ampoules, and PCBs-containing ballasts and electrical components as directed by the Contracting Officer. Do not crush lamps on site as this creates a hazardous waste stream with additional handling requirements.

1.9.3 Waste

Dispose by landfill or incineration only those waste materials with no practical use, economic benefit, or recycling opportunity.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used. -- End of Section --

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

08/15, CHG 2: 08/21

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 E1971 (2005; R 2011) Standard Guide for
Stewardship for the Cleaning of Commercial
and Institutional Buildings

1.2 SUBMITTALS

Government approval is required for all submittals.

SD-10 Operation and Maintenance Data

O&M Database
Training Plan
Training Outline
Training Content

SD-11 Closeout Submittals

Training Video Recording
Validation of Training Completion

1.3 OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data for the provided equipment, product, or system, defining the importance of system interactions, troubleshooting, and long-term preventive operation and maintenance. Compile, prepare, and aggregate O&M data to include 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.

1.3.1 Package Quality

Documents must be fully legible. O&M data must be consistent with the manufacturer's standard brochures, schematics, printed instructions, general operating procedures, and safety precautions.

1.3.2 Package Content

Provide data package content in accordance with paragraph 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.

1.3.3 Changes to Submittals

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

1.4 O&M DATABASE

Develop an editable, electronic spreadsheet based on the equipment in the O&M Manuals that contains the information required to start a preventive maintenance program. As a minimum, provide list of system equipment, location installed, warranty expiration date, manufacturer, model, and serial number.

1.5 OPERATION AND MAINTENANCE MANUAL FILE FORMAT

Assemble data packages into electronic O&M Manuals. Assemble each manual into a composite electronically indexed file using the most current version of Adobe Acrobat or similar software capable of producing PDF file format. Provide compact disks (CD) or data digital versatile disk (DVD) as appropriate, so that each one contains operation, maintenance and record files, project record documents, and training videos. Include a complete electronically linked O&M directory.

1.5.1 Organization

Bookmark Product and Drawing Information documents using the current version of CSI MasterFormat numbering system, and arrange submittals using the specification sections as a structure. Use CSI MasterFormat and UFGS numbers along with descriptive bookmarked titles that explain the content of the information that is being bookmarked.

1.5.2 CD or DVD Label and Disk Holder or Case

Provide the following information on the disk label and disk holder or case:

- a. Building Number
- b. Project Title
- c. Activity and Location
- d. Construction Contract Number
- e. Prepared For: (Contracting Agency)
- f. Prepared By: (Name, title, phone number and email address)
- g. Include the disk content on the disk label
- h. Date
- i. Virus scanning program used

1.6 TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES

The following are a detailed description of the data package items listed in paragraph SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES.

1.6.1 Operating Instructions

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

1.6.1.1 Safety Precautions and Hazards

List personnel hazards and equipment or product safety precautions for operating conditions. List all residual hazards identified in the AHA provided under Section 01 35 26 GOVERNMENT SAFETY REQUIREMENTS. Provide recommended safeguards for each identified hazard.

1.6.1.2 Operator Prestart

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

1.6.1.3 Startup, Shutdown, and Post-Shutdown Procedures

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

1.6.1.4 Normal Operations

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

1.6.1.5 Emergency Operations

Provide Emergency Procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Provide Emergency Shutdown Instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance and procedures for emergency operation of utility systems including required valve positions, valve locations and zones or portions of systems controlled.

1.6.1.6 Operator Service Requirements

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

1.6.1.7 Environmental Conditions

Provide a list of Environmental Conditions (temperature, humidity, and other relevant data) that are best suited for the operation of each product, component or system. Describe conditions under which the item equipment should not be allowed to run.

1.6.1.8 Operating Log

Provide forms, sample logs, and instructions for maintaining necessary operating records.

1.6.1.9 Additional Requirements for HVAC Control Systems

Provide Data Package 5 and the following for control systems:

- a. Narrative description on how to perform and apply functions, features, modes, and other operations, including unoccupied operation, seasonal changeover, manual operation, and alarms. Include detailed technical manual for programming and customizing control loops and algorithms.
- b. Full as-built sequence of operations.
- c. Copies of checkout tests and calibrations performed by the Contractor (not Cx tests).
- d. Full points list. Provide a listing of rooms with the following information for each room:
 - (1) Floor
 - (2) Room number
 - (3) Room name
 - (4) Air handler unit ID
 - (5) Reference drawing number
 - (6) Air terminal unit tag ID
 - (7) Heating or cooling valve tag ID
 - (8) Minimum cfm
 - (9) Maximum cfm
- e. Full print out of all schedules and set points after testing and acceptance of the system.
- f. Full as-built print out of software program.
- g. Marking of system sensors and thermostats on the as-built floor plan and mechanical drawings with their control system designations.

1.6.2 Preventive Maintenance

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

1.6.2.1 Lubrication Data

Include the following preventive maintenance lubrication data, in addition to instructions for lubrication required under paragraph 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.

1.6.2.2 Preventive Maintenance Plan, Schedule, and Procedures

Provide manufacturer's schedule for routine preventive maintenance, inspections, condition monitoring (predictive tests) and adjustments required to ensure proper and economical operation and to minimize repairs. Provide instructions stating when the systems should be

retested. 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.

- a. Define the anticipated time required to perform each test (work-hours), test apparatus, number of personnel identified by responsibility, and a testing validation procedure permitting the record operation capability requirements within the schedule. Provide a remarks column for the testing validation procedure referencing operating limits of time, pressure, temperature, volume, voltage, current, acceleration, velocity, alignment, calibration, adjustments, cleaning, or special system notes. Delineate procedures for preventive maintenance, inspection, adjustment, lubrication and cleaning necessary to minimize repairs.
- b. Repair requirements must inform operators how to check out, troubleshoot, repair, and replace components of the system. Include electrical and mechanical schematics and diagrams and diagnostic techniques necessary to enable operation and troubleshooting of the system after acceptance.

1.6.2.3 Cleaning Recommendations

Provide environmentally preferable cleaning recommendations in accordance with ASTM E1971.

1.6.3 Repair

Provide manufacturer's recommended procedures and instructions for correcting problems and making repairs for the installed model and features of each system. Include potential environmental and indoor air quality impacts of recommended maintenance procedures and materials.

1.6.3.1 Troubleshooting Guides and Diagnostic Techniques

Provide 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.

1.6.3.2 Wiring Diagrams and Control Diagrams

Provide 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.

1.6.3.3 Repair Procedures

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

1.6.3.4 Removal and Replacement Instructions

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

1.6.3.5 Spare Parts and Supply Lists

Provide lists of spare parts and supplies required for 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.

1.6.3.6 Repair Work-Hours

Provide manufacturer's projection of repair work-hours including requirements by type of craft. Identify, and tabulate separately, repair that requires the equipment manufacturer to complete or to participate.

1.6.4 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:

1.6.4.1 Product Submittal Data

Provide a copy of SD-03 Product Data submittals documented with the required approval.

1.6.4.2 Certificates

Provide a copy of SD-07 Certificates submittals documented with the required approval.

1.6.4.3 Manufacturer's Instructions

Provide a copy of SD-08 Manufacturer's Instructions submittals documented with the required approval.

1.6.4.4 O&M Submittal Data

Provide a copy of SD-10 Operation and Maintenance Data submittals documented with the required approval.

1.6.4.5 Parts Identification

Provide identification and coverage for the 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 must show the index, reference, or key number that will cross-reference the illustrated part to the listed part.

Group the parts shown in the listings 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.

1.6.4.6 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 of the system.

1.6.4.7 Extended Warranty Information

List all warranties for products, equipment, components, and sub-components whose duration exceeds one year. For each warranty listed, indicate the applicable specification section, duration, start date, end date, and the point of contact for warranty fulfillment. Also, list or reference the specific operation and maintenance procedures that must be performed to keep the warranty valid.

1.6.4.8 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.

1.6.4.9 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. Provide final set points.

1.6.4.10 Testing and Performance Data

Include completed prefunctional checklists, functional performance test forms, and monitoring reports. Include recommended schedule for retesting and blank test forms. Provide final set points.

1.6.4.11 Field Test Reports and Manufacturer's Field Reports

Provide a copy of Field Test Reports (SD-06) and Manufacturer's Field Reports (SD-09) submittals documented with the required approval.

1.6.4.12 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.

1.7 SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES

Provide the O&M data packages specified in individual technical sections. The information required in each type of data package follows:

1.7.1 Data Package 1

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

1.7.2 Data Package 2

- a. Safety precautions and hazards
- b. Normal operations
- c. Environmental conditions
- d. Lubrication data
- e. Preventive maintenance plan, schedule, and procedures
- 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. Extended warranty information
- m. Contractor information

1.7.3 Data Package 3

- a. Safety precautions and hazards
- b. Operator prestart
- c. Startup, shutdown, and post-shutdown procedures
- d. Normal operations
- e. Emergency operations
- f. Environmental conditions
- g. Operating log
- h. Lubrication data
- i. Preventive maintenance plan, schedule, and procedures
- j. Cleaning recommendations
- k. Troubleshooting guides and diagnostic techniques
- l. Wiring diagrams and control diagrams
- m. Maintenance and repair procedures
- n. Removal and replacement instructions
- o. Spare parts and supply list
- p. Product submittal data
- q. O&M submittal data
- r. Parts identification
- s. Warranty information
- t. Extended warranty information
- u. Testing equipment and special tool information
- v. Testing and performance data
- w. Contractor information
- x. Field test reports

1.7.4 Data Package 4

- a. Safety precautions and hazards
- b. Operator prestart
- c. Startup, shutdown, and post-shutdown procedures

- d. Normal operations
- e. Emergency operations
- f. Operator service requirements
- g. Environmental conditions
- h. Operating log
- i. Lubrication data
- j. Preventive maintenance plan, schedule, and procedures
- k. Cleaning recommendations
- l. Troubleshooting guides and diagnostic techniques
- m. Wiring diagrams and control diagrams
- n. Repair procedures
- o. Removal and replacement instructions
- p. Spare parts and supply list
- q. Repair work-hours
- r. Product submittal data
- s. O&M submittal data
- t. Parts identification
- u. Warranty information
- v. Extended warranty information
- w. Personnel training requirements
- x. Testing equipment and special tool information
- y. Testing and performance data
- z. Contractor information
- aa. Field test reports

1.7.5 Data Package 5

- a. Safety precautions and hazards
- b. Operator prestart
- c. Start-up, shutdown, and post-shutdown procedures
- d. Normal operations
- e. Environmental conditions
- f. Preventive maintenance plan, schedule, and procedures
- g. Troubleshooting guides and diagnostic techniques
- h. Wiring and control diagrams
- i. Maintenance and repair procedures
- j. Removal and replacement instructions
- k. Spare parts and supply list
- l. Product submittal data
- m. Manufacturer's instructions
- n. O&M submittal data
- o. Parts identification
- p. Testing equipment and special tool information
- q. Warranty information
- r. Extended warranty information
- s. Testing and performance data
- t. Contractor information
- u. Field test reports
- v. Additional requirements for HVAC control systems

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 TRAINING

Prior to acceptance of the facility by the Contracting Officer for

Beneficial Occupancy, provide comprehensive training for the systems and equipment specified in the technical specifications. The training must be targeted for the Facilities Management Specialist, building maintenance personnel, and applicable building occupants. Instructors must be well-versed in the particular systems that they are presenting. Training must include classroom or field lectures based on the system operating requirements. The location of classroom training requires approval by the Contracting Officer.

3.1.1 Training Plan

Submit a written training plan to the Contracting Officer for approval at least 60 calendar days prior to the scheduled training. Training plan must be approved by the QC Manager prior to forwarding to the Contracting Officer. Also, coordinate the training schedule with the Contracting Officer and QC Manager. Include within the plan the following elements:

- a. Equipment included in training
- b. Intended audience
- c. Location of training
- d. Dates of training
- e. Objectives
- f. Outline of the information to be presented and subjects covered including description
- g. Start and finish times and duration of training on each subject
- h. Methods (e.g. classroom lecture, video, site walk-through, actual operational demonstrations, written handouts)
- i. Instructor names and instructor qualifications for each subject
- j. List of texts and other materials to be furnished by the Contractor that are required to support training
- k. Description of proposed software to be used for video recording of training sessions.

3.1.2 Training Content

The core of this training must be based on manufacturer's recommendations and the O&M information. The QC Manager is responsible for overseeing and approving the content and adequacy of the training. Spend 95 percent of the instruction time during the presentation on the OPERATION AND MAINTENANCE DATA. Include the following for each system training presentation:

- a. Start-up, normal operation, shutdown, unoccupied operation, seasonal changeover, manual operation, controls set-up and programming, troubleshooting, and alarms.
- b. Relevant health and safety issues.
- c. Discussion of how the feature or system is environmentally

responsive. Advise adjustments and optimizing methods for energy conservation.

- d. Design intent.
- e. Use of O&M Manual Files.
- f. Review of control drawings and schematics.
- g. Interactions with other systems.
- h. Special maintenance and replacement sources.
- i. Tenant interaction issues.

3.1.3 Training Outline

Provide the O&M Manual Files (Bookmarked PDF) and a written course outline listing the major and minor topics to be discussed by the instructor on each day of the course to each trainee in the course. Provide the course outline 14 calendar days prior to the training.

3.1.4 Training Video Recording

Record classroom training session(s) on video. Provide to the Contracting Officer two copies of the training session(s) in DVD video recording format. Capture within the recording, in video and audio, the instructors' training presentations including question and answer periods with the attendees. The recording camera(s) must be attended by a person during the recording sessions to assure proper size of exhibits and projections during the recording are visible and readable when viewed as training.

3.1.5 Unresolved Questions from Attendees

If, at the end of the training course, there are questions from attendees that remain unresolved, the instructor must send the answers, in writing, to the Contracting Officer for transmittal to the attendees, and the training video must be modified to include the appropriate clarifications.

3.1.6 Validation of Training Completion

Ensure that each attendee at each training session signs a class roster daily to confirm Government participation in the training. At the completion of training, submit a signed validation letter that includes a sample record of training for reporting what systems were included in the training, who provided the training, when and where the training was performed, and copies of the signed class rosters. Provide two copies of the validation to the Contracting Officer, and one copy to the O&M Manual Preparer for inclusion into the Manual's documentation.

3.1.7 Quality Control Coordination

Coordinate this training with the QC Manager in accordance with Section 01 45 00.05 20 DESIGN AND CONSTRUCTION QUALITY CONTROL FOR DESIGN-BUILD.

-- End of Section --

SECTION 01 78 24.00 20

FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI)

02/15, CHG 3: 08/21

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.

U.S. DEPARTMENT OF DEFENSE (DOD)

FC 1-300-09N (2014; with Change 4, 2018) Navy and
Marine Corps Design

1.2 DEFINITIONS AND ABBREVIATIONS

1.2.1 eOMSI Manual

Manual (PDF file) provided by the Contractor that includes, but is not limited to, product information, a facility description with photos, and a list of primary facility systems.

1.2.2 eOMSI Facility Data Workbook (FDW)

A Microsoft Excel file containing required facility information populated by the Contractor.

1.2.3 Systems

The words "system", "systems", and "equipment", when used in this document refer to as-built systems and equipment.

1.2.4 Computer Assisted Design and Drafting (CADD)

Electronic Computer Assisted Design and Drafting graphic software program that is used to create facility design contract documents and Record Drawings.

1.2.5 KTR

An abbreviation for "Contractor."

1.3 eOMSI MEETINGS

1.3.1 Post-Award Kickoff Meeting

Be prepared to discuss the following during this meeting:

- a. eOMSI Manual and eOMSI Facility Data Workbook Coordination Meeting
- b. Processes and methods of gathering eOMSI Manual and eOMSI Facility Data Workbook information during construction.
- c. The eOMSI Submittals schedule. Include the eOMSI submittal schedule

on the Baseline Network Analysis Schedule (NAS) in accordance with Section 01 32 17.00 20 COST-LOADED NETWORK ANALYSIS SCHEDULE (NAS).

- d. Electronic eOMSI Facility Data Workbook file for Contractor's use and completion.

1.3.2 eOMSI Manual and Facility Data Workbook Coordination Meeting

Facilitate a meeting after the Post-Award Kickoff Meeting prior to the submission of the eOMSI Progress Submittal. Meeting attendance must include the Contractor's eOMSI Manual and Facility Data Workbook Preparer, Designer of Record (DOR), and Quality Control Manager, and the Government's Design Manager (DM), Contracting Officer's Representative, and NAVFAC Public Works (PW) Facilities Management Division (FMD). Include any Mechanical, Electrical, and Fire Protection Sub-Contractors.

The purpose of this meeting is to reach a mutual understanding of the scope of work concerning the contract requirements for eOMSI and coordinate the efforts necessary by both the Government and Contractor to ensure an accurate collection, preparation and timely Government review of eOMSI.

1.3.3 Facility Turnover Meeting

Include eOMSI in NAVFAC Red Zone (NRZ) facility turnover meetings as specified in Section 01 31 19.05 20 CONCEPT DESIGN WORKSHOP (CDW).

1.4 SUBMITTAL SCHEDULING

1.4.1 eOMSI, Progress Submittal

Submit the Progress submittal when construction is approximately 50 percent complete, to the Contracting Officer for approval. Provide eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel). Include the elements and portions of system construction completed up to this point.

The purpose of this submittal is to verify progress is in accordance with contract requirements as discussed during the eOMSI Manual Coordination Meeting. Field verify a portion of the eOMSI information in accordance with paragraph FIELD VERIFICATION.

1.4.2 eOMSI, Prefinal Submittal

Submit the 100 percent submittal of the eOMSI Prefinal Submittal to the Contracting Officer for approval within 90 calendar days of the Beneficial Occupancy Date (BOD). This submittal must provide a complete, working document that can be used to operate and maintain the facility. Any portion of the submittal that is incomplete or inaccurate requires the entire submittal to be returned for correction. Any discrepancies discovered during the Government's review of eOMSI Progress submittal must be corrected prior to the Prefinal submission.

The eOMSI Prefinal Submittal must include eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel).

1.4.3 eOMSI, Final Submittal

Submit completed eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility

Data Workbook (Excel). The Final submittal is due at BOD. Any discrepancies discovered during the Government's review of the Prefinal eOMSI submittal, including the Field Verification, must be corrected prior to the Final eOMSI submission.

1.5 UNITS OF MEASURE

Provide eOMSI utilizing the units of measure required by the RFP for the facility. Refer to Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES.

1.6 SUBMITTALS

Government approval is required for all submittals. Submit the following in accordance with Sections 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES and 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES:

SD-11 Closeout Submittals

eOMSI, Progress Submittal

eOMSI, Prefinal Submittal

eOMSI, Final Submittal

PART 2 PRODUCTS

2.1 eOMSI FILES FORMAT

Format eOMSI manuals and files in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA. Include a complete electronically linked operation and maintenance directory. Provide four electronic copies of the eOMSI Manuals to the Contracting Officer for approval.

Provide eOMSI Facility Data Workbook on compact disks (CD) or data digital versatile disk (DVD) disks in (EXCEL) format. Scan eOMSI Manual Files and eOMSI Facility Data Workbook for viruses, malware, and spyware using a commercially available scanning program that is routinely updated to identify and remove current virus threats.

2.1.1 eOMSI Manual Organization

Organize the eOMSI Manuals into two parts: 1) Product and Drawing Information, and 2) Facility Information. Bookmark the PDF files for easy access to the information.

- a. Bookmark Product and Drawing Information documents in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.
- b. Bookmark Facility Information to at least one level lower than the major system.

2.1.2 eOMSI Manual CD or DVD Disk Label and Disk Holder or Case

Provide disks in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

2.2 eOMSI MANUAL

2.2.1 Product and Drawing Information

Provide an organized record of the facility products, materials, equipment, and testing submittals, and the minimum information necessary to operate the facility. Provide Product and Drawing Information for the systems of the final constructed facility.

2.2.1.1 O&M Data

As a minimum, provide the approved O&M Data, submitted in the technical specification sections, in accordance with paragraph TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES in Section 01 78 23 OPERATION AND MAINTENANCE DATA.

2.2.1.2 Record Drawings

Provide an electronic, PDF copy of the Record Drawings, prepared in accordance with FC 1-300-09N. Bookmark drawings using the sheet title and sheet number.

Include Record Drawings as part of the Red-Zone specified in Section 01 30 00 ADMINISTRATIVE REQUIREMENTS.

2.2.1.3 Utility Record Drawings

Using Record Source Drawings, show and document details of the actual installation of the utility systems; annotate and highlight the eOMSI information. Provide Utility Record Drawings in PDF format. Provide the following drawings at a large enough scale to differentiate designated isolation units from surrounding valves and switches.

- a. Utility Schematic Diagrams - Provide a one line schematic diagram for each utility system such as power, water, wastewater, and gas/fuel. Schematic diagram must show from the point where the utility line is connected to the mainline up to the five-foot connection point to the facility. Indicate location or area designation for route of transmission or distribution lines; locations of duct banks, manholes/handholes or poles; isolation units such as valves and switches; and utility facilities such as pump stations, lift stations, and substations.
- b. Enlarged Connection and Cutoff Plans - Provide enlarged floor plans that provide information between the five foot utility connection point and where utilities connect to facility distribution. Enlarge floor plans/ elevations of the rooms where the utility enters the building and indicate on these plans locations of the main interior and exterior connection and cutoff points for the utilities. Also enlarge floor plans / elevations of the rooms where equipment is located. Include enough information to enable someone unfamiliar with the facility to locate the connection and cutoff points. Indicate designations such as room number, panel number, circuit breaker, or valve number, of each utility and equipment connection and cutoff point, and what that connection and cutoff point controls.

2.2.2 Facility Information

Provide the following in Facility Information:

2.2.2.1 General Facility and System Description

Describe the function of the facility. Detail the overall dimensions of the facility, number of floors, foundation type, expected number of occupants, and facility Category Code. List and generally describe all the facility systems and any special building features (for example, HVAC Controls, Sprinkler Systems, Cranes, Elevators, and Generators). Include photographs marked up and labeled to show key operating components and the overall facility appearance.

2.2.2.2 Basis of Design

Include the Basis of Design that shows the basic design scope of work, assumptions and the original intentions of the Designer of Record (DOR). Identify the site utility design goals, objectives, design load limits, assumptions, and system features that are critical to the operation and maintenance of the systems.

2.2.2.3 Floor Plans

Provide uncluttered, legible 11 by 17 inches floor plans. Include room numbers, type or function of spaces, and overall facility dimensions on the floor plans. Do not include items such as construction instructions, references, or frame numbers.

2.2.2.4 Floor Coverings, Wall Surfaces, and Ceiling Surfaces

Provide a table that lists by room number (including hallways and common spaces), the type, and area of finish, manufacturer's product name, identifying number, and color. Include a facility summary of the total area for each type of space and floor, wall, or ceiling finish in the table.

2.2.2.5 Windows

Provide a table that lists by room number (including hallways and common spaces), the type of window, window size, number of each size and type, special features, manufacturer's product name, identifying number, and color. The table must include a facility summary of the total number for each type and size of window.

2.2.2.6 Roofing

Provide the total area of each type of roof surface and system. Provide the name of the roofing product and system; manufacturer's, supplier's, and installer's names, addresses, and phone numbers; manufacturer's product name, identifying number, and color. For each type of roof, provide a recommended inspection, maintenance and repair schedule that details checkpoints, frequencies, and prohibited practices. List roof structural load limits.

2.2.2.7 HVAC Filters

Provide a table that lists the quantity, type, size, and location of each HVAC filter, manufacturer's product name, and identifying number.

2.2.2.8 Plumbing Fixtures

Provide a table that lists by room number, the number and type of plumbing and bathroom plumbing fixtures (for example, sinks, water closets, urinals, showers and drinking fountains).

2.2.2.9 Lighting Fixtures

Provide a table that lists by room number (including hallways and common spaces), the type of lighting fixture, ballast, number of lighting fixtures, type of lamps and number of lamps, and the manufacturer's product name and the identifying number. The table must include a facility summary of the total number of fixtures of each type and number of lamps of each type.

2.2.2.10 Equipment Listing

Provide a table that lists the major equipment shown on the design equipment schedules. Show the item descriptions, locations, model numbers; and the names, addresses, and telephone numbers of the manufacturers, suppliers, contractors, and subcontractors.

2.2.2.11 System Flow Diagrams

Provide a flow diagram indicating system liquid, air or gas flow during normal operations. Integrate the system components into the diagram. A compilation of non-integrated, flow diagrams for the individual system components are not acceptable.

2.2.2.12 Valve List

Provide a list of all valves associated with the system. Show valve type, identification number, function, location and normal operating position.

2.2.2.13 Riser Diagrams

Provide riser diagrams and settings of equipment.

2.3 eOMSI FACILITY DATA WORKBOOK

Download the eOMSI Facility Data Workbook at the following location:

<http://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/forms-graphics-tables>.

Complete the KTR Facility Data File tab based on the selection of Mastersystems, Systems, and Subsystems installed. The following tabs are included in the eOMSI Facility Data File Workbook and serve the purpose stated:

- a. Instructions Tab: Instructions for completing Model & Facility Data Matrix Tab and KTR Facility Data File Tab. If a discrepancy exists between what is required in this section and the Workbook, the instructions within the workbook take precedence.
- b. Model & Facility Data Matrix Tab: - The Matrix lists Required Facility Asset Fields for each SYSTEM and SUBSYSTEM. The Designer of Record selects SYSTEMS and SUBSYSTEMS that are within the project scope, which the Contractor needs to include and populate in KTR Facility Data File tab. The "Required Facility Asset Field Position Numbers," one through thirty-five, are pre-populated, and are not editable.

- c. Required Facility Asset Fields Tab: Defines the 35 Required Facility Asset Field Position Numbers used in Model and Facility Data Matrix and KTR Facility Data File tabs.
- d. KTR Sample Facility Data File Tab: Sample KTR eOMSI facility data file. This tab provides an example of the mandatory fields of equipment installed by the Contractor, and populated in the KTR eOMSI Facility Data File Tab, along with their descriptions.
- e. KTR Facility Data File Tab: Required eOMSI facility data file deliverable provided to the Government. Provide a separate and unique new row for each facility component or piece of equipment installed. Coordinate with the Government's Contracting Officer's Representative and NAVFAC PW FMD for specific facility component naming convention.

PART 3 EXECUTION

3.1 FIELD VERIFICATION

Field verify eOMSI Facility Data Workbook information with Contractor and Government personnel. Include the following personnel in this meeting: Contractor's eOMSI Manual and Facility Data Workbook Preparer and Quality Control Manager, and the Government's Contracting Officer's Representative and NAVFAC PW FMD. Request, and provide, an eOMSI Field Verification Meeting no sooner than 14 calendar days after submission of the Progress eOMSI submittal, and another, no sooner than 14 calendar days after submission of the Prefinal eOMSI submittal. During this meeting, the Government and Contractor will verify that the eOMSI Facility Data Workbook is complete and accurate.

Field verify that at least 5 Subsystems under each of the Mastersystems are accurate, for a total of 25 Subsystems. For each of these items, verify that the required facility asset field, as defined in the "Model & Facility Data Matrix" tab, contains the specified data and it is accurate (i.e. item description, manufacturer, model no., serial no.). 100 percent accuracy of eOMSI information is required for successful field verification. If data discrepancies are discovered amongst the 25 Subsystems verified, resubmit an updated eOMSI FDW, and request a make-up field verification meeting. At the make-up field verification meeting 25 new Subsystems and their associated required facility asset fields will be field verified; the 25 new Subsystems must be 100 percent accurate. Any discrepancies discovered must be corrected prior to next eOMSI Facility Data Workbook Submittal.

- (1) D10 - CONVEYING
- (2) D20 - PLUMBING
- (3) D30 - HVAC
- (4) D40 - FIRE PROTECTION
- (5) D50 - ELECTRICAL

3.2 eOMSI TRAINING

Provide training on eOMSI Manuals and Facility Data Workbook in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

-- End of Section --

SECTION 01 91 00.15 20

TOTAL BUILDING COMMISSIONING

02/21, CHG 1: 05/21

PART 1 GENERAL

Total Building Commissioning (TBCx) is a systematic, quality-focused process for enhancing the delivery of a project that focuses on verifying and documenting that all of the commissioned systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the project requirements. The purpose is to reduce the cost and performance risks associated with delivering facilities projects, and to increase value to owners, occupants, and users.

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 SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ASHRAE 202 (2018) Commissioning Process for Buildings and Systems

ASSOCIATED AIR BALANCE COUNCIL (AABC)

ACG Commissioning Guideline (2005) Commissioning Guideline

NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB)

NEBB Commissioning Standard (2009) Procedural Standards for Whole Building Systems Commissioning of New Construction; 3rd Edition

SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)

ANSI/SMACNA 014 (2013) HVAC Systems Commissioning Manual, 2nd Edition

1.2 DEFINITIONS

Commissioning Process (Cx) - a quality-focused process for enhancing the delivery of a project. Refer to ASHRAE 202 for a comprehensive description of the commissioning process.

Commissioning Provider (CxP) - The entity who leads, plans, and coordinates the Commissioning Team. The terms Commissioning Provider, Commissioning Firm, Lead Commissioning Specialist, Commissioning Specialist, and Commissioning Authority (CA or CxA) when used by sustainable Third Party Certification (TPC) programs, are interchangeable.

Commissioning Authority - The Government retains the authority for oversight and assurance of the entire commissioning process, and final approval of all commissioning deliverables.

Government Acceptance Testing Representatives - Government Acceptance Testing Representatives perform the inherently Governmental function of technical oversight and quality assurance for critical systems, and is distinctly separate from the commissioning process. Government Acceptance Testing Representatives witness final testing of critical systems and report systems' acceptance to the COR. Submittals to be surveilled and approved by Government Acceptance Testing Representatives are identified in Section 01 33 00 SUBMITTAL PROCEDURES. Testing required to be witnessed by Government Acceptance Testing Representatives are identified in system level sections.

1.3 COMMUNICATION WITH THE GOVERNMENT

The Lead Commissioning Specialist (CxC) must submit all plans, schedules, reports, and documentation directly to the Contracting Officer's Representative concurrent with submission to the QC Manager.

The Lead Commissioning Specialist must have direct communication with the Contracting Officer's Representative regarding all elements of the commissioning process; however, the Government has no direct contract authority with the Lead Commissioning Specialist.

1.4 COMMUNICATION WITH GOVERNMENT ACCEPTANCE TESTING REPRESENTATIVES

The QC Manager must communicate directly with the Government Acceptance Testing Representatives and Contracting Officer's Representative regarding Government acceptance testing activities. Inform the Contracting Officer's Representative when systems are ready for testing to be witnessed by Government Acceptance Testing Representatives, and allow access to the construction site and system(s) to be tested.

1.5 SYSTEMS TO BE COMMISSIONED

Coordinate commissioning and quality control activities for the following systems, equipment, and associated controls. System-specific requirements are located in the associated specification Sections. Commission the following systems, equipment, and associated controls in accordance with this section and the inspection, testing, and quality control requirements of their respective sections:

300H and 800H piping networks and components to include but not limited to shut-off valves, control valves, and instrumentation.

300 PSIG Fuel Fired Heat Exchanger including electrical/instrumentation, mechanical and piping components.

1.6 COMMISSIONING TEAM

The Commissioning team will include, but is not limited to the following team members.

Ensure all Design and Construction Activities for systems to be commissioned are coordinated with the appropriate commissioning team members.

- a. Lead Commissioning Specialist (CxC)
- b. Quality Control Manager (QCM)

- c. Sub-Contractor Representatives for each trade responsible for construction/installation of systems to be commissioned
- d. Construction Manager (CM)
- e. Designer of Record (DOR)
- f. Technical Commissioning Specialists for each system to be commissioned
- g. TAB Representative
- h. Equipment manufacturer representatives
- i. Government Contracting Officer
- j. Government Representatives
- k. Government Acceptance Testing Representatives
- l. Installation Maintenance Representative
- m. Facility End User

1.7 PROJECT SCHEDULE

Include the following tasks in the project schedule required by Section 01 32 17.00 20 COST-LOADED NETWORK ANALYSIS SCHEDULES (NAS). Ensure sufficient time is scheduled to complete each item. The order of items listed below is not intended to imply a specified sequence:

- a. Submission and approval of the Commissioning Firm Qualifications
- b. Submission and approval of the Design Phase Commissioning Plan
- c. Submission and approval of the Design Review Report
- d. Submission and approval of the Interim and Final Construction Phase Commissioning Plans
- e. Commissioning Kickoff Coordination Meeting
- f. Regular Commissioning Coordination Meetings
- g. Installation of permanent utilities (gas, water, electric)
- h. Manufacturer's Equipment Start-Up for each of the systems to be commissioned
- i. Submission and approval of the Completed Pre-Functional Checklists
- j. Submission and approval of Certificate of Readiness for each system to be commissioned
- k. Functional Performance Testing for each system to be commissioned
- l. Integrated Systems Tests
- m. Post-test deficiency correction for each system to be commissioned

- n. Re-Testing
- o. Training for each of the systems to be commissioned
- p. Submission and approval of the Initial and Final Commissioning Reports
- q. Seasonal Testing
- r. Final testing required to be witnessed by Government Acceptance Testing Representatives, as identified in system level sections.
- s. Warranty Phase Site Visit
- t. Updated Commissioning report

1.8 PHASING

This project includes multiple phases. Commissioning activities for each project phase must be scheduled separately and must correspond to each completion milestone in the master schedule.

1.9 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-05 Design Data

Design Phase Commissioning Plan

SD-06 Test Reports

Design Review Report

Interim Construction Phase Commissioning Plan

Final Construction Phase Commissioning Plan

Initial Commissioning Report

Issues Log

Completed Pre-Functional Checklists

SD-07 Certificates

Commissioning Firm

Certificate Of Readiness

SD-11 Closeout Submittals

Final Commissioning Report

Updated Final Commissioning Report

Final Commissioning Report (eNotebook)

Updated Final Commissioning Report (eNotebook)

1.10 COMMISSIONING FIRM

Employ the services of a Commissioning Firm and all Commissioning Specialists required to perform work for this project. The Commissioning Firm must be a first-tier subcontractor that is financially and corporately independent from contractor and all other subcontractors and the Designer of Record.

- a. Submit the Commissioning Firm's and Commissioning Specialists' qualifications, including the name of the firm and each CxC and each certification, no later than 30 calendar days after Notice to Proceed. Include 5 example projects where commissioning of industrial systems similar in nature to medium and high pressure compressed air systems was conducted within the last 10 years.
- b. If, for any reason, a specialist loses a certification during this period, immediately notify the Contracting Officer and submit another Commissioning Specialist for approval. Validate all work performed for this project by the CxC who lost a certification by an approved successor.

1.10.1 Commissioning Specialists (CxC)

Assign Lead Commissioning Specialist and other appropriate Commissioning Specialists for the systems to be commissioned.

1.10.1.1 Lead Commissioning Specialist (CxC)

Lead Commissioning Specialist (CxC) coordinates all aspects of the commissioning process. Duties include leading and overseeing the commissioning work, and acting as the primary point of contact for the commissioning work. CxC may serve as a systems Specialist if all requirements for both designations are met. CxC must have a minimum of five years of commissioning experience, including two projects of similar size and complexity to this project.

CxC must be certified in one of the following:

NEBB qualified Systems Commissioning Administrator (SCA)

ACG Certified Commissioning Authority (CxA)

ICB/TABB Certified Commissioning Supervisor

BCA Certified Commissioning Professional (CCP)

AEE Certified Building Commissioning Professional (CBCP)

University of Wisconsin-Madison Qualified Commissioning Process Provider (QCxP)

ASHRAE Building Commissioning Professional (BCxP).

1.10.1.2 Commissioning Specialists

Commissioning Specialists with the following qualifications must perform the technical work associated with each system to be commissioned:

- a. Mechanical Commissioning Specialist: The technical work associated with mechanical systems to be commissioned must be performed by a Commissioning Specialist certified by NEBB, ACG, ICB/TABB, AEE, University of Wisconsin-Madison, ASHRAE, or BCA in the commissioning of Fuel Fire Heat Exchangers and Medium and High Pressure Compressed Air Piping Systems with five years of experience in the commissioning of medium and high pressure compressed air piping systems.
- b. Electrical Commissioning Specialist: The technical work associated with electrical systems to be commissioned must be performed by an engineering technician with five years of experience inspecting, testing, and calibrating electrical distribution and generation equipment, systems, and devices.

1.10.2 Commissioning Standard

Comply with the requirements of the commissioning standard under which the Commissioning Firm and Specialists qualifications are approved. When the firm and specialists are certified by BCA, AEE, ASHRAE, or the University of Wisconsin-Madison, comply with the requirements of one of these acceptable standards: ACG Commissioning Guideline, NEBB Commissioning Standard, ANSI/SMACNA 014, or ASHRAE 202. Comply with applicable NETA testing standards for electrical systems.

- a. Implement all recommendations and suggested practices contained in the Commissioning Standard and electrical test standards.
- b. Use the Commissioning Standard for all aspects of Commissioning, including calibration of instruments.
- c. Where the instrument manufacturer calibration recommendations are more stringent than those listed in the Commissioning Standard, adhere to the manufacturer calibration recommendations.
- d. All quality assurance provisions of the Commissioning Standard such as performance guarantees are part of this contract.
- e. The Commissioning Specialists must develop commissioning procedures for any systems or system components not covered in the Commissioning Standard.
- f. Use any new requirements, recommendations, and procedures published or adopted by the body responsible for the Commissioning Standard at the time of project award.
- g. If there is a conflict between the requirements of the contract documents and the commissioning standard used, the contract documents take precedent.

1.11 SUSTAINABILITY THIRD PARTY CERTIFICATION (TPC)

The Commissioning Specialist must perform all commissioning activities, coordination, and submittals required by the sustainability Third Party Certification (TPC) program applied to this project, in accordance with Section 01 33 29 SUSTAINABILITY REQUIREMENTS AND REPORTING.

1.12 ISSUES LOG

The Commissioning Specialist develops and maintain an Issues Log for the systems to be commissioned. The issues log documents and tracks resolution of deficiencies identified during submittal reviews, inspection, and testing. At any point during construction, any commissioning team member finding deficiencies may communicate those deficiencies in writing to the Commissioning Specialist for inclusion into the Issues Log. For each issue, the Issues Log includes, but is not limited to, a unique reference number, description of the issue with contract requirement referenced, location of or equipment name/tags exhibiting the issue, the initials of the individual's name whom reported the issue, the date of first observation, the proposed resolution of the issue and date proposed, the date of any subsequent observations with applicable additional information, and the date of implementation of the final resolution of the issue as confirmed by the Commissioning Specialist and Contracting Officer. Issues must not be deleted from the issues log.

CxC must submit the Issues Log monthly and within three working days from changes to the Issue Log. The CxC is responsible for distributing the Issues Log to the Commissioning Team. The QC manager is responsible for notifying the CxC and Contracting Officer of outstanding deficiencies and tracking them to resolution in accordance with Section 01 45 00.05 20 DESIGN AND CONSTRUCTION QUALITY CONTROL, "Quality Control Plan".

1.13 CERTIFICATE OF READINESS

Prior to scheduling Functional Performance Tests, the Quality Control Manager must issue a Certificate of Readiness for each system, certifying that pre-functional checks have been completed, open issues have been resolved, and the system is ready for Functional Performance Testing. The Certificate of Readiness must include, for each system to be commissioned, equipment and system start-up reports; completed Pre-Functional Checklists; ; Issues Log; and 300 PSIG Fuel Fire Heat Exchanger Controls Start-Up Reports to the extent applicable to the system. Sign and date the Certificate of Readiness, and include signatures and dates from the CxC; the Quality Control Representative; the Mechanical, Electrical, Controls, and TAB subcontractor representatives.

Submit the Certificate of Readiness for each system 14 calendar days prior to Functional Performance Tests of that system. Do not schedule Functional Performance Tests for a system until the Certificate of Readiness is approved by the Government.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 DESIGN COMMISSIONING COORDINATION MEETING

Conduct a design commissioning coordination meeting led by the CxC prior to the 35 percent design submittal for systems to be commissioned. Discuss the commissioning process, including project contract requirements, lines of communication, roles and responsibilities, schedules, and documentation requirements.

The Quality Control team, Designer of Record, and the Government

Acceptance Testing Representatives and other Government team members must attend this meeting. Invite the User and to attend this meeting. Meeting may be conducted by teleconferencing.

3.2 DESIGN PHASE COMMISSIONING PLAN

Submit the Design Phase Commissioning Plan no later than 14 calendar days after the Design Commissioning Coordination Meeting. Outline the commissioning process, commissioning team members and responsibilities, lines of communication, and documentation requirements for the design phase of the project in the Design Phase Commissioning Plan. Identify the Commissioning Standard chosen for the project.

3.3 DESIGN REVIEW

The CxC and other Commissioning Specialists must review design documents. The design review must include verifying the Design Plans and Specifications for the systems to be commissioned are prepared in accordance with the contract documents.

Provide a Design Review Report identifying discrepancies or deficiencies that would prevent the systems to be commissioned from operating or performing in accordance with the design requirements or being safely maintained. Report must include individual list of each deficiency and corresponding corrective action necessary for proper system performance. The Contracting Officer, the CxC, and the Designers of Record for the associated systems must meet, discuss, and resolve any outstanding items contained in the report no later than 14 calendar days after submission of the report. The CxC must verify that their review comments have been adequately addressed in subsequent design submittals.

3.4 CONSTRUCTION SUBMITTAL REVIEWS

Coordinate construction submittal document reviews for commissioned systems and assemblies with the CxC. The commissioning submittal review does not replace the designer of record (DoR) or Government submittal review, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

The CxC must identify construction submittals to be provided by the contractor for the commissioned systems. The CxC must evaluate construction submittals for compliance with the contract documents. The DoR must consider the CxC's comments and provide direction to the contractor as necessary. Provide a copy of final DoR submittal reviews with comment responses to the CxC. Include a copy of the submittal document review transmittal and response in the Commissioning Report.

3.5 COMMISSIONING KICKOFF MEETING

Conduct a Commissioning Kickoff Meeting, led by the CxC, after approval of the Commissioning Firm and Commissioning Specialists, and no later than 60 days following construction notice to proceed. Discuss the commissioning process including contract requirements, lines of communication, roles and responsibilities, schedules, documentation requirements, inspection and test procedures, and logistics as specified in this section.

The Quality Control team, Designer of Record, and the Government Acceptance Testing Representatives and other Government team members must attend this meeting. Invite the User and to attend this meeting.

3.6 REGULAR COMMISSIONING COORDINATION MEETINGS

The Quality Control team, Designer of Record, and the Government Acceptance Testing Representatives and other Government team members must attend this meeting. Invite the User and to attend this meeting.

CxC must conduct monthly commissioning coordination meetings when installation of commissioned systems begins. Provide status of commissioned systems, open issues log items, outstanding submittals, and upcoming commissioning activities. Conduct bi-weekly commissioning coordination meetings within 30 days of the scheduled date for functional performance testing.

3.7 CONSTRUCTION PHASE COMMISSIONING PLANS

The Interim Construction Phase Commissioning Plan identifies the commissioning and testing standards and outline the overall commissioning process, the commissioning schedule, the commissioning team members and responsibilities, lines of communication, documentation requirements for the construction phase of the project. Submit the Interim Construction Phase Commissioning Plan 14 calendar days after the Construction Commissioning Coordination Meeting and 14 days prior to the start of construction of the building envelope.

The Final Construction Phase Commissioning Plan includes the information provided in the Interim Construction Phase Commissioning Plan as well as the Pre-Functional Checklists, Integrated Systems Test Checklists, and Functional Performance Test Checklists for each building, for each system required to be commissioned, and for each component for inclusion in the Final Construction Phase Commissioning Plan. Submit the Final Construction Phase Commissioning Plan no later than 90 calendar days prior to the start of Pre-Functional Checks. Once approved, file the approved plan in the Sustainability eNotebook.

3.7.1 Pre-Functional Checklists

The Pre-Functional Checklists must include items for physical inspection or testing that demonstrate that installation and start-up of equipment and systems is complete. Refer to paragraph PRE-FUNCTIONAL CHECKS. Pre-functional checklists must be tailored to verify the specific installation requirements and details of the construction documents and manufacturer's instructions.

3.7.2 Functional Performance Test Checklists

Functional Performance Test Checklists must include procedures that explain, step-by-step, the actions and expected results that will demonstrate that the system performs in accordance with the contract. Refer to paragraph FUNCTIONAL PERFORMANCE AND INTEGRATED SYSTEMS TESTS. Include the following sections and details appropriate to the systems being tested in the Functional Performance Test Checklists:

- a. Notable system features including information about controls to facilitate understanding of system operation
- b. Conclusions and recommendations. Conclusions must clearly indicate if system does or does not perform in accordance with contract requirements. Recommendation must clearly indicate that the system should or should not be approved by the Government.

- c. Test conditions including date, beginning and ending time, and beginning and ending outdoor air conditions
- d. Attendees
- e. Identification of the equipment involved in the test
- f. Control system feature identification
- g. Point-to-point observations including demonstrating system flow meters and sensors have been calibrated and are correctly displayed on the Operator work station
- h. Actuator operation observations demonstrating actuator responses to commands from the control system
- i. As-found condition of the system operation
- j. List of test items with step numbers along with the corresponding feature or control operation, intended test procedure, expected system response, and pass/fail indication.
- k. Space for comments for each test item.

3.7.3 Integrated Systems Test Checklists

Integrated Systems Test Checklists must include test procedures that explain, step-by-step, the actions and expected results that will demonstrate that the interactive operations between systems performs in accordance with the contract. Refer to paragraph FUNCTIONAL PERFORMANCE AND INTEGRATED SYSTEMS TESTS. Include the following sections in the Integrated Systems Test Checklists:

- a. Notable features of the interconnected systems organized by discipline including information to facilitate understanding of system operation
- b. Conclusions and recommendations. Conclusions must clearly indicate if the systems do or do not perform in accordance with contract requirements. Recommendation must clearly indicate that the systems should or should not be approved by the Government
- c. Test conditions including date and beginning and ending time
- d. Identification of the equipment and systems involved in the test
- e. List of test items with step numbers along with the corresponding feature or control operation, intended test procedure, expected system response, and pass/fail indication.
- f. Space for comments for each test item.

3.8 PRE-FUNCTIONAL CHECKS

Complete one Pre-Functional Checklist for each individual item of equipment or system for each system required to be commissioned including, but not limited to, ductwork, piping, equipment, fixtures (lighting and plumbing), and controls. Indicate commissioning team member inspection and validation of each Pre-Functional Checklist item by initials.

Validation of each Pre-Functional Checklist item by each team member indicates that item conforms to the contract documents and validated design in their area of responsibility. Commissioning Specialist validation of each Pre-Functional Checklist item indicates that each item has been installed correctly and in accordance with contract documents and the Owner's Project Requirements (OPR). Submit the initialed and Completed Pre-Functional Checklists no later than 7 calendar days after completion of inspection of all checklists items for each system. Include manufacturer start-up checklists associated with equipment with the submission of the Pre-Functional Checklists.

3.9 FUNCTIONAL PERFORMANCE AND INTEGRATED SYSTEMS TESTS

Demonstrate that all system components have been installed, that each control device and item of equipment operates, and that the systems operate and perform, including interactive operation between systems, in accordance with contract documents and the OPR. Provide all materials, services, and labor required to perform the Pre-Functional Checks, Integrated Systems Tests, and Functional Performance Tests.

Commissioning Specialist's duties include leading and documenting all tests for the systems to be commissioned with appropriate sub-contractors performing the Tests. The representatives listed in the paragraph Commissioning Team must attend the tests.

Perform Integrated Systems Tests only after the Functional Performance Tests for each associated system are completed with all deficiencies resolved and after the related Functional Performance Test Checklists have been signed by each commissioning team member.

3.9.1 Test Scheduling and Coordination

Conduct Initial Functional Performance Tests as soon as all contract work is completed, regardless of the season. Develop and implement means of artificial loading to demonstrate, to a reasonable level of confidence, the ability of the HVAC systems to handle peak seasonal loads. Schedule Functional Performance Tests for each system only after the Certificate of Readiness has been approved by the Government for the system. Correct all deficiencies identified through any prior review, inspection, or test activity before the start of Functional Performance Tests.

Functional Performance Tests and Integrated Systems Tests must be performed with the CxC present. Government reserves the right to witness all tests. Coordinate test schedule with Government representatives.

3.9.2 Testing Procedures

Functional performance testing is conducted by simulating conditions at control devices to initiate a control system response. Over-writing control input values through the control system is not allowed unless approved by the Contracting Officer. Do not simulate conditions when damage to the system or building may result.

Follow the Functional Performance Test from the approved Final Construction Phase Commissioning Plan. Perform Functional Performance Tests for each item of equipment and each system required to be commissioned. Verify all sensor calibrations, control responses, safeties, interlocks, operating modes, sequences of operation, capacities, lighting levels, and all other performance requirements comply with

contract, regardless of the specific items listed within the checklists provided. In general, testing must progress from equipment or components to subsystems to systems to interlocks and connections between systems. Commissioning Specialists are responsible for determining the order of components and systems to be tested. Indicate validation of each item of equipment and systems tested by signature of each commissioning team member for each test. The Quality Control Representative, Commissioning Specialists, and Contracting Officer's Representative, if present, must indicate validation after the equipment and systems are free of deficiencies.

3.9.3 Integrated Systems Tests

Follow the Integrated Systems Test Checklists from the approved Final Construction Phase Commissioning Plan. Integrated Systems Tests must be performed for the interactive operation between systems such as HVAC systems, fire protection systems, back-up electrical supply, energy generation systems, and other systems, and verify correct interactive operation, acceptable speed of response, and other contract requirements for both normal and failure modes. Examples of Integrated Systems Tests include the correct operation of HVAC systems during emergency system activation, correct operation of uninterruptible power supplies or energy generators and connected systems, or lighting system operation during power outage or emergency system activation.

3.9.4 Sample Strategy

Perform Functional Performance Tests and Integrated Systems Tests for all systems and equipment to be commissioned using the sample strategy identified herein. Complete a Functional Performance Test Checklist for each item of equipment or system to be tested. For sample sizes less than 100 percent for similar equipment, the Contracting Officer's Representative reserves the right to select the specific equipment or system to be tested during testing. Perform Integrated Systems Tests for all systems and equipment having interactive operation. Complete an Integrated Systems Test Checklist for each item of equipment or system.

Test all central plant equipment, primary air handling units, and process cooling or heating equipment. Test all system-level equipment serving multiple zones. Twenty percent sample testing is allowed for large groups of identical equipment with identical controllers serving single zones such as air terminal units, fan coil units, unitary equipment, lighting zones, and plumbing fixtures.

3.9.4.1 100 Percent Sample Procedures

Systems or equipment for which 100 percent sample size are tested fail if one or more of the test procedures results in discovery of a deficiency and the deficiency cannot be resolved within 5 minutes during the test.

Re-test to the extent necessary to confirm that the deficiencies have been corrected without negatively impacting the performance of the rest of the system.

3.9.4.2 Less than 100 Percent Sample Procedures

Randomly test each sample group of identical equipment. Sample size must be at least three units. If 10 percent of the units in the first sample fail the functional performance tests, test a second sample group, the

same size as the first sample group. The second sample must not include any units from the first sample group.

If 10 percent of the units in the second sample fail, test all remaining units. If at any point frequent failures occur, and testing becomes more troubleshooting than verification, the CxC may stop the testing and require the contractor to perform and document a checkout of the remaining units prior to continuing functional testing.

3.9.5 Aborted Tests and Re-Testing

Abort any test if any deficiency prevents successful completion of the test or if any required commissioning team member is not present for the test. Re-test after all deficiencies identified during the original test have been corrected. Contracting Officer may withhold payment equivalent to lost time, re-testing, and aborted tests. These costs may include salary, travel costs, and per diem for Government team members.

3.10 TRAINING PLAN

CxC must review the training plan for training associated with the equipment and systems to be commissioned, checking that each plan has the trainer name, trainer contract information, training schedule and location. Submit review at least 30 days prior to the first training event. Incorporate CxC review comments prior to submitting training plan in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA and 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI). Update and resubmit the training plan based on any corrective action taken.

Document training attendance using training attendance rosters and submit completed attendance rosters no later than 7 calendar days following the completion of training for each system to be commissioned.

3.10.1 Systems Manual

The Systems Manual includes the Basis of Design, system single line diagrams, as-built sequences of operation and controls drawings, as-built control setpoints, recommended schedule for sensor and actuator calibration, recommended schedule of maintenance when not in the O&M manuals, recommended re-testing schedule with proposed testing forms, and full equipment warranty information for all commissioned systems. Incorporate CxC review comments prior to submitting Systems Manual in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA and 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI). Update and resubmit the system manual information based on any corrective action taken during the warranty period.

3.11 COMMISSIONING REPORT

Submit an Initial Commissioning Report no later than 14 calendar days following commissioning team validates all Functional Performance Tests and Integrated Systems Tests, with the exception of Seasonal Tests. Submit a Final Commissioning Report upon completion of training and trend log reviews. File the approved Final Commissioning Report (eNotebook) in the Sustainability eNotebook. Include the following information in the Final Commissioning Report:

- a. An executive summary describing the overall commissioning process, the

results of the commissioning process, outstanding deficiencies and recommended resolutions, and seasonal testing that must be scheduled for a later date. Indicate, in the executive summary, whether the systems meet the requirements of the contract documents and the OPR.

- b. A list of deficiencies discovered during the commissioning process and the corrective actions taken in the report.
- c. Completed Building Envelope Inspection Checklists, Pre-Functional Checklists, Functional Performance Test Checklists, Integrated Systems Test Checklists, the Final Construction Phase Commissioning Plan, the Issues Log, Training Attendance Rosters, the Design Review Reports, Submittal Review Report, and the approved TAB Report.

3.12 WARRANTY PHASE SITE VISIT

The Lead Commissioning Specialist must visit the building site concurrent with the 9 month warranty inspection to inspect building system equipment and review building operation with the building operating/maintenance staff, and identify any deficiency of the building systems to operate in accordance with the contract documents and the OPR. The Commissioning Specialist must notify the Contracting Officer of any identified deficiencies and the proposed corrective action. Submit Updated Final Commissioning Report and Systems Manuals, documenting the results of the warranty phase inspection. Include other warranty phase activities, such as Seasonal testing results. File the approved Updated Final Commissioning Report (eNotebook) in the Sustainability eNotebook.

-- End of Section --

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

PART THREE – PROJECT PROGRAM

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

Project Program

**Replace Shop 940 Piping and Valves /
Replace 300 PSIG Fuel Fired Heat
Exchanger**

P-XH98495

FY21

Category Code N400.85

**FRC-East, Marine Corps Air Station,
Cherry Point, Havelock,**

North Carolina

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

COVER PAGE.....#	
TABLE OF CONTENTS.....#	
1. PROJECT DESCRIPTION.....#	
2. PROJECT OBJECTIVES.....#	
2.1. Mission Statement	
2.2. Facility Function	
2.3. Project Specific Priorities	
2.4. Appropriate Design	
2.5. Workflow Process	
3. SITE ANALYSIS.....#	
3.1 Existing Site Conditions	
3.2 Site Development Requirements	
4. BUILDING REQUIREMENTS.....#	
4.1 Space Tabulation	
4.2 Space Relationships	
4.3 Exterior Character.	
5. ROOM REQUIREMENTS.....#	
6. ENGINEERING SYSTEMS REQUIREMENTS.....#	
A10 Foundations	
D20 Piping	
D50 Electrical Power and Lighting	
E10 Equipment	

1.0 PROJECT DESCRIPTION

Building 137 houses a military aircraft pneumatic component test system in Shop 940. Piping and valves are distributed throughout Shop 940 supporting the test system. The test system comprises of six (6) subsystems. One subsystem is the High-Pressure (300 psig) Fuel Fired Heat Exchanger (FFHE). The FFHE is located outside of Hangar 3 of Building 137.

This project's scope of work includes the design, equipment, material, and construction to:

1. Remove and replace all 940 shop piping, as specified herein, including all associated piping accessories (insulation, valves, flanges, instruments, supports as needed, etc.) before and after the specific listed pneumatic test cells. Piping Systems to be removed and replaced:
 - 300H Piping System
 - 300C Piping System
 - 800H Piping System
 - 800C Piping System
 - Vent Piping System
2. Remove (DEMO) and replace existing 300 PSIG network heat exchanger (NHE) with a new 300 PSIG FFHE and all associated controls and accessories (EXERCISE AS AN OPTION).
3. All demolition, installation, and testing/commissioning of equipment, piping (including all associated piping accessories), instrumentation, electrical, and structural supports shall be completed in a well-defined phasing of work with minimal effect on other existing pneumatic operations. The different Phases of work must include the following, as a minimum:
4. Provide required support structures, piping (including all required piping accessories), valves, equipment (muffler, etc.) on the roof.
5. Provide required support structures, piping (including all required piping accessories), valves, equipment (muffler, etc.) going to and exhausting from valve channel 1,2,3,4 and test cell 1 (Air Turbine Starter), 2 (Air Turbine Starter), and 3 (Engine Driven Compressor).
6. Provide required support structures, piping (including all required piping accessories) and valves going to Cooling Turbine channel room.
7. Provide required support structures, piping (including all required piping accessories), valves, equipment (muffler, etc.) going to and exhausting from AV-8 valve stands and Bendix test stand 1 and 2.
8. Provide required support structures, piping (including all required piping

accessories), valves, and equipment for the 300 psig Fuel Fired Heat Exchanger.

9. Provide emergency shut off valves. Contractor shall determine the number and location of emergency shut off valves upon determining locations of all piping tie-ins and phasing requirements.

Contractor shall provide the following for phasing of work:

- The goal of each phase.
- Detailed work description and the scope duration on all work items for each phase.
- Shutdown of equipment required for each phase.
- Isolation of valve testing required for phasing for each phase.
- Outage restrictions for each phase.
- Commissioning and Acceptance Plan for each phase.

2.0 PROJECT OBJECTIVES

2.1 Mission Statement

Fleet Readiness Center East mission is to maintain and operate facilities for and perform a complete range of depot level rework operations on designated weapon systems, accessories, and equipment.

2.2 Facility Function

The function of the upgrades will support the functions of Building 137 that houses a military aircraft pneumatic component test system in Shop 940.

2.3 Project Specific Priorities

2.3.1 Sustainable Design and Construction

Not Used

2.3.2 Storm Water Management - Low Impact Development (LID)

Not Used

2.3.3 Energy Efficiency

Not Used.

2.3.4 Building Commissioning

Provide commissioning to meet requirements identified in Section 01 91 00.15 *Total Building Commissioning, and UFC 1-200-02 High Performance and Sustainable Building Requirements*.

2.3.5 Accessibility Requirements

Not Used

2.3.6 Antiterrorism Criteria

Replacement of all 940 shop piping including valves before and after the specific listed pneumatic test cells. Replacement of existing 300 PSIG network heat exchanger (NHE) with a new 300 PSIG FFHE and all associated accessories (exercised as option) to comply with UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings.

Facility is within a controlled perimeter.

2.3.7 Cybersecurity

Not Used

2.3.8 Secured Areas

Not Used

2.4 Appropriate Design

Comply with FC 1-300-09N Navy and Marine Corps Design Procedures Change 6 20210709 for planning and design requirements for this project.

2.5 Workflow Process

2.5.1 Hours of Operation

7 AM to 3:30 PM Monday thru Friday

2.5.2 Staffing/Occupancy

Not Used

3.0 SITE ANALYSIS

3.1 Existing Site Conditions

The project site is located within the FRC East compound and within building 137. The location is an industrial area.

Subsurface conditions are identified in the Geotechnical Data Report included in Part 6

3.2 Site Development Requirements

3.2.1 Antiterrorism Requirements

The existing facility is located within a Level I secured perimeter.

3.2.2 Vehicular Access and Circulation

Maintain a minimum 50 foot access lane for aircraft from gate opening at FRC East fence line to Hangar 137.

3.2.3 Utilities

Existing electrical utilities shall be identified and evaluated to provide electrical service to the fuel fire heat exchanger. The provision of a new heat exchanger is part of an additive bid option.

3.2.4 Site Drainage and Stormwater Runoff

Not Used

3.2.5 Erosion and Sediment Control

Not Used

3.2.6 Demolition

Demolition, if required, will include the saw cutting and removal of existing concrete slab on grade as necessary for the installation of new 300 PSIG FFHE (Exercised as option). Note, the existing concrete slab on grade is expected to remain in place.

3.2.7 Environmental Constraints

Not Used

4.0 BUILDING REQUIREMENTS

4.1 Space Tabulation

Space Name	# of spaces	Unit SF (Net)	Total SF (Net)	Total SQM (Net)	Remarks
INTERIOR SPACE					
Small Mechanical Room	1	900	900	83.61	
Room 137 - 1099	1	1200	1200	111.48	
Room 137 - 1100	1	450	450	41.81	
Test Cell Rooms	1	600	600	55.74	
Large Mechanical Room	1	1110	1110	103.12	
	1		0	0.00	
EXTERIOR SPACE					
	1		0	0.00	
Piping on the Roof	1		0	0.00	
Pipes from and to fuel fired heat exchanger	1		0	0.00	
(Field verify penetration and unit square footage)	1		0	0.00	
	1		0	0.00	
	1		0	0.00	
		Subtotal Net Area	4260	395.77	
		Net to Gross Factor	1.10	1.10	
		TOTAL GROSS AREA	4686	435.34	

The design build contractor shall provide actual area in both square feet and square meters in proposals.

4.2 Space Relationship

Not Used

4.3 Exterior Character

The Design-Build contractor and its Architect-Engineer shall be responsible for determining the facility's exterior design.

The intent of the base is to provide Fuel Fired Heat Exchanger (FFHE) located outside of Hangar 3 of Building 137. All FFHE components, except the FFHE control panel, shall be placed on a concrete pad in the exterior. The burner and fuel tank shall be placed in accordance with NFPA 31.

Provide required support structures, piping (including all required piping accessories), valves, equipment (muffler, etc.) on the roof.

The contractor is encouraged to pursue a creative and imaginative means and methods to have minimal penetrations through existing masonry veneer walls and EPDM roof. Any holes and penetrations should be adequately caulked and sealed for weather tightness. Contractor to provide pitch pockets, curbs, counter flashing to maintain existing roof warranty.

5.0 ROOM REQUIREMENTS

- **Not Used**

6.0 ENGINEERING SYSTEM REQUIREMENTS

6. ENGINEERING SYSTEMS REQUIREMENTS

A10 FOUNDATIONS

SYSTEM DESCRIPTION

The existing foundation of the current heat exchanger is believed to be adequate to support the new equipment, maintenance platform, and piping. The existing foundation shall be verified for the new design loads by a Professional Engineer. If the foundation is determined to be adequate, no new foundation work is required. If existing foundation is determined to be inadequate, provide new foundation systems in accordance with Unified Facilities Criteria (UFC) 3-301-01, *Structural Engineering* and UFC 3-220-01, *Geotechnical Engineering*. The existing foundation, or new foundation, shall be capable of transmitting all equipment, maintenance platform, and piping loads to the ground.

In addition, the existing foundation, or new foundation, shall be able to support the following loading criteria:

Live Loads

As required by the manufacturer for the equipment and as determined by analysis for piping loads.

Provide for live loads for occupancies or uses not provided in UFC 3-301-01 as follows:

Occupancy or Use: Maintenance Platforms

Uniform Live load: 40 psf.

Concentrated Live Load: 300 lbs.

Importance Factors

Use Risk Category II in Table 2-2 of UFC 3-301-01 for determining Importance Factors for seismic and snow design.

Wind Exposure

Base wind design on Exposure C.

A10 GENERAL

CONTRACTOR TO BE PROVIDED GEOTECHNICAL INFORMATION

Perform the soils investigation at the site for use in the design and construction of the equipment and piping replacement, along with the evaluation of the existing foundation. Perform, at Contractor's expense, subsurface exploration, investigation, testing, and analysis for the design and construction of features such as the utility structure foundations. Prepare a report including laboratory analysis of samples and recommendations for foundation design by a professional engineer as specified and in accordance with UFC 3-201-01, *Civil Engineering*.

Anticipate minor variations in subsurface conditions between borings. The contractor is responsible for costs associated with the site preparation, ground improvement and foundations except as allowed by contract clause federal acquisition regulation (FAR) 52.236-2, "Differing Site Conditions". The contractor's geotechnical engineer must perform additional subsurface investigation/testing as required to adequately determine all applicable geotechnical factors including the type and capacity of the project foundations. The contractor's geotechnical engineer is required to evaluate the provided information and any additional information obtained and prepare a report as described in other portions of this RFP. The minimum requirements for the subsurface investigation and report are as required by facilities criteria (FC) 1-300-09N with associated references.

Observed site conditions which may present a challenge during design/construction include - The soils that will be exposed after completion of stripping will be soft and at or near the groundwater elevation. Anticipate these marginal subgrade support conditions and incorporate measures into the design and construction procedures to obtain required soil support while maintaining progress for completion on schedule.

Provide personnel under the supervision of a registered professional engineer to inspect excavations and soil/groundwater conditions throughout construction. The engineer is required to perform pre-construction and periodic site visits throughout construction to assess site conditions. The engineer, with the concurrence of the contractor and the contracting officer, is required to update the excavation, sheeting, shoring and dewatering plans as construction progresses to reflect actual site conditions and is required to submit the updated plan and a written report (with professional stamp) at least monthly informing the contractor and contracting officer of the status of the plan and an accounting of contractor adherence to the plan; specifically addressing any present or potential problems. The engineer must be available to meet with the contracting officer at any time throughout the contract duration. Provide the services of the Engineer at no additional cost to the Government. It is important to note that the presence of loose or compressible soils may result in excessive settlement that could impact the performance of surface bearing structures and supporting facilities such as foundations, slabs, and utilities. The magnitude and duration of consolidation settlement will be dependent on the composition, depth, and thickness of the compressible soils as well as the successful bidder's design concept. The contractor's geotechnical engineer is responsible for evaluating potential global settlement due to designed grade increases and final structural loads. The contractor's geotechnical engineer must develop any settlement mitigation procedures (such as preloading, surcharging, fill monitoring programs, and ground improvement systems) needed to maintain global settlements

within tolerable limits. Surcharge material, if required, must remain in place for a minimum of 90 days.

A site-specific seismic ground motion study is not required. The contractor's geotechnical engineer must determine the seismic site classification in accordance with UFC 3-301-01, *Structural Engineering*.

A1010 STANDARD FOUNDATIONS

As determined by the Designer of Record to be applicable, provide a standard foundation. "Standard Foundations" are shallow or deep foundations as specifically addressed in international building code (IBC) Chapter 18. Do not use masonry unit footings, steel grillage footings, timber footings or wood foundations.

A1020 SPECIAL FOUNDATIONS

As determined by the designer of record to be applicable, provide a special foundation. "Special Foundations" are any foundations that are not specifically "Standard Foundations", or a combination of standard foundations and a site improvement/ground modification system. Examples of site improvement/ground modification systems include surcharging, stone columns, rammed aggregate piers, impact densification, compaction grouting, vibroflotation, and other similar systems. As "Special Foundation" techniques or systems typically require the use of specialty contractors, a Professional Engineer must establish installation and acceptance criteria and supervise the installation. The designer of record must submit justification for use, including acceptable evidence of previous successful installation in similar conditions, methods and equipment used in their installation, proposed testing and inspection to be used, supporting test data, calculations and any other information related to the structural properties and load capacity of such system. The allowable stresses for piles/piers must not exceed those limitations specified in UFC 1-200-01.

-- End of Section --

6. ENGINEERING SYSTEMS REQUIREMENTS

D20 PIPING

SYSTEM DESCRIPTION

Building 137 houses the military aircraft pneumatic component testing systems in shop 940. Piping and valves are routed throughout the 940 shop and mechanical room and feed all the (6) test systems that make up the testing systems. This over-all scope for the piping includes replacing the notated 940 shop piping including all notated manual valves, control valves, instrumentation & pipe supports including spring cans.

D1010 NARRATIVE

During the design phase for this project, the contractor will have to work with the project team on developing the phased shutdown and tie-in sequence to complete the project with minimal effect on other testing stations. All work cannot be performed at one major shutdown additional piping and valves may have to be installed to perform the phased shutdowns for the project.

1. All demolition of existing piping and valves to be removed will be part of the phased approach shutdown.
2. After demolition of existing piping, the tie-in flange shall have rated blind flanges installed on the inlet and outlet of all existing pressurized lines.
3. All piping to be replaced up to each test station isolation valve on the inlet and outlet.
4. All metals used must meet the requirements of ASME (American Society of Mechanical Engineers) B31.1.
5. All piping materials including valves must be designed, constructed, installed and hydro tested per ASME B31.1.
6. Provide insulation on all hot sides of the piping.
7. See Appendix 2, the Y (year) – 2000 (not updated) for piping specifications attached section 15212 & 15216 are for reference only, and the AE awarded shall update with new codes and dates for all piping specs for the project.
8. Pipe stress analysis shall be performed on all hot side of the 300 psig & 850 psig piping. In addition, the pipe stress analysis shall provide for expansion of the 300 psig and 850 psig FFHE outlet process air pipe to eliminate potentially harmful stress to the tube bundle assembly. The piping exiting the FFHE shall not contain expansion joints. The piping shall be designed based on an operating temperature of 1,000 degrees F and 1250 degrees F (2) temperature cycles per day, 250 days per year (approximately 12,500 cycles over 25 years).
9. P&ID's to be provided by the contractor for the project and as-built after construction is complete.
10. See Appendix 1 for pipe to be replaced see highlighted approximate piping arrangements drawings M-101, M-102, M-103, M-104, M-105, M-106, M-9 (Y-2000/

not updated) M-10 (Y-2000 / not updated) & T-2 (Y-2000/ not updated) AE awarded the project will have to determine the true existing conditions to be replaced.

Drawings do not show all the piping, shut-off valves, control valves, etc. Contractor must verify all existing conditions of piping systems.

11. All piping in the existing mechanical room will be designed by future Architect/Engineering firm. No additional scope will be required except to add some manual shut off valves to transition from project to project.
12. The new heat exchanger is for bid option only and to bid separately from the pipe replacement part of the project.

Contractor must validate and document all new piping, fittings & components on the 300 and 800 networks are compatible for the temperatures and pressures. Provide the replacements for all deficient components.

Contractor must field verify all new piping and existing piping at tie-in locations.

A pipe stress analysis shall be performed, prior to the start of acceptance testing, on the following sections of pipe:

Piping section exiting the new 300 NHE (300 psig FFHE) on the 300 psig network (hot and cold) and continuing through to the last pipe/spring anchor.

Bypass piping section exiting the new 300 NHE (300 psig FFHE) and connected to the 800 psig network (hot and cold) and continuing through to the last bypass pipe/spring anchor. Analyze this section for the situation when the double block bleed valve is being utilized and fully functional.

Piping section exiting the 800 NHE (850 psig FFHE) to the cross connection between the 800H line and 300H line, represents the bypass spool location for the 800H and 300H lines. The subject hot spool section and cold side spool section is to be replaced with a properly rated double block bleed valve and associated components. The double block bleed valves shall have gauges and sensors to ensure safe switching from 300 psig to 850 psig. Analyze this section for the situation when the double block bleed valve is being utilized and fully functional.

-- End of Section --

6. ENGINEERING SYSTEMS REQUIREMENTS

D50 ELECTRICAL

SYSTEM DESCRIPTION

Replace existing 300 psig network heat exchanger (NHE) with a new 300 psig Fuel fired heat exchanger (FFHE) and all associated accessories. This scope to replace the heat exchanger, as described below is to be exercised as an option in this request for proposal (RFP).

Provide electrical service to a new 300 psig fuel fired heat exchanger. This shall include circuit protection and wiring from a local 480 V3 phase power source to the new control panel(s) and new motors (combustion air, fuel pump, etc.). Locations for available 480 volt power source are in the existing mechanical room and in the 940 Valve Shop. It will need to be determined, based on the selected heat exchanger unit, if the existing power distribution panels in the area are adequate to supply the new unit.

The existing 300 psig network heat exchanger (NHE) shall be removed and new and existing drawings to support this removal shall be provided. All electrical wiring to the existing unit and abandoned and un-used conduits shall be removed.

GENERAL SYSTEM REQUIREMENTS

Provide an Electrical System complete in place, tested and approved, as specified throughout this RFP, as needed for a complete, usable and proper installation. Install all equipment in accordance with the criteria of PTS Section D50 and the manufacturer's recommendations. Where the word "should" is used in the manufacturer's recommendations, substitute the word "must".

The systems shall be furnished complete with all accessories such as electrical motors, contactors, Allen Bradley controls with touch screen controls (Human Machine Interface (HMI)), relays, transformers, and switches pre-wired for operation upon connection applicable requirements of NFPA 70 and NFPA 79.

The systems shall be designed to operate from a single 480 VAC, 3 phase, and 60 hertz service. All other voltages shall be derived from the system voltage.

All systems controls (motor starters, relays, lights, sensors, all electronic devices, etc.) shall operate on 120 VAC, 60 hertz maximum in accordance with NFPA 70.

The system including all components shall be designed to fully operate with +/- 5 percent variations in system voltage (480 VAC, 60 hertz nominal).

The system control package including all electronic devices shall be capable of maintaining normal operations during voltage drops to 40 percent of rated lasting 0.1 seconds (6 cycles).

The system shall not restart when conditions permit without operator action.

A manually operated disconnect switch shall be provided for each major component. The disconnect switch shall electrically isolate each major component for maintenance action. Each disconnect switch shall be lockable for Lock-Out-Tag-Out (LOTO) with engraved identification placard (name of equipment, volt, ampere, phase, power source, etc.). The identification placard shall be hard plastic with white lettering engraved on a black background and attached to disconnect switch cover with rivets.

All wiring shall be copper.

All motors shall not be loaded more than 90 percent of their horsepower rating. All AC motors 1 HP or greater shall be of energy efficient type. All AC motors ½ HP or greater shall be provided with a magnetic starter with melting alloy overload protection. All motors shall comply with all applicable UFC and NEC codes.

The outside electrical distribution/control panel shall be in accordance with NEMA 250 and meet all standard requirements.

All outdoor electrical components shall be NEMA 4X rating.

D5010 ELECTRICAL SERVICE

D501001 Sustainability

Provide electrical systems and components that support project sustainability and energy goals.

D501002 Seismic Bracing

Bracing of electrical equipment to resist seismic events shall be determined and installed as required.

D501003 Grounding

Provide design for grounding new equipment panel(s) and motors.

D501004 System Design

Work with mechanical lead and control engineer to specify the system control panel(s) and motors to meet the needs and burner management safety systems requirements.. Control panel(s) shall meet NFPA requirements for rated fault current components and labeling of ratings. Engineer will work with site distribution engineering to provide the fault current level requirements.

D5020 INSTRUMENTATION

Instrumentation scope boundary is highlighted on the piping arrangement drawings found in Appendix 1, M-101, M-102, M-103, M-104, M-105, and M-106; and must conform to an updated equivalent of an outdated Appendix 02 (Y-2000 Section 15212).

Contractor shall walk down and document all instrumentation within scope boundary to verify current as-built conditions. Documentation to include at a minimum: Instrument Tag, Full Model/Manufacturer number, and Serial Number.

Operation, performance, calibration and test of all existing components and the subject component system shall be recorded at required ranges prior to any work/replacement. The same test, at the same ranges, on a component level and component system level shall be performed after all the new components and new piping are installed. Govt. acceptance of the test(s) requires the new (component level and component system level) test at least match or improved the existing performance (operation level, performance level, calibration level and testing level).

Provide replacements for all instrumentation within scope boundary in kind or Owner approved equivalent. Confirm compatibility of existing wiring with replacement instrumentation.

De-Energize, disconnect, and document termination information for all wired devices within scope boundary. Termination information to include at a minimum end connection designations, conductor colors. Verify wiring condition and replace if required or if final instrument location has moved outside of the current acceptable wiring's reach.

Demolish and remove all instrumentation within scope boundary. Dispose per Owner guidelines.

Provide any required bulk items such as tubing, end fittings, or gasket materials required to install and commission instrument.

Reconnect cabling to replacement instrument per NEC code for area classification and provide any Owner required bulk items to adequately field dress the cable terminations such as heat shrink, crimp terminations, conduit bushings/fittings, or conduit seals.

Pending decision on the optional 300 psig FFHE replacement, the new FFHE, the contractor shall verify approved programmable logic controllers and HMI (controls) are provided by the FFHE vendor. Contractor shall confirm if any additional I/O is required for FFHE vendor supplied controllers to communicate with Owner's central controller.

--- End of Section --

6. ENGINEERING SYSTEMS REQUIREMENTS

E10 EQUIPMENT

GENERAL SYSTEMS REQUIREMENTS - PROCESS

Provide Process Flow Diagram (PFD) with an integrated preliminary heat and material balance (HMB). Existing PFDs do not exist. PFD will include Major Equipment information for the new 300 PSIG Fuel Fired Heat Exchanger (Name, Equipment Number, Capacity/Flow, Material of Construction), process controls and instrumentation that control flow, and major process streams with directional flow. HMB information for major streams will include mass flow, volumetric flow, density, temperature, viscosity and phase.

Provide Process and Instrumentation Diagram(s) (P&ID) for all new and re-used equipment, piping, valves and instrumentation for all six (6) subsystems within the scope boundary as highlighted on M-101, M-102, M-103, M-104, M-105, and M-106. Existing P&IDs do not exist. Work shall include re-tuning on the affected P&ID Loops for all channels.

Provide preliminary demo drawing for all equipment, piping, valves and instrumentation for all six (6) subsystems within the scope boundary as highlighted on M-101, M-102, M-103, M-104, M-105, and M-106.

Provide process data input for the new 300 PSIG Fuel Fired Heat Exchanger (FFHE) Equipment Specification.

Provide a Piping Tie-In List detailing all Tie-Ins to existing piping, valves, etc. for all six (6) subsystems using highlighted boundaries shown on M-101, M-102, M-103, M-104, M-105, and M-106. Piping Tie-In Numbers and locations shall be noted on the P&IDs.

Generate Piping Line List with process data at maximum design and operating conditions for all six (6) subsystems.

Size and/or verify all replaced and/or new pipes and valves.

Each test cell piping network shall have piping network capacity (maximum pressure, maximum temperature, maximum flow, etc.) determined and stated on a comprehensive piping network drawing. All piping components on the drawing shall show the following information:

1. Name of Component.
2. Model Number.
3. Manufacturer.
4. Performance Information.

Maximum noise level for all associated components shall not exceed 84 dBA at three (3) feet. If required, noise attenuation shall be included.

Validate and document (spreadsheet and system drawing) all 300H and 800H components on the 300 and 800 networks are compatible for the working and design temperatures and pressures. Provide the replacements for all deficient components.

For all items that are to be replaced (pipe, valves, instruments, equipment, etc.), either due to scope requirements or found to be deficient, the Contractor shall provide a database/listing of all such items. The database/list shall clearly identify, for both the original replaced existing items and the recommended new items, all technical information (name of component, model number, manufacturer, specifications, operating/design conditions, calibration requirements, etc.) for those items. Reference must conform to an updated equivalent of an outdated Y-2000 Section 15212, High and Medium Pressure Compressed Air Piping, Page 22, Paragraph 2.7.2.5 for typical required information.

All demolition, equipment and equipment pad installation, and testing, shall be completed in 90 days. Construction shall not commence until all materials and equipment are on site.

Specify the proper type and thickness of insulation for all hot side piping.

The Contractor shall evaluate, size, and design the required replacement (mechanical and electrical) pump service that is required to pump the JP-5/JP-8 fuel from the fuel farm to the FFHE fuel tank. That subject design shall include all associated accessories (isolation valves, gauges, check valves, float switches, etc.) required to pump and troubleshoot the pumping of the subject JP-5/JP-8 fuel. The replacement fuel line shall be a double containment piping design or equivalent and made of stainless steel. The double containment pipe network shall have all appropriate sensors, wiring, and alarms for leak detection. In addition, double containment pipe design shall have proper drainage and disposal/storage to handle all interior leaks. A scaled schematic of the piping network with locations of leak detection sensors shall be displayed and monitored/trended within METASYS. The Contractor shall design the JP-5/JP-8 fuel piping network so that sections of the piping can be isolated and removed/repared as required. All underground piping shall be properly protected from corrosion.

Contractor shall determine if any additional utilities (air, electrical, fuel, etc.) are required for the new 300 psig FFHE. If additional utilities are required, then the specific grade and quality of the utility are to be defined. Based on the new 300 psig FFHE utility requirements, the Contractor shall design the proper measures to ensure all utilities provided are 100% compatible. All permanent measures needed to verify grade and quality of the subject utility are to be provided at the FRC East site.

Contractor shall develop a commissioning and acceptance test plan for all electrical/instrumentation, mechanical, and piping components. Operation, performance, calibration and test of all existing components and the subject component system shall be recorded at required ranges prior to any work/replacement. The same test, at the same ranges, on a component level and component system level shall be performed after all the new components and new piping are installed. Government acceptance of the test(s) requires the new (component level and component system level) test at least match or improve the existing performance (operation level, performance level, calibration level, and testing level). Contractor shall submit the commissioning and acceptance test plan for owner's approval. The commissioning and acceptance test plan shall include system tuning, testing, verification of equipment functionality, and process capability prove-out. Electrical/instrumentation and mechanical/piping check-out will precede commissioning activities to ensure that wiring, instruments, piping, valves and equipment are functional and ready for initial testing. Contractor shall perform all commissioning and acceptance tests per the plan, maintaining and completing testing/commissioning documentation, and for securing the necessary sign-offs at each

stage in the commissioning process.

E1020 FUEL FIRED HEAT EXCHANGER:

The existing 300 PSIG Network Heat Exchanger (NHE) (M/N:685 ODF-4112; EIN: 65923X22513) and all associated components, structural supports, platforms, and ladders shall be properly removed. The parts of the NHE are defined as the following:

1. Fuel Pumps (primary and backup).
2. Blower(s).
3. Exhaust Stack.
4. Heat Exchanger.
5. Structural supports for all components including access/maintenance platforms and access ladders.
6. Concrete equipment pads, as required if not reused.
7. Internal piping of the NHE and its associated components.
8. Control Panel for the NHE and all associated parts and wiring.
9. Electrical (power) distribution panel and associated parts and wiring.

Suitably rated blind flanges shall be installed on the upstream side of inlet process air and on the downstream side of the outlet process air and all other relevant sites prior to any dismantling of the existing NHE.

Supply and Install a new 300 psig Fuel Fired Heat Exchanger (FFHE).

All external piping connections shall be reconnected to the new FFHE and fully functional when the new FFHE has been fully installed. The new FFHE shall be a current-production model, which, on the date this solicitation is issued, has been designed, engineered, and sold or offered for sale through advertisements or manufacturer's published catalogs or brochures. Products such as prototype units, pre-production models, or a highly modified current model, where major components have been redesigned, do not qualify as meeting this requirement.

All FFHE components, except the FFHE control panel, shall fit a foot print of 12' Width x 21' Depth. The burner and fuel tank(s), if required, shall be placed in accordance with the requirements of NFPA 31.

The existing NHE exhaust stack shall be completely demolished and replaced with a new stack for the FFHE. Contactor shall perform structure (stress, temperature) analysis on the new structure and any supplied high temperature piping to ensure they are able to expand and contract as needed due to the forces and temperature differences (0 to 1,250 degrees F).

Design and sizing requirements for the new FFHE shall include:

1. The FFHE shall be capable of using JP-5 or JP-8 or a blended mixture. JP-5/JP-8 fuel is defined as a fuel containing either 100% JP-5 or 100% JP-8 or a blend/mixture of JP-5 with JP-8.
2. The FFHE shall be a free-standing structure, designed for outdoor installation, JP-5/JP-8 fuel-fired burner with propane pilot and electronic ignition, heat exchanger tube bundle, combustion chamber, exhaust stack, and a combustion air blower. The elements of combustion shall not come in direct contact with the process air. The combustion system components and the control cabinet for the FFHE shall be

designed to be securely anchored/fastened to the existing slab/building structure.

3. The combustion system shall meet the following performance requirements:

Continuously variable process air flow rate	Primary use: @300 psig: 0-300 ppm is normal
Inlet process air pressure	300 PSIG - 350 psig
Inlet process air temperature	70 degrees F to 110 degrees F
Selectable outlet process air temperature	800 degrees F to 1,250 degrees F +/- 10 degrees F
Minimum thermal efficiency	65% Low Heating Value (LHV) for JP-5/JP-8 fuel with an inlet process air flow and temperature of 300 PPM and 70 - 100 degrees F with an ambient temperature of 70 degrees F
Pressure drop across the FFHE system from the process air inlet pipe connection to the process air outlet pipe connection	Shall not exceed 10 PSID at 300 PPM
Overall thermal efficiency	Overall thermal efficiency > 70% High Heating Value (HHV) at design conditions, as fired on JP-5/JP-8 fuel

4. Contractor shall confirm the above required combustion system performance requirements.
5. The temperature and safety control system shall be designed for outdoor operation. The temperature and safety control system shall also include a control cabinet, designed for indoor installation (See T-2 or PE-21528M), containing a process controller, monitoring and safety controls and monitoring instrumentation displays. All controls and safety devices shall be in accordance with ASME CSD-1-2014.
6. The FFHE shall be capable of a cold start-up with no process air flow through the heat exchanger tube bundle. After the start-up has been initiated, an outlet process air temperature of 1250 degrees F shall be obtainable in less than 30 minutes with 300 PPM process air flow. After the initial start-up, the FFHE shall automatically heat up the process air to the selected outlet process air temperature in three (3) minutes or less, without any detrimental effects on the equipment. It shall be designed to allow a minimum of 24 cycles per 24 hours (One cycle is defined as controls cycling from low flow to operating flow, back to no flow) without reducing expected combustion system life below 20 years.
7. The tube configuration shall be designed to protect the tubes from overheating in the high temperature zone of the heater and to obtain the required efficiency and control at the exhaust of the heater. Tubes shall be so arranged and supported as to avoid damaging or excessive noise-producing vibration. All internal expansion created by tubes operating at design temperatures shall not be transmitted to external inlet and outlet connections. All supports shall be capable of withstanding the rapid temperature changes required for start-up and cycling. Bundle shall be easily removed for inspection and for repair. Thermocouples on tubes shall be designed for replacement without removal of tube bundle.
8. Burner, piping, and equipment shall be furnished and installed in accordance with NFPA 31 and NFPA 86.
9. The equipment shall be provided with shutdown switches to begin automatic shutdown procedures. Operator shall not have to supervise the shutdown.
10. The FFHE shall have the required safety components to automatically shut off the fuel to the burner in the event of an adverse condition that could cause harm to personnel and/or equipment.
11. Provide the FFHE maximum heating capacity (MMBtu/hr.) as soon as it is calculated to FRC East's Air Quality Division (POC Matt Willis, 252-464-7046) for air permit requirements. Other information required to Matt Willis includes stack height and diameter, stack exit gas temperature and velocity, fan performance (SCFM @ IWC), rain cap type (if any), exhaust stack configuration (vertical or other detailed orientation), and whether the system will be equipped with a continuous trim oxygen

- system or other fuel ratio optimizer.
12. All piping shall be replaced with new piping that connects between the new FFHE and the shutoff/block valves on the inlet process air side and the shutoff/block valves on the on the outlet process air side.
 13. The shutoff valves on the inlet 300 psig process air side and on the process outlet air side shall be replaced.
 14. Install safe working surfaces accessible to and from the ground level in the form of ladder(s) or stair(s) for serviceable parts of the new FFHE that are three (3) feet or more above ground level. Working Platforms (to allow safe working area for a minimum of two (2) maintenance personnel), shall be provided at all locations that may require service or maintenance over the life of the FFHE. Working Platforms, ladders, and handrails shall be designed and installed in accordance with OSHA 29 CFR 1910 Subpart D - Walking-Working Surfaces.
 15. In addition to the monitor and safety controls, the following parameters shall be measured and displayed on the indoor FFHE control panel. The FFHE controls shall have the ability to track, trend, and record the FFHE performance. Pressure and temperature indications shall give a normal operating reading near the midpoint of the scale range if analog gauges are supplied.
 - Outlet process air temperature (actual current reading) - readings monitored and trended through METASYS. The METASYS network values displayed and downloaded via network. All equipment connections and terminal connections need to be defined by A&E and provided through contractor.
 - Exhaust gas temperature
 - Internal gas temperature
 - tube wall temperature
 - Fuel supply pressure
 - Inlet process air pressure
 - Inlet process air temperature
 - Combustion air pressure
 - Heat exchange tube temperature
 - Stack temperature
 - Flame failure alarm
 - Process air pressure failure
 - Fuel pressure failure
 - High fuel pressure alarm
 - Differential pressure gauges
 16. The new equipment controls and differential pressure gauge indicators shall be connected and directly interfacing with FRC East's existing Johnson Controls Facilities Management System (FMS). Verification of new equipment shall be integrated into the existing Johnson Controls FMS system shall be conducted with an FRC East representative prior to project closeout and field verify the existing conditions to include the existing controls. Upgrade the existing controls graphics to match new equipment labeling. Controls graphics shall show the building and relative building locations of the equipment to closely match the drawings and As-Built locations. Both the new 300 NHE and the existing 800 NHE shall be connected to

FRC East METASYS network. The following items (including all alarms and warnings) and all items monitored by indoor FFHE control panel shall be monitored and trended by METASYS. In addition, METASYS shall have all function tag number, typical ranges, normal value, warning, shut down and comment on normal operation (opens on decrease, low fire drive, opens on increase, etc.) entered and listed for all items:

- Flame scanner Failure
 - Combustion Air Pressure Low
 - Outlet Temperature Controller
 - Outlet Temperature High
 - HX Differential Pressure low
 - Propane Pilot Gas Low
 - Propane Pilot Gas High
 - JP-5/JP-8 Pressure High
 - JP-5/JP-8 Pressure Low
 - Atomizing Air Pressure low
 - Pilot mixer propane pressure
 - Tube wall temperature controller
 - Tube wall temperature high
 - Tube gas temperature high
 - Stack Temperature high
 - Process inlet pressure low
 - Process inlet temperature
 - JP-5/JP-8 Fuel supply pressure
17. The FFHE combustion system tube bundle shall be constructed of material that meet or exceed the requirements of ASME B31.1 and be designed, constructed and stamped per ASME BPVC Section VIII, Division I. All metals used in the FFHE must meet or exceed the requirements of ASME B31.1 for each particular use in the FFHE.
18. The blower(s) shall be designed to operate outdoors, vibration isolators provided, with an inlet screen to prevent intake of foreign objects (including winter snow and ice). The equipment shall meet OSHA requirements for safety. The blower package shall include the blower and shall be supplied as complete, packaged unit including:
- Motor
 - Mounting Frame
 - Necessary interconnecting piping
 - Controls
 - Safety and operation instrumentation
- The combustion air blower shall supply ambient air at the pressure and flow required for the burner to operate at design conditions.
19. Maximum noise level for the heater, including the blower and all other associated components, shall not exceed 84 dBA at 3 feet. If required, noise dampening shall be included.

20. As a minimum, shut-off valves, piping, support hangers, and anchors shall be provided to connect:
- FFHE process air inlet and manual chain-operated shutoff valve to a flanged connection in the pneumatic piping subsystem.
 - Existing propane supply to the FFHE with a shutoff valve.
 - Existing JP-5/JP-8 fuel supply to the FFHE with shutoff valve.
 - Existing plant instrument air to FFHE with shutoff valve.
 - FFHE process air outlet and a manual chain-operated shutoff valve to a flanged connection in the pneumatic piping subsystem.
21. The FFHE outlet process air pipe shall be insulated per ASTM F683. All external exposed surfaces shall be insulated to minimize heat loss and eliminate personnel hazard or equipped with proper personnel protection guards.
22. A pipe stress analysis shall be performed, prior to the start of acceptance testing, on the following sections of pipe:
- Piping section exiting the new FFHE on the 300 psig network (hot and cold) and continuing through to the last pipe/spring anchor.
 - Bypass piping section exiting the new FFHE and connected to the 800 psig network (hot and cold) and continuing through to the last bypass pipe/spring anchor. Analyze this section for the situation when the double block bleed valve is being utilized and fully functional.
 - Piping section exiting the existing 850 psig FFHE to the cross connection between the 800H line and 300H line, representing the bypass spool location for the 800H and 300 H lines. The subject hot spool section and cold side spool section is to be replaced with a properly rated double block bleed valve and associated components. The double block bleed valves shall have gauges and sensors to ensure safe switching from 300 psig to 850 psig. Analyze this section for the situation when the double block bleed valve is being utilized and fully functional.
23. Accessories provided with the FFHE shall include, but are not limited to, the following:
- High Velocity JP-5/JP-8 fuel fired burner.
 - LP gas pilot ignition system.
 - Fuel-air control valve with low fire start interlock.
 - Pneumatically operated dilution air control valve.
 - Combustion air blower with motor, inlet silencer, and filter.
 - Tube temperature thermocouples.
 - Tube excess temperature switch.
 - Process air outlet temperature thermocouple.
 - Temperature indicating-recording controller (proportional, auto reset and rate action).
 - Manual and automatic fuel shut-off and vent valves.
 - Flame scanner.
 - Flame failure relay.
 - Combustion air and fuel gas low pressure switches.

- High fuel gas pressure switch.
 - Low process air flow switch.
 - Control panel (for remote mounting) to include, but not be limited to items: Temperature indicating-recording controller, Flame scanner, Flame failure relay and pushbuttons, indicating lights and time delay relays.
 - Junction box with ignition transformer (mounted on heater).
 - Fuel pump, piping, and valves to bring JP-5/JP-8 fuel pressure up to the pressure required for FFHE.
24. All peculiar support equipment (tools, fixtures, jigs, instruments etc.) required to operate, maintain, and calibrate each of the subsystems and the overall FFHE shall be supplied with the FFHE.
25. All piping components (valves, gauges, pipe material etc.) shall be designed, constructed, installed and hydrostatically tested per ASME B31.1.
26. The new FFHE shall incorporate appropriate programmable logic controllers and required HMI (controls) for all operations.
27. The Contractor shall warrant the 300 FFHE and all associated parts for a minimum period of three (3) years, to include all parts and labor. This warranty period shall begin after Government acceptance. The warranty shall cover all costs (i.e., labor, travel, meals, hotel, parts, freight, materials, rigging, equipment, supervision, engineering, and transportation expenses) associated with warranty repair and support. Upon notification of a discrepancy covered by the warranty, the Contractor shall arrive at the depot within 48 hours to initiate repairs.
28. All sections and components of the new FFHE shall be OEM factory tested prior to shipment to FRC East.

Contractor shall develop a commissioning and acceptance test plan for the new FFHE and all its associated electrical/instrumentation, mechanical, and piping components. Contractor shall submit the commissioning and acceptance test plan for owner's approval. The commissioning and acceptance test plan shall include system tuning, testing, verification of equipment functionality, and process capability prove-out. Electrical/instrumentation and mechanical/piping check-out will precede commissioning activities to ensure that wiring, instruments, piping, valves and equipment are functional and ready for initial testing. Contractor shall perform all commissioning and acceptance tests per the Plan, maintaining and completing testing/commissioning documentation, and for securing the necessary sign-offs at each stage in the commissioning process.

Tests, as a minimum, shall:

1. Define the objectives and requirements of the performance test (which includes all OEM test (dry out/bake out test) to ensure performance of system and all installed components. Production shall not be shut down for more than two (2) consecutive days (or total of three (3) days for all tests) for any one (1) test. Base line performance metrics and values (vibration levels, temperature levels, etc.) need to be defined, in writing, prior to installation. The subject performance test(s) shall be created and written by the Contractor and submitted for acceptance by OEM and approved by the Government and A&E 60 days before any onsite FFHE construction work commences.
2. Define the objectives and requirements of the acceptance test to ensure the system and all installed components meet acceptable conditions (maximum number of startups allowed, time frame to prove all components are fully operational and

penalty for inability to perform). Production shall not be shut down for more than two (2) consecutive days for any one (1) test (or total of three (3) days for all tests). The subject acceptance test(s) shall be created and written up by the Contractor and submitted for acceptance by OEM and approved by the Government and A&E 60 days before any onsite FFHE construction commences.

Required documentation and manuals are listed below. The Contractor shall provide one (1) electronic copy of all drawings in .dxf / dwg file format, manuals in pdf and word file format, and two (2) hard copies.

1. Engineering Documentation. The A&E shall provide complete drawings of the system. Drawings shall include Block Diagrams, P&IDs, Single Lines, Signal Flow Diagram, PLC Configuration Drawings, Pneumatic Flow Diagrams, Physical System Layouts, Hydraulic Schematics, Pneumatic Schematics, Electrical/Electronic Schematics, and Mechanical Component Drawings. All diagrams shall be cross-referenced to each other, and include component, identity, locations, and I/O channels entry points. The document shall further break down the system diagrams into component schematics, I/O channel signals, power distribution, and wiring connections. Wiring tables shall be provided for all plugs, jacks, and terminal boards with their associated signal designation. The document shall provide a list of all switches, relay indicators, valves, and controls and how it relates to the above diagrams and their locations. Supplemental manuals or copies shall be provided during training on the materials presented to demonstrate how to use the manual to perform signal tracing on the system. The Contractor shall provide one (1) electronic copy of all drawings in .dxf/ dwg file format, and two (2) hard copies. Within each drawing there shall be the Drawing Number, Part Number, and Bill of Materials (BOM). All views required to manufacture the component, material, current revision of the drawing, and finish requirements (if none required, state "No finish required"). The Contractor shall apply ASME Y14.100-2000 "Engineering Drawing Practices" drawing standards. The drawings shall be included as part of the Contractors normal drawing submission. DI-E-5586 is for reference only. Contractor format is acceptable upon government approval.
2. Maintenance Manuals. The A&E and Contractor shall provide maintenance manuals. The first submission shall be delivered 15 days before pre-shipment acceptance testing. The maintenance manuals shall include information on diagnostic, periodic, and preventive maintenance on all equipment. This shall include critical voltage checks, system power supplies, and any components that would allow full system operation. The manual describe critical removal and replacement procedures and the location of the major and complex component procedures list in the Provisioning Document. Supplemental manuals or copies of this manual shall be provided during training on the materials presented to demonstrate how to use the manual to perform maintenance on the system. The final submission shall be delivered 10 days prior to final acceptance testing. Contractor format is acceptable upon Government approval.
3. Operators Manual (OM): The Contractor shall provide an Operators Manual that describes in a step-by-step fashion how to energize, warm-up, start-up, test, operate, and shut down the FFHE. The step-by-step procedures shall include all associated equipment, computer software, instrumentation, controls, sensors, and alarms. The OM shall also describe the emergency conditions for shutdown of the system. The OM must be approved prior to the start of commissioning of the equipment. Contractor format is acceptable upon Government approval.
4. Process Schematic: The contractor shall provide a process schematic detailing the

operation of the FFHE.

Contractor shall supply new FFHE training for a period of at least three (3) eight-hour days and shall thoroughly familiarize personnel with operating and maintaining all mechanical, electrical and electronic equipment and controls in the 300 psig FFHE and all associated components. The Contractor shall create and submit training plan 60 days before acceptance testing for review and acceptance. All technical manuals listed shall be used extensively as reference materials during this training. Training shall include actual hands-on instruction with the equipment.

1. Mechanical maintenance training shall include as a minimum:

- Review all 300 psig FFHE and all associated components mechanical schematics and drawings.
- Component location and function of the 300 psig FFHE and all associated components.
- Troubleshooting procedures and techniques of the 300 psig FFHE and all associated components.
- Repair procedures including disassembly and assembly of all 300 psig FFHE and all associated components.
- Adjustments, calibration, setups (when, how, where) of all 300 psig FFHE and all associated components.
- Preventive maintenance procedures of all 300 psig FFHE and all associated components.
- Thoroughly familiarize (hands on training) all personnel with programming the 300 psig FFHE and all associated components.
- Thoroughly familiarize (hands on training) all personnel with operating and calibrating the 300 psig FFHE and all associated components.
- Thoroughly familiarize (hands on training) all personnel with maintaining and troubleshooting the 300 psig FFHE and all associated components.
- Review the formalized procedure for LOTO procedure for all 300 psig FFHE and all associated components.

2. Electrical and electronic maintenance training shall include as a minimum:

- Review electrical and electronic wiring schematics and drawings for the 300 psig FFHE and all associated components.
- Troubleshooting procedures and techniques for the 300 psig FFHE and all associated components.
- Electrical and electronic equipment servicing for the 300 psig FFHE and all associated components.
- Procedures for adjustments (locating equipment, adjustments to be made, equipment required to make adjustments) for the 300 psig FFHE and all associated components.
- Adjustments, calibration, setups (when, how, where) of the 300 psig FFHE and all associated components.
- Preventive maintenance procedures of the 300 psig FFHE and all associated components.
- Thoroughly familiarize (hands on training) all personnel with programming the

300 psig FFHE and all associated components.

- Thoroughly familiarize (hands on training) all personnel with operating and calibrating the 300 psig FFHE and all associated components.
- Thoroughly familiarize (hands on training) all personnel with maintaining and troubleshooting the 300 psig FFHE and all associated components.
- Review the formalized procedure for LOTO procedure for the 300 psig FFHE and all associated components.

--End of Section--

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

PART FOUR – PERFORMANCE TECHNICAL SPECIFICATIONS

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

PROJECT TABLE OF CONTENTS

PART FOUR – PERFORMANCE TECHNICAL SPECIFICATION (PTSs)

A10	Foundations
D50	Electrical
Z10	General Performance Technical Specifications

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

SECTION A10
FOUNDATIONS
12/18

A10 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

A10 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

A10 1.1.1 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01 DoD Building Code (General Building Requirements).(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed there, which includes the following significant UFC(s):UFC 3-101-01, Architecture UFC 3-220-01, Geotechnical Engineering UFC 3-301-01, Structural Engineering)

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS Section 31 23 00.00 20 Excavation and Fill

A10 1.2 GENERAL REQUIREMENTS

A10 1.2.1 Earthwork

Prepare the following UFGS Specification as part of the project specification and include the prepared specification section in the design submittal for the project:

UFGS Section 31 23 00.00 20 *Excavation and Fill*

A10 1.2.2 Geotechnical Report

A10 1.2.2.1 Subsurface Soils Information

Any provided subsurface soil information is included for the Contractor's information only, and is not guaranteed to fully represent all subsurface conditions. The data included in this RFP is to assist in proposal preparation. Perform such subsurface exploration, investigation, testing, and analysis for the

design and construction of the foundation system at no additional cost to the Government.

A10 1.2.2.2 Contractor-provided Geotechnical Engineer

Retain a Geotechnical Engineer experienced and licensed in the geographic region of the project to interpret any provided data as related to the design concept and develop requirements for bidding. Requirements stated in Parts 3 and 4 of the RFP take precedence over any content of any included geotechnical report. Additional requirements for the geotechnical design of this project are provided elsewhere in this RFP.

Coordinate all work by the Contractor-provided Geotechnical Engineer with the Contracting Officer and ensure that work does not conflict with Base operations. When providing the Foundation Work Design submittal, provide the Contractor's Geotechnical Report (an Adobe Acrobat PDF version on CD and two printed copies) for review and record keeping purposes. The report becomes the property of the Government. Provide the Geotechnical reports generated during construction, such as pile load tests or PDA results, pile driving results and analysis, to the Contracting Officer (an Adobe Acrobat PDF version and two printed copies) for record keeping purposes.

A10 1.2.2.3 Contractor-Provided Geotechnical Report

Submit a written Geotechnical report based upon the Contractor-provided Geotechnical Engineer's subsurface investigation data and all additional field and laboratory testing accomplished at the discretion of the Contractor's Geotechnical Engineer. The Geotechnical Report must include all requirements listed in UFC 3-220-01, *Geotechnical Engineering*, paragraph entitled "Section 1803 "Geotechnical Investigations"; in addition, include the following:

- a. The project site description, vicinity map and site map indicating the location of borings and any other sampling locations. Provide 24 hour groundwater observations for at least 20% of the borings, minimum one boring. Provide notes explaining any abbreviations or symbols used and describing any special site preparation requirements.
- b. Results of all applicable field and laboratory testing, whether Government or Contractor-provided. Address existing subsurface conditions, selection and design of the foundation and floor slab, all underground construction including utility installation and all other site-specific requirements (such as soil stabilization and slope stability).
- c. Engineering analysis, discussion and recommendations addressing:
 - 1) Settlement analysis. Settlement must be limited as required in EM 1110-1-1904, *Settlement Analysis*.
 - 2) Bearing Capacity Analysis.
 - 3) Foundation selection and construction considerations (shallow, deep, special); dimensions, and installation procedures.
 - 4) Site preparation (earthwork procedures and equipment), compaction requirements, building slab preparation (as applicable), soil sensitivity to weather and equipment, groundwater influence on construction, mitigation of expansive soils or liquefaction potential, dewatering requirements, slope stability, and other necessary instructions.

- 5) Sheeting and shoring considerations, as applicable.
- 6) Calculations to support conclusions and recommendations.
- 7) Present recommendations on a structure-by-structure Basis.

Provide the Geotechnical Report signed by the Contractor-provided Geotechnical Engineer.

Submit report accompanied by a cover letter identifying any report recommendations of the report proposed to be adopted into the design which are interpreted by the Contractor as a change condition to the Geotechnical or Pavement related requirements of the RFP.

A10 1.2.2.4 Geotechnical Site Data required in Design Drawings

The Contractor's final design drawings must include the Contractor-provided subsurface data presented in the RFP as noted below, as well as all additional borings and laboratory test data results performed by the Contractor. The data provided must include:

- a. Logs of Borings and related summary of laboratory test results and groundwater observations. Provide 24-hour groundwater observations for at least 20% of the borings, minimum one boring. Provide notes explaining any abbreviations or symbols used and describing any special site preparation requirements.
- b. Indicate locations of all borings on the drawings. Revise applicable design drawings to reference the Contractor's Geotechnical Report as being a basis for design.

A10 1.3 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

Provide verification of satisfactory construction and system performance of the foundations via Performance Verification Testing, and by field inspection, as detailed in this section of the RFP and in Part 2 Section 01 45 00.05 20, *Design and Construction Quality Control*. Provide special tests and special inspections in accordance with Part 2 Section 01 45 00.05 20.

A10 1.3.1 Earthwork

Perform quality assurance for earthwork in accordance with International Building Code (IBC) Chapter 17 and UFGS Section 31 23 00.00 20. A competent person, as defined by COE EM 385-1-1, under supervision of a registered Professional Engineer is required to provide inspection of excavations and soil/groundwater conditions throughout construction. The Engineer must perform periodic site visits throughout construction to assess site conditions. The Engineer, with the concurrence of the Contractor and the Contracting Officer, must update the excavation, sheeting, shoring, and dewatering plans as construction progresses to reflect actual site conditions and submit the updated plan and a written report (with professional stamp) at least monthly informing the Contractor and the Contracting Officer of the status of the plan and an accounting of Contractor adherence to the plan; specifically addressing any present or potential problems. The Engineer must be available to meet with the Contracting Officer at any time throughout the contract duration. The Contractor will bear all costs of the Engineer.

A10 1.4 DESIGN SUBMITTALS

Provide design submittals in accordance with Z10, *General Performance Technical Specifications*, Part 2 Section 01 33 10.05 20, *Design Submittal Procedures*, Facilities Criteria (FC) 1-300-09N, *Navy and Marine Corps Design Procedures*, UFC 3-220-01, *Geotechnical Engineering*, and UFC 1-200-01, *DoD Building Code (General Building Requirements)*.

UFGS sections listed below or in the body of the PTS text are to be used by the Designer of Record (DOR) as a part of the design submittal. The DOR must edit these referenced UFGS sections and submit them as a part of the design submittal specification. Edit the specification sections in accordance with the limitations stated in PTS Section Z10, *General Performance Technical Specifications*.

UFGS Section 31 23 00.00 20 *Excavation and Fill*

A10 1.5 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications*. In addition to the Z10 requirements, the Designer of Record (DOR) must approve the following submittals as a minimum:

- All structural elements necessary for construction
- Contractor-provided geotechnical report
- Controlled fill or backfill material tests
- As-Built drawings - Include a statement on the drawings indicating the method used to verify the allowable design capacity of the piles (load tests or PDA).

A1010 STANDARD FOUNDATIONS

A1010 1.1 SHEETING AND SHORING

Provide sheeting and shoring as required. Provides sheeting and shoring plans signed by the Contractor's Geotechnical Engineer.

A101001 WALL FOUNDATIONS

Provide foundation walls as required in accordance with the requirements of this section and other portions of this RFP.

A101002 COLUMN FOUNDATIONS

Provide column foundations and grade beams as required in accordance with the requirements of this section and other portions of this RFP.

A1020 SPECIAL FOUNDATIONS

A102003 UNDERPINNING

If required, underpin existing construction as required in accordance with the requirements of this section and other portions of this RFP.

A102004 DEWATERING

If foundation work is required, dewater site for foundation construction as required by soil conditions and local subsurface and surface water, including rainfall, and considering any potential adverse impact on adjacent facilities, including settlement. Consult an environmental engineer to determine if the ground water is contaminated prior to dewatering, and for proper handling, storage, and disposal of contaminated ground water. Dewatering requirements and methods must be established by the Contractor's Geotechnical Engineer, based on his subsurface exploration and investigation.

A102005 RAFT FOUNDATIONS

If required, provide a raft foundation as required to achieve the requirements of this section and other portions of this RFP and as required by the Contractor's Geotechnical Engineer.

A102006 PRESSURE INJECTED GROUTING

If required, pressure inject grout as required in accordance with the requirements of this section and other portions of this RFP.

A1030 GROUND FLOOR SLABS

A103001 STANDARD SLAB ON GROUND

If allowed by site conditions and recommended by the Contractor-provided Geotechnical Engineer, provide standard concrete slab on grade to meet the required loading requirement in accordance with the requirements of this section and other portions of this RFP.

Design and construct floor slab on grade in accordance with EM 1110-1-1904, Settlement Analysis, and so that any settlement of the floor slab will not result in harmful distortion of the floor, nor vertical misalignment of the floor with other building components (such as doorways and trenches), building utilities or with pile-supported building elements. If these above conditions cannot be met, provide a pile supported slab.

A103003 TRENCHES

Provide reinforced concrete trenches with water proof joints and seals to prevent ground water infiltration.

A103004 PITS AND BASES

Provide reinforced concrete pits and bases with water proof joints and seals to prevent ground water infiltration.

A103005 FOUNDATION DRAINAGE

A103005 1.1 PERIMETER FOUNDATION DRAINAGE

If perimeter wall foundation work is required, provide a perimeter drainage system to remove water away from the foundation of the facility and to be deposited in the storm sewerage system of the site. Consult an environmental engineer to determine if the ground water is contaminated prior to installing foundation drainage, and for proper handling, storage, and disposal of contaminated ground water. Provide perforated pipe for the foundation drainage system of the type specified, and of a size sufficient to remove water from the foundation successfully. Provide one, or a combination of more than one, of the following types of pipe:

- a. Corrugated Polyethylene (PE) Drainage Pipe: ASTM F 405, heavy duty, for pipe 3 to 6 inches in diameter inclusive; ASTM F 667 for pipe 8 to 24 inches in diameter. Fittings

- must be manufacturer's standard type and must conform to the indicated specifications.
- b. Acrylonitrile-Butadiene-Styrene (ABS) Pipe: ASTM D 2751, with a maximum SDR of 35.
 - c. Polyvinyl Chloride (PVC) Pipe: ASTM F 758, Type PS 46, ASTM D 3034, or ASTM F 949 with a minimum pipe stiffness of 46 psi.

Installation includes wrapping the pipe with filter fabric sock and careful bedding of the pipe with appropriate fill material to ensure that the pipe does not become obstructed with the bedding material.

A103090 OTHER SLAB ON GROUND

A103090 1.1 BLOCK OR BOARD PERIMETER INSULATION

Provide only thermal insulating materials recommended by manufacturer for perimeter insulation. Provide one of the board or block thermal insulations listed below conforming to the following standards:

- a. Extruded Preformed Cellular Polystyrene: ASTM C 578

Provide insulation to meet requirements of UFC 3-101-01, *Architecture*.

-- End of Section --

SECTION D50

ELECTRICAL 12/18

D50 GENERAL

RFP Part 3, including the Engineering System Requirements (ESR) provides project specific requirements. The RFP Part 4, Performance Technical Specifications (PTS), provides generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

D50 1.1 NARRATIVE

This section covers installations inside the facility and out to the five foot line. See PTS Section G40, *Site Electrical*, for continuation of systems beyond the five foot line.

D50 1.2 ELECTRICAL DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

When all product Quality Control information is included in the Unified Facility Criteria (UFC) and there are requirement options identified in the ESR, then the Uniformat Level 4 titles (and possible subtitles) are included without additional verbiage. One example of this is D501090, OTHER SERVICE AND DISTRIBUTION.

D50 1.2.1 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	DoD Building Code (General Building Requirements)(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed therein, which includes the following significant UFC(s):UFC 3-501-01, Electrical Engineering)
UFC 1-200-02	High Performance and Sustainable Building Requirements
UFC 3-580-10	Navy and Marine Corps Intranet (NMCI) Standard Construction Practices
UFC 3-501-01	Electrical Engineering
UFC 3-520-01	Interior Electrical Systems

D50 1.3 QUALITY ASSURANCE

Submit Qualifications, Certifications, and Test Plans indicated herein 45 calendar days prior to the expected date of execution. Notify the Contracting Officer 14 calendar days prior to all testing. Submit test results within 7 calendar days of completion of testing.

The Designer of Record is responsible for approving the submittals listed below.

D50 1.3.1 NEC Qualified Worker

Provide in accordance with NFPA 70. Qualified Workers are allowed to be assisted by helpers on a 1 to 1 ratio, provided such helpers are registered in recognized apprenticeship programs. Submit a certification confirming NEC Qualified Worker requirements.

D50 1.3.2 Qualified Telecommunications Worker

All installers assigned to the installation of telecommunications systems or any of its components must be Building Industry Consulting Services International (BICSI) Registered Cabling Installation Technicians or have a minimum of 3 years of experience in the installation of the specified copper and fiber optic cable and components. Include names and locations of two projects successfully completed using optical fiber and copper communications cabling systems. Include written certification from users that systems have performed satisfactorily for not less than 18 months. Include specific experience in installing and testing structured telecommunications distribution systems using optical fiber and Category 5e cabling systems.

D50 1.3.3 Material Standards

D50 1.3.3.1 Field-Required Nameplates

Provide laminated plastic nameplates for each switchboard, switchgear, panelboard, equipment enclosure, motor controller, relay, and switch. Each nameplate must identify the function and, when applicable, the position. Provide melamine plastic nameplates, 0.125 inch (3 mm) thick, white with black center core. Surface to be matte finish with square corners. Accurately align lettering and engrave into the core. Minimum size of nameplates is 1-inch by 2-1/2 inches (25 mm by 65 mm). Minimum size of lettering is 0.25 inch (6.35 mm) high normal block style.

D50 1.3.4 Factory Testing

The Government reserves the right to witness all factory testing. The manufacturer must have a calibration program that assures that all test instruments are maintained within rated accuracy.

D50 1.3.5 Electrical System Startup and Testing

Submit test plans for approval. Tailor test plans to the systems provided.

As part of the test plan, list make and model and provide functional description of the test instruments and accessories and describe the setup of the tests to be conducted. Test instruments must be capable of measuring and recording or displaying test data at a

higher resolution and greater accuracy than specified for the equipment's performance.

D50 1.3.5.1 Factory Trained Engineer

Provide a factory trained engineer to supervise start-up and testing as required in referenced specifications.

D50 1.3.5.2 Performance Verification Testing

Perform in-service demonstration that all circuits and devices are in operating condition. Tests must confirm that each item of control equipment will function not less than five times. Provide all necessary test equipment, tools, fuel, load banks, labor, and materials for testing. As a minimum, test all systems in accordance with manufacturer's recommendations. Additional testing requirements for the various systems are described with those systems, hereinafter. Assure that all test instruments are maintained within rated accuracy. Dated calibration labels are to be visible on all test equipment.

Submit a separate electrical field test plan in accordance with manufacturer's recommendations and that conforms to NETA ATS for each piece of Electrical Distribution Equipment and System requiring Performance Verification Testing.

The following items identify specific test requirements. Additional test requirements are contained in the applicable UFGS.

- 1) Check tightness of connections in accordance with NETA ATS.

D50 1.4 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications*. In addition to the PTS Section Z10 requirements, the Designer of Record (DOR) must approve the following construction submittals as a minimum:

Electrical Equipment, OMSI information for equipment, and Quality Assurance Submittals listed above.

D50 1.4.1 Sustainable Construction Submittal

Submit sustainable construction submittals in accordance with Part 2 Section 01 33 29.05 20, *Sustainability Reporting for Design-Build*.

D50 1.5 VARIABLE FREQUENCY DRIVES (VFD)

When Variable Frequency Drives are required, the Designer of Record must utilize UFGS Section 26 29 23 for the project specification, and submit the edited specification section as a part of the design submittal for the project.

D50 1.6 BRANCH WIRING

All homerun circuits must contain no more than 3 phase conductors. Provide switches that comply with NEMA WD-1 and UL 20.

SECTION Z10

GENERAL PERFORMANCE TECHNICAL SPECIFICATION 12/18

Z10 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

Z10 1.1 NARRATIVE

All Performance Technical Specification (PTS) sections must be used in conjunction with all parts of the Design Build (D/B) Request for Proposal (RFP) to determine the full requirements of this solicitation. This PTS section provides general requirements for the other PTS sections of this RFP and is used in conjunction with the other PTS sections.

Refer to Part 2 Section 01 33 10.05 20, *Design Submittal Procedures* for the order of precedence of the RFP Parts. Requirements listed in the project program take precedence over the PTS sections requirements; therefore, requirements identified in the project program eliminate options related to that requirement in the PTS sections.

Z10 1.2 DESIGN GUIDANCE

Provide work in compliance with the following design standards and codes, as a minimum. Government standards listed in this RFP take precedence over industry standards.

The PTS Sections reference published standards, the titles of which can be found in the *Unified Master Reference List (UMRL)* on the Whole Building Design Guide at the [Unified Facilities Guide Specification \(UFGS\) Website](#). The publications referenced form a part of this specification to the extent referenced. The publications are referred to in the section text by the basic designation only. Industry standards, codes, and Government standards referenced in the section text, and not found in the UMRL, are listed at the beginning of the PTS sections.

The advisory provisions of all referenced codes, standards, and specifications must be mandatory; substitute words such as "must", or "required" for words such as "should", "may", or "recommended," wherever they appear. The results of these wording substitutions incorporate these code and standard statements as requirements. Reference to the "authority having jurisdiction" for variance from criteria must be interpreted to mean the "Chief Engineer, NAVFAC" and for contractual obligations on this project must be interpreted to mean the "Contracting Officer". Comply with the required and advisory portions of the current edition of the standard at the time of contract award.

The following list of codes and standards is not comprehensive and is augmented by other codes and standards referenced and cross-referenced in the RFP.

Z10 1.2.1 INDUSTRY CODES

INTERNATIONAL BUILDING CODE (IBC) as modified by UFC 1-200-01. UFC 1-200-01 applies the IBC to the project and references other commercial standards and UFC criteria that become part of the contract.

Z10 1.2.2 INDUSTRY REQUIREMENTS

WHOLE BUILDING DESIGN GUIDE (WBDG)

WHOLE BUILDING DESIGN GUIDE, Ensure Occupant Safety and Health (Systems Safety Engineering) at http://www.wbdg.org/design/ensure_health.php

Z10 1.2.3 GOVERNMENT STANDARDS

Z10 1.2.3.1 UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	DoD Building Code (UFC 1-200-01 is a hub document that provides general building requirements and references other critical UFCs. A reference to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs listed therein.)
UFC 1-200-02	High Performance and Sustainable Building Requirements
FC 1-300-09N	Navy and Marine Corps Design Procedures

Z10 1.2.3.2 FEDERAL STANDARDS

Architectural Barriers Act Standards with DEPSECDEF Memorandum 31 Oct 2008, "Access for People with Disabilities".

Occupational Safety and Health Administration (OSHA)

Z10 1.3 MATERIALS AND EQUIPMENT REQUIREMENTS IDENTIFICATION

Z10 1.3.1 MATERIALS STANDARD

Refer to the Project Program for identification of government furnished equipment.

The equipment items must be supported by service organizations that are 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.

Materials, equipment, fixtures, and other appurtenances must comply with applicable Underwriters Laboratories, (UL) Inc., American National Standards Institute, Inc., and National Electrical Manufacturer's Association standards or applicable standards of a similar independent testing organization. All materials must be new, and must bear the label of Underwriters Laboratories whenever standards have been established and label service is normally and regularly furnished by the agency. All equipment provided must be listed and labeled suitable for the specified purpose, environment, and application and installed in accordance with manufacturer's recommendations. Insulation must be asbestos free.

Z10 1.3.2 EQUIPMENT NAMEPLATE IDENTIFICATION

Each item of equipment must 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.

Z10 1.3.3 FIELD-APPLIED NAMEPLATES

Provide laminated plastic nameplates for each piece of equipment. Each nameplate must identify the function and, when applicable, the number designation of that piece of equipment as used in the design documents. Provide melamine plastic nameplates, 0.125 inch (3 mm) thick, white with black center core.

Z10 1.4 COMMISSIONING

Commission the building systems identified in Part 3 Chapter 2.0 "Project Objectives", paragraph titled "Building Commissioning". Refer to Part 2 Section 01 45 00.05 20, *Design and Construction Quality Control* for the Commissioning Authority's required qualifications and responsibilities and comply with UFGS 01 91 00.15 20 Total Building Commissioning modified as necessary to include all applicable systems included in the final design. Test reports must be certified by the Commissioning Authority (CA), that work is in compliance with requirements of the RFP.

Z10 1.5 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTS

Verification of satisfactory construction and system performance must be via performance verification testing, acceptance tests, and submittal of test reports certified by the Designer of Record (DOR), that work is in compliance with requirements of the RFP. The Government reserves the right to witness all performance verification and acceptance tests, review data, and request other such additional inspections and repeat tests as necessary to ensure that the work and provided services conform to the stated requirements. Contractor must pay the cost of all testing.

Refer to each PTS section to identify performance verification and acceptance testing required by the work specified in that PTS section.

Z10 1.6 SUBMITTALS

Contractor's design submittals that combines design and construction submittals, must jointly comply with Part 2 Sections 01 33 00.05 20, *Construction Submittal Procedures* and 01 33 10.05 20, *Design Submittal Procedures*. Contractor's construction submittals that are submitted separate from the design submittals must comply with Part 2 Section 01 33 00.05 20, *Construction Submittal Procedures*.

Refer to "Construction Quality Control" in Part 2 Sections 01 33 00.05 20, *Construction Submittal Procedures* and 01 45 00.05 20, *Design and Construction Quality Control* to define reviewing and approving Authority of design and construction submittals.

Utilize the same materials and equipment that are approved and provided for an initial facility design, on all follow-on facilities that use the same design with-in this contract. Once the initial facility design is approved by the Government, the Contractor must obtain Government approval to change materials and equipment when designing and constructing follow-on facilities utilizing the same design.

Z10 1.6.1 DESIGN SUBMITTALS

Submit design submittals in accordance with Part 2 Section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures*, and other discipline-specific guidelines listed in the applicable PTS sections.

Part 2 Section 01 33 10.05 20, *Design Submittal Procedures* requires the use of UFGS sections in the development of the Contractor originated specification. The Designer of Record (DOR) must edit the UFGS sections for the project and submit the edited

specification as a part of the design submittal. The DOR must edit the UFGS as follows:

- (1) Prepare UFGS Specifications as part of the project specification,
- (2) Delete only portions of the UFGS specification that are not applicable to the project,
- (3) Edit only the bracketed choices that are within the UFGS specification text,
- (4) Edit blank bracketed options to include requirements that exercise prudence and adherence to acceptable industry standards,
- (5) Comply with the directions, directives, and requirements of all UFGS Criteria Notes. The UFGS Criteria Notes are typically bordered on the top and bottom by a line of asterisks to highlight their location.
- (6) If proprietary information is provided or required to streamline the construction submittal process, include proprietary information in the edited UFGS sections and added to the end of each UFGS section. Confirm that the proprietary products, materials, and systems listed in the specifications are in compliance with the requirements of the RFP.

Z10 1.6.2 CONSTRUCTION SUBMITTALS

Submit for approval to the Designer of Record (DOR), construction submittals, product data, manufacturer's information, shop drawings, and test reports on all materials and systems installed in the project, unless the DOR designates submittal for QC approval. Refer to each PTS section for further construction submittal requirements relating to the work identified in that particular PTS section. Some PTS sections reference UFGS sections that will require more construction submittals for DOR approval than is stated above. Refer to Part 2 Section 01 33 00.05 20 for the list of construction submittals reserved for Government Approval and Government Surveillance.

--End of Section--

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

PART FIVE - PRESCRIPTIVE SPECIFICATIONS

Not Applicable

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

PART SIX - ATTACHMENTS

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

PART SIX – ATTACHMENTS (APPENDIX)

Appendix 1 – Marked Up Piping Drawings

Appendix 2 – Reference Specifications - Test Cell Piping B137 sections 15212 to 15216

Appendix 3 – Replace Piping-Shop 940 HazMat Report

Appendix 4 – Performance Appendix Form (PAP)

Appendix 5 – Permits Records of Decision (PROD) Form

Appendix 6a – BVD under 150k

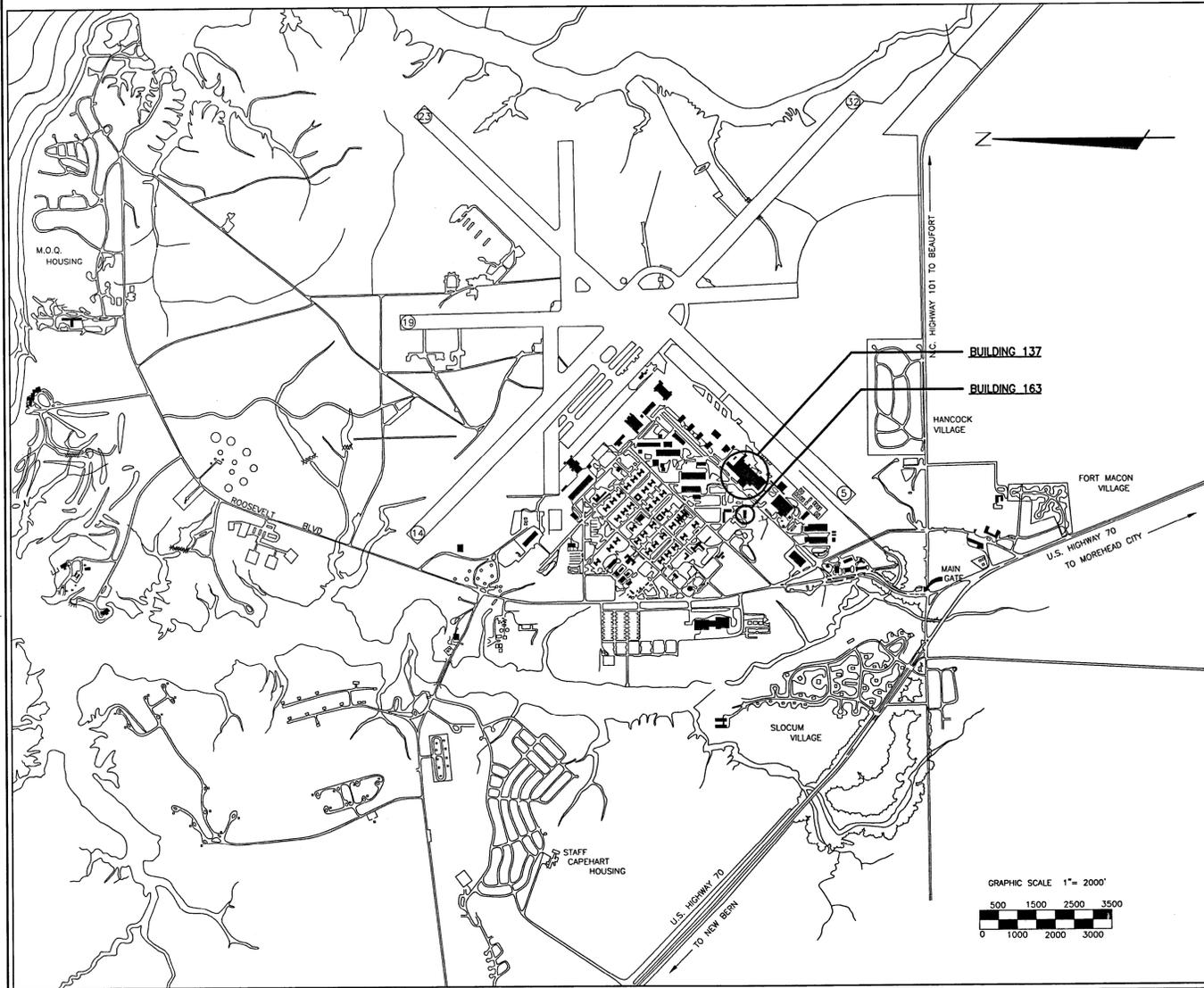
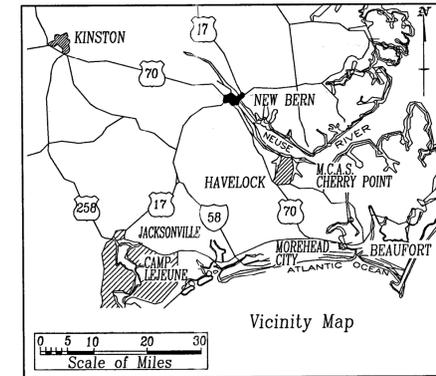
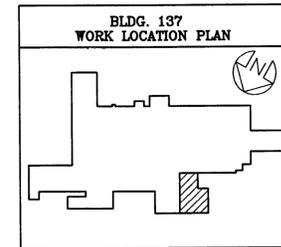
Appendix 6b – BVD over 150K

Appendix 7 - Performance-Rating-Method-Compliance-Form-2013

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

APPENDIX 1 – MARKED UP PIPING DRAWINGS

REPLACE PNEUMATIC TEST CELL PIPING BUILDING NO.137 MCAS CHERRY POINT N.C. PROJECT NO.CP9174M



DRAWING INDEX		
SHEET NUMBER	TITLE	NAVFAC NO.
T-1	TITLE SHEET	4406696
T-2	ACCESS PLAN	4406697
S-1	PIPE SUPPORT DETAILS	4406698
S-2	PIPE SUPPORT DETAILS	4406699
S-3	PIPE SUPPORT DETAILS	4406700
S-4	PIPE SUPPORT DETAILS	4406701
M-1	MECHANICAL LEGENDS AND ABBREVIATIONS	4406702
M-2	COMPRESSOR ROOM AND APU TEST FACILITY - DEMOLITION	4406703
M-3	TEST STATION AND FURNACE AREA - DEMOLITION	4406704
M-4	CHANNEL ROOM - UPPER AND LOWER LEVEL - DEMOLITION	4406705
M-5	SOUTH END - ROOF PLAN - DEMOLITION	4406706
M-6	COMPRESSOR ROOM AND APU TEST FACILITY - NEW WORK	4406707
M-7	TEST STATION AND FURNACE AREA - NEW WORK	4406708
M-8	CHANNEL ROOM - UPPER AND LOWER LEVEL - NEW WORK	4406709
M-9	SOUTH END - ROOF PLAN - NEW WORK	4406710
M-10	NORTH END - ROOF PLAN - NEW WORK	4406711
M-11	SECTIONS A & B - NEW WORK	4406712
M-12	PIPING SCHEMATIC - DEMOLITION	4406713
M-13	PIPING SCHEMATIC - NEW WORK	4406714
E-1	EMERGENCY POWER OFF SWITCH DIAGRAMS	4406715
E-2	TEST STATION AND FURNACE AREA - NEW WORK	4406716
E-3	COMPRESSOR ROOM AND APU TEST FACILITY - NEW WORK	4406717
E-4	CHANNEL ROOM - UPPER AND LOWER LEVEL - NEW WORK	4406718

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS AIR STATION, CHERRY POINT, N.C. CP9174M, REPLACE PNEUMATIC TEST CELL PIPING, BUILDING 137 TITLE SHEET	
CODE ID NO. 800911 SIZE D SCALE: 1/4" = 1'-0" FED DRAWING NO. STA. PROJ. NO. CP9174M SPEC. NO. 05-99-3587 CONSTR. CONTR. NO. 1 * 015227 NAVFAC DRAWING NO. 4406696	SHEET 1 OF 23 T-1

1

2

3

4

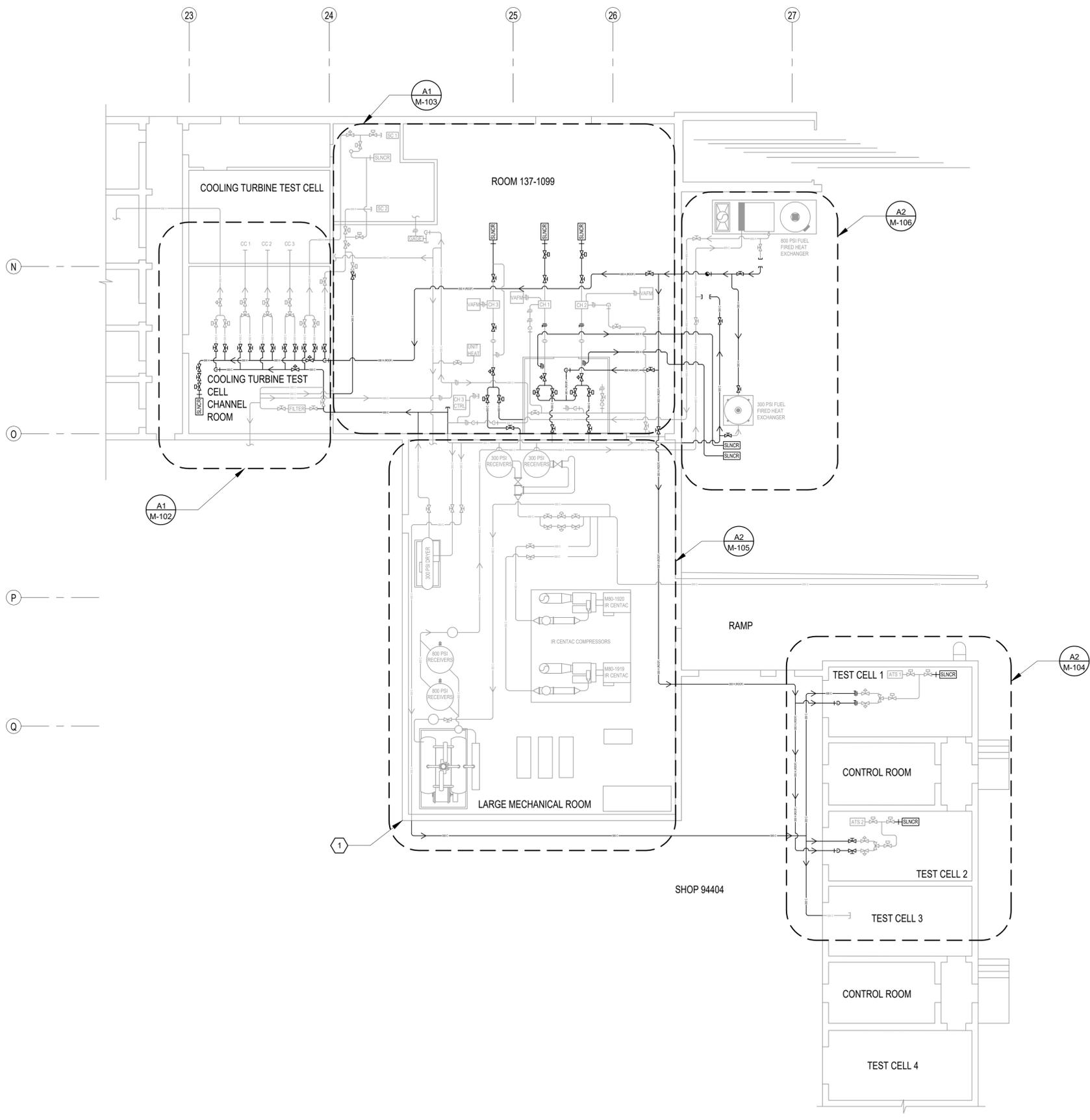
5

D

C

B

A



GENERAL NOTES

1. ALL WORK INDICATED ON THIS DRAWING(S) SHALL COMPLY WITH FEDERAL BUILDING CODES.
2. ALL WORK ASSOCIATED WITH THIS PACKAGE (I.E. - DELIVERY DATES, INSTALLATION, RELOCATIONS, ETC) SHALL BE COORDINATED THROUGH THE PROJECT MANAGER, JULIEN MILES 252-464-8837.
3. CONDITIONS SHOWN ARE BASED ON EXISTING PLANS AND FIELD OBSERVATION WITHOUT DEMOLITION.
4. DIMENSIONS SHOWN ARE APPROXIMATE. FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIAL AND COMMENCING WORK.

KEYNOTES

1. CURRENTLY UNDER CONSTRUCTION. LAYOUT WILL CHANGE VIA DUKE ENERGY. LARGE MECHANICAL ROOM ONLY.

LEGEND AND ABBREVIATIONS

800 PSI -- HOT	800 H	—
800 PSI -- COLD	800 C	—
300 PSI -- HOT	300 H	—
300 PSI -- COLD	300 C	—
PIPE CONTINUES		—
DIRECTION OF FLOW		→
CAP		⊥
PIPE TURN DOWN		↘
PIPE TURN UP		↗
ORIFICE PLATE		⊥
BUTTERFLY VALVE		⊕
MIXING VALVE		⊕
MK. 1 VALVE		⊕
MK. 9 VALVE		⊕
GATE VALVE		⊕
OTHER VALVES		⊕
FILTER		⊕
SILENCER		⊕
SILENCER ON ROOF		⊕
COOLING TURBINE CHANNEL		CC
STARTER CHANNEL		SC
CHANNEL		CHX
VARIABLE AREA FLOW METER		VAFM
CHANNEL 3 CONTROLLER		CH3 CTRL
MODINE UNIT HEATER		UNIT HEAT
PRESSURE GAGE		GAGE

REV	DESCRIPTION	DATE	APPR



NO PRELIMINARY CONSTRUCTION
 DIVISION APPROVED WHEN SIGNED
 2022DEC21

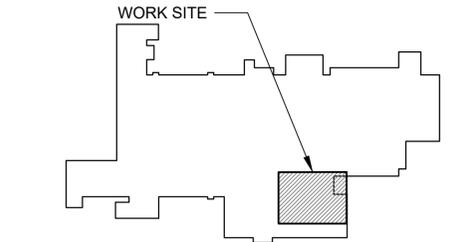
DESIGNER	W.DOHENY
DRAWN	J.DRUMM
CHECKED	K.WETHERINGTON
REVIEWED	M.CHAPOTON
APPROVED	C.YDE

FLEET READINESS CENTER EAST
 U.S. MARINE CORPS AIR STATION, CHERRY POINT, NC
300 PSI AND 800 PSI PIPING WORK
300 PSI & 800 PSI PIPING FLOOR PLAN
 DIVISION DWG NO.
PE-22056

BUILDING 137	
SHOP: 94400	
SIZE	CAGE CODE
D	96916
M-101	
SCALE: AS NOTED	
WO: XL93928	
SHEET 1 OF 6	

300 PSI AND 800 PSI PIPING FLOOR PLAN

SCALE: NOT TO SCALE



B137 WORK LOCATION

SCALE: NOT TO SCALE



1

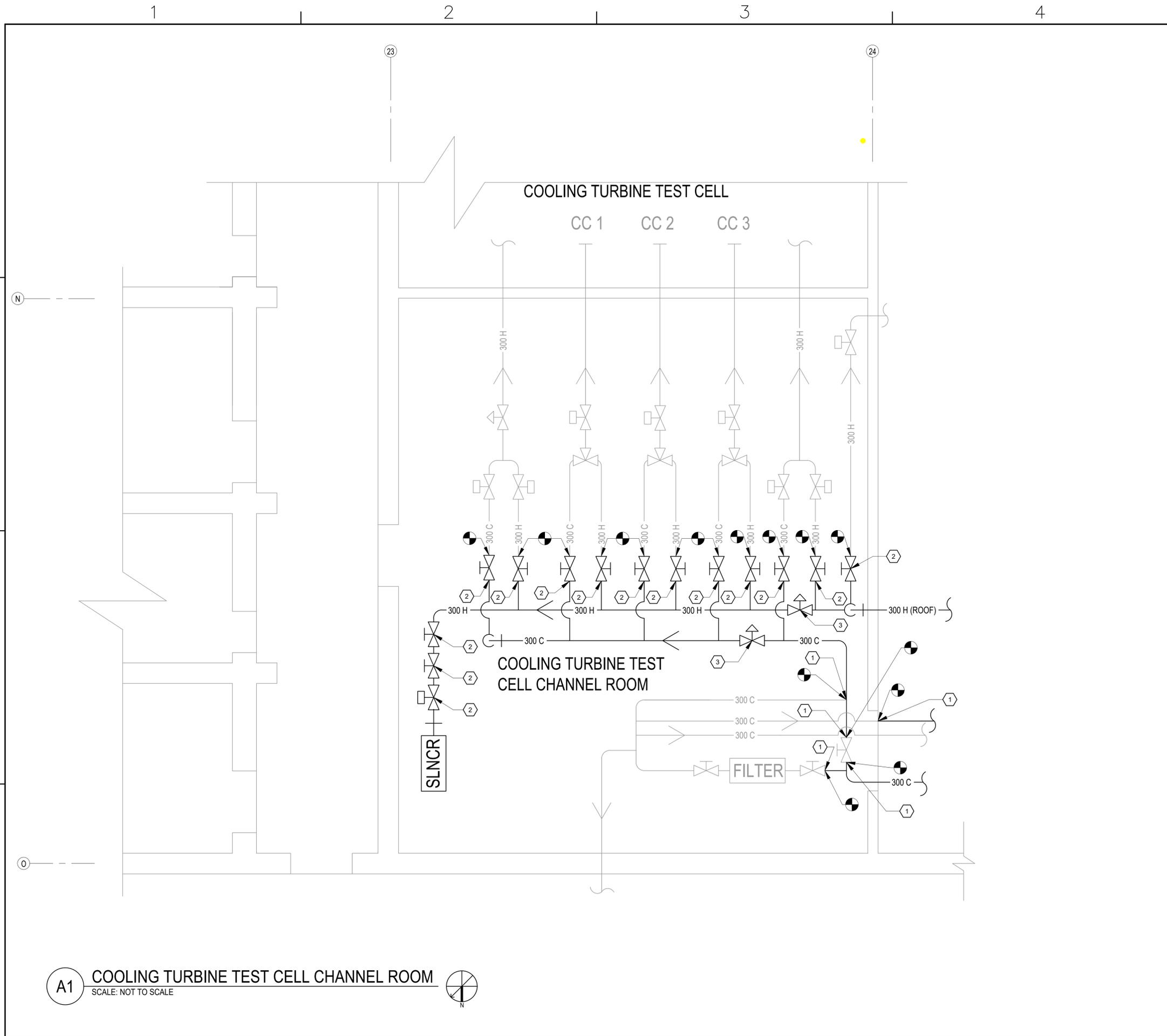
2

3

4

5

2-2019



GENERAL NOTES

1. ALL WORK INDICATED ON THIS DRAWING(S) SHALL COMPLY WITH FEDERAL BUILDING CODES.
2. ALL WORK ASSOCIATED WITH THIS PACKAGE (I.E. - DELIVERY DATES, INSTALLATION, RELOCATIONS, ETC) SHALL BE COORDINATED THROUGH THE PROJECT MANAGER, JULIEN MILES 252-464-8837.
3. CONDITIONS SHOWN ARE BASED ON EXISTING PLANS AND FIELD OBSERVATION WITHOUT DEMOLITION.
4. DIMENSIONS SHOWN ARE APPROXIMATE. FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIAL AND COMMENCING WORK.

KEYNOTES

- ① TERMINATION POINT IS WHERE CARBON STEEL MEETS STAINLESS STEEL
- ② VALVE TO BE REPLACED SHALL MATCH EXISTING.
- ③ VALVE TO BE REPLACED SHALL MATCH EXISTING. CHECK THE TRIM.

LEGEND AND ABBREVIATIONS

300 PSI -- HOT	300 H
300 PSI -- COLD	300 C
PIPE CONTINUES	
DIRECTION OF FLOW	
PIPE TURN DOWN	
MIXING VALVE	
MK. 1 VALVE	
MK. 9 VALVE	
GATE VALVE	
FILTER	
SILENCER ON ROOF	
TERMINATION POINT	
COOLING TURBINE CHANNEL	

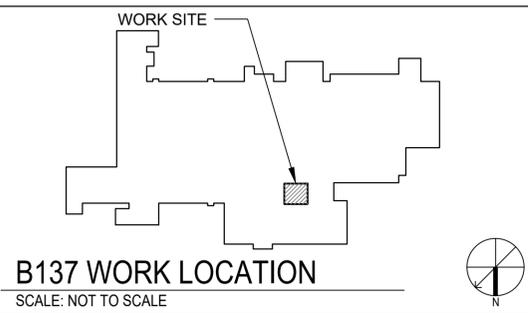
REV	DESCRIPTION	DATE	APPR



NO PRELIMINARY CONSTRUCTION
 DIVISION APPROVED WHEN SIGNED
 2022DEC21

DESIGNER	W.DOHENY
DRAWN	J.DRUMM
CHECKED	K.WETHERINGTON
REVIEWED	M.CHAPOTON
APPROVED	C.YDE

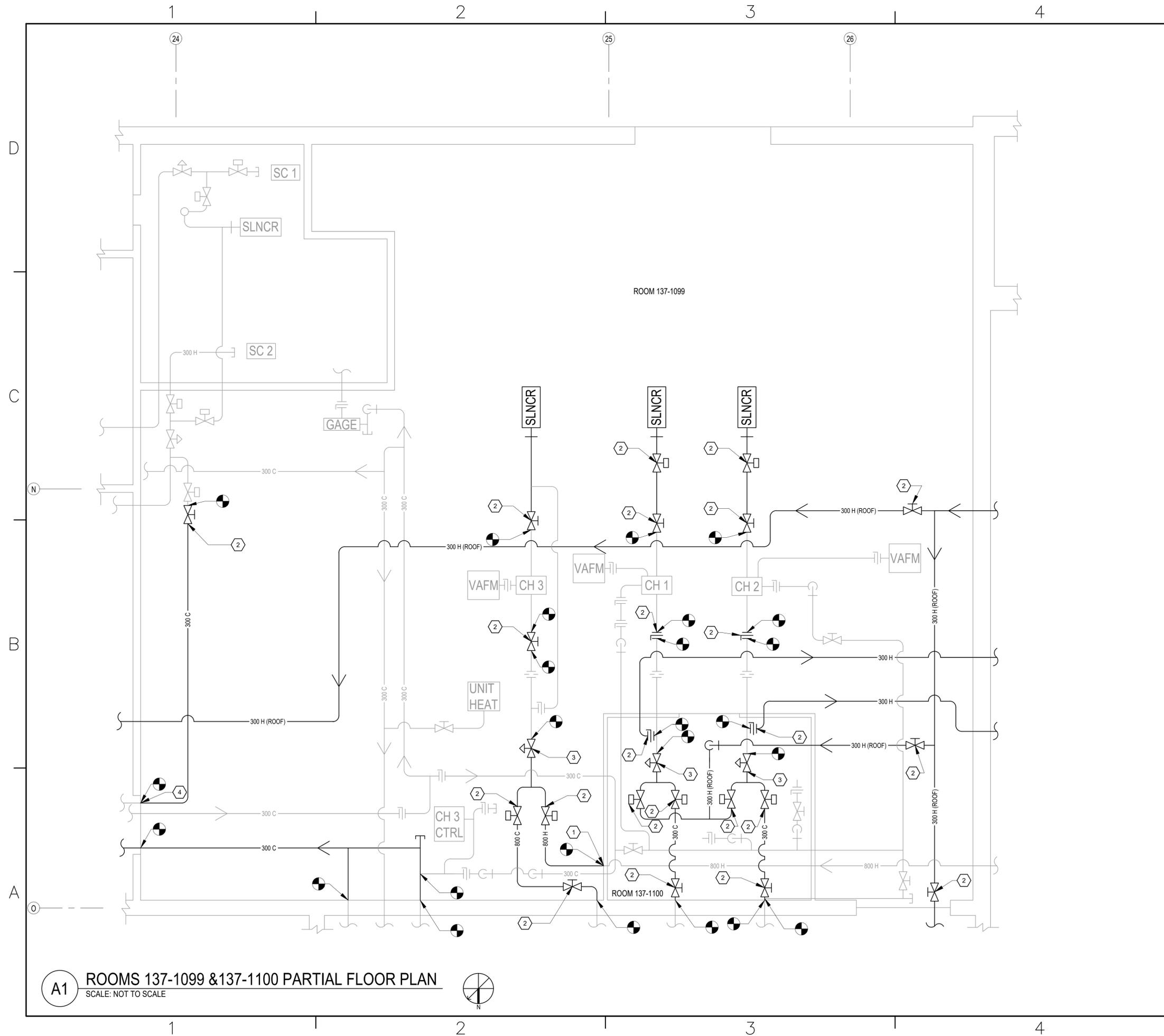
FLEET READINESS CENTER EAST
 U.S. MARINE CORPS AIR STATION, CHERRY POINT, NC
300 PSI AND 800 PSI PIPING WORK
 SMALL MECHANICAL ROOM PARTIAL FLOOR PLAN
 DIVISION DWG NO.
PE-22056



B137 WORK LOCATION
 SCALE: NOT TO SCALE

A1 COOLING TURBINE TEST CELL CHANNEL ROOM
 SCALE: NOT TO SCALE

BUILDING	137
SHOP	94400
SIZE	CAGE CODE
D	96916
M-102	
SCALE: AS NOTED	
WO: XL93928	
SHEET 2 OF 6	



A1 ROOMS 137-1099 & 137-1100 PARTIAL FLOOR PLAN
SCALE: NOT TO SCALE

GENERAL NOTES

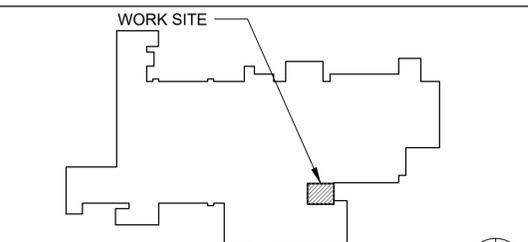
1. ALL WORK INDICATED ON THIS DRAWING(S) SHALL COMPLY WITH FEDERAL BUILDING CODES.
2. ALL WORK ASSOCIATED WITH THIS PACKAGE (I.E. - DELIVERY DATES, INSTALLATION, RELOCATIONS, ETC) SHALL BE COORDINATED THROUGH THE PROJECT MANAGER, JULIEN MILES 252-464-8837.
3. CONDITIONS SHOWN ARE BASED ON EXISTING PLANS AND FIELD OBSERVATION WITHOUT DEMOLITION.
4. DIMENSIONS SHOWN ARE APPROXIMATE. FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIAL AND COMMENCING WORK.

KEYNOTES

- ① NEW GATE VALVE TO BE INSTALLED. INSTALL AT WALL.
- ② VALVE TO BE REPLACED SHALL MATCH EXISTING.
- ③ VALVE TO BE REPLACED SHALL MATCH EXISTING. CHECK THE TRIM.
- ④ TERMINATION POINT IS WHERE CARBON STEEL MEETS STAINLESS STEEL

LEGEND AND ABBREVIATIONS

800 PSI -- HOT	800 H
800 PSI -- COLD	800 C
300 PSI -- HOT	300 H
300 PSI -- COLD	300 C
PIPE CONTINUES	
DIRECTION OF FLOW	
CAP	
PIPE TURN DOWN	
ORIFICE PLATE	
BUTTERFLY VALVE	
MIXING VALVE	
MK. 1 VALVE	
MK. 9 VALVE	
GATE VALVE	
FILTER	
SILENCER ON ROOF	
TERMINATION POINT	
COOLING TURBINE CHANNEL	CC
STARTER CHANNEL	SC
CHANNEL	CHX
VARIABLE AREA FLOW METER	VAFM
CHANNEL 3 CONTROLLER	CH3 CTRL
MODINE UNIT HEATER	UNIT HEAT
PRESSURE GAGE	GAGE



B137 WORK LOCATION
SCALE: NOT TO SCALE

REV	DESCRIPTION	DATE	APPR
<p>PRELIMINARY FOR CONSTRUCTION NO DIVISION APPROVAL WHEN SIGNED 2022DEC21</p>			
DESIGNER	W.DOHENY		
DRAWN	J.DRUMM		
CHECKED	K.WETHERINGTON		
REVIEWED	M.CHAPOTON		
APPROVED	C.YDE		
<p>FLEET READINESS CENTER EAST U.S. MARINE CORPS AIR STATION, CHERRY POINT, NC 300 PSI AND 800 PSI PIPING WORK ROOMS 137-1099 & 137-1100 PARTIAL FLOOR PLAN DIVISION DWG NO. PE-22056</p>			
<p>BUILDING 137 SHOP: 94400 SIZE D CAGE CODE 96916 M-103 SCALE: AS NOTED WO: XL93928 SHEET 3 OF 6</p>			
2-2019			

1

2

3

4

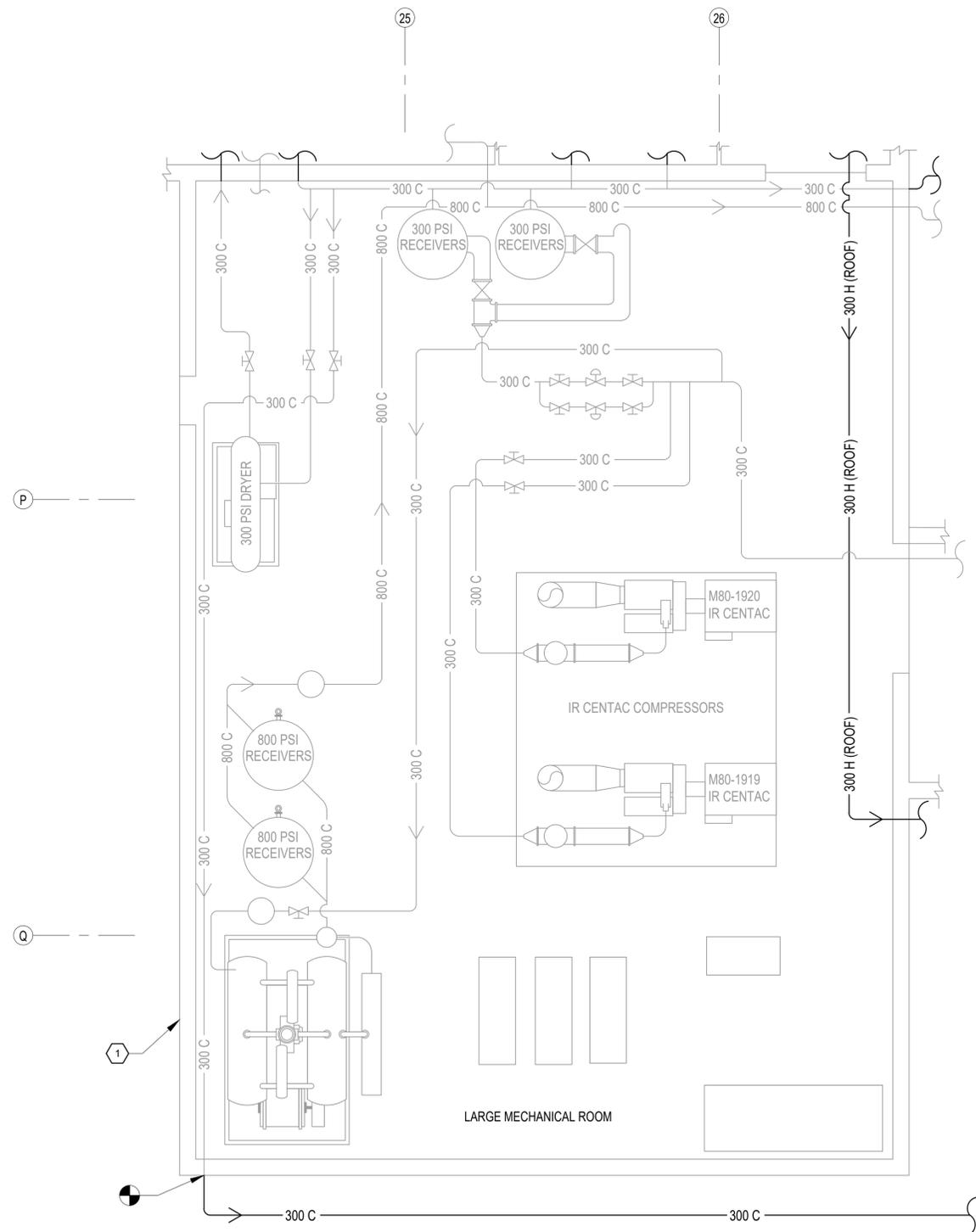
5

D

C

B

A



A2 LARGE MECHANICAL ROOM PARTIAL FLOOR PLAN
SCALE: NOT TO SCALE

GENERAL NOTES

1. ALL WORK INDICATED ON THIS DRAWING(S) SHALL COMPLY WITH FEDERAL BUILDING CODES.
2. ALL WORK ASSOCIATED WITH THIS PACKAGE (I.E. - DELIVERY DATES, INSTALLATION, RELOCATIONS, ETC) SHALL BE COORDINATED THROUGH THE PROJECT MANAGER, JULIEN MILES 252-464-8837.
3. CONDITIONS SHOWN ARE BASED ON EXISTING PLANS AND FIELD OBSERVATION WITHOUT DEMOLITION.
4. DIMENSIONS SHOWN ARE APPROXIMATE. FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIAL AND COMMENCING WORK.

KEYNOTES

1. CURRENTLY UNDER CONSTRUCTION. LAYOUT WILL CHANGE VIA DUKE ENERGY. LARGE MECHANICAL ROOM ONLY.

LEGEND AND ABBREVIATIONS

- 800 PSI -- COLD
- 300 PSI -- HOT
- 300 PSI -- COLD
- PIPE CONTINUES
- DIRECTION OF FLOW
- MK. 1 VALVE
- GATE VALVE
- OTHER VALVES
- TERMINATION POINT

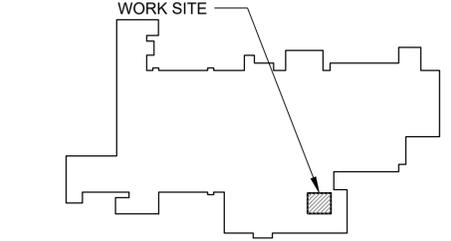
REV	DESCRIPTION	DATE	APPR



PRELIMINARY
NOT FOR CONSTRUCTION
DIVISION APPROVED WHEN SIGNED
2022DEC21

DESIGNER	W.DOHENY
DRAWN	J.DRUMM
CHECKED	K.WETHERINGTON
REVIEWED	M.CHAPONOT
APPROVED	C.YDE

FLEET READINESS CENTER EAST
U.S. MARINE CORPS AIR STATION, CHERRY POINT, NC
300 PSI AND 800 PSI PIPING WORK
LARGE MECHANICAL ROOM PARTIAL FLOOR PLAN
DIVISION DWG NO.
PE-22056



B137 WORK LOCATION
SCALE: NOT TO SCALE

BUILDING 137	
SHOP: 94400	
SIZE	CAGE CODE
D	96916
M-105	
SCALE: AS NOTED	
WO: XL93928	
SHEET 5 OF 6	

1

2

3

4

5

1

2

3

4

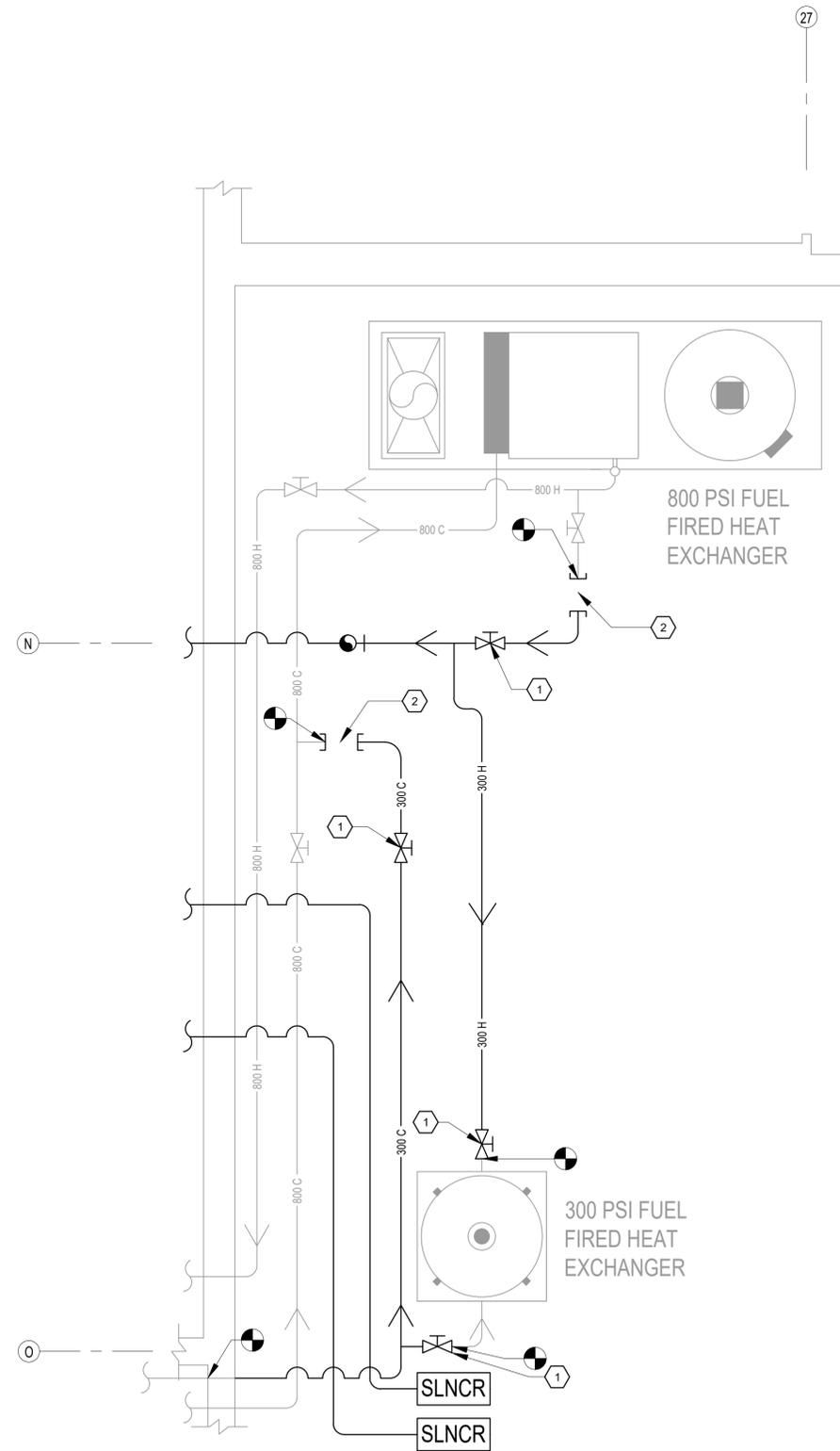
5

D

C

B

A



A2 EXTERIOR PARTIAL FLOOR PLAN
SCALE: NOT TO SCALE



GENERAL NOTES

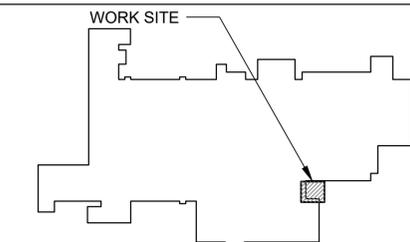
1. ALL WORK INDICATED ON THIS DRAWING(S) SHALL COMPLY WITH FEDERAL BUILDING CODES.
2. ALL WORK ASSOCIATED WITH THIS PACKAGE (I.E. - DELIVERY DATES, INSTALLATION, RELOCATIONS, ETC) SHALL BE COORDINATED THROUGH THE PROJECT MANAGER, JULIEN MILES 252-464-8837.
3. CONDITIONS SHOWN ARE BASED ON EXISTING PLANS AND FIELD OBSERVATION WITHOUT DEMOLITION.
4. DIMENSIONS SHOWN ARE APPROXIMATE. FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIAL AND COMMENCING WORK.

KEYNOTES

- ① VALVE TO BE REPLACED SHALL MATCH EXISTING.
- ② LOCATIONS FOR EMERGENCY DOUBLE BLOCK BLEED VALVES.

LEGEND AND ABBREVIATIONS

800 PSI -- HOT	800 H	—
800 PSI -- COLD	800 C	—
300 PSI -- HOT	300 H	—
300 PSI -- COLD	300 C	—
PIPE CONTINUES		—
DIRECTION OF FLOW		→
CAP		⊥
PIPE TURN UP		⊥
GATE VALVE		⊗
SILENCER	SLNCR	⊗
TERMINATION POINT		⊗



B137 WORK LOCATION
SCALE: NOT TO SCALE



REV	DESCRIPTION	DATE	APPR



NO PRELIMINARY CONSTRUCTION
DIVISION APPROVED WHEN SIGNED
2022DEC21

DESIGNER	W.DOHENY
DRAWN	J.DRUMM
CHECKED	K.WETHERINGTON
REVIEWED	M.CHAPOTON
APPROVED	C.YDE

FLEET READINESS CENTER EAST
U.S. MARINE CORPS AIR STATION, CHERRY POINT, NC
300 PSI AND 800 PSI PIPING WORK
EXTERIOR PARTIAL FLOOR PLAN
DIVISION DWG NO.
PE-22056

BUILDING 137	
SHOP: 94400	
SIZE	CAGE CODE
D	96916
M-106	
SCALE: AS NOTED	
WO: XL93928	
SHEET 6 OF 6	

MATCHLINE NO CONTINUATION

SOUTH END - ROOF PLAN - NEW WORK

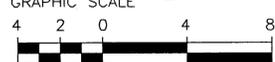
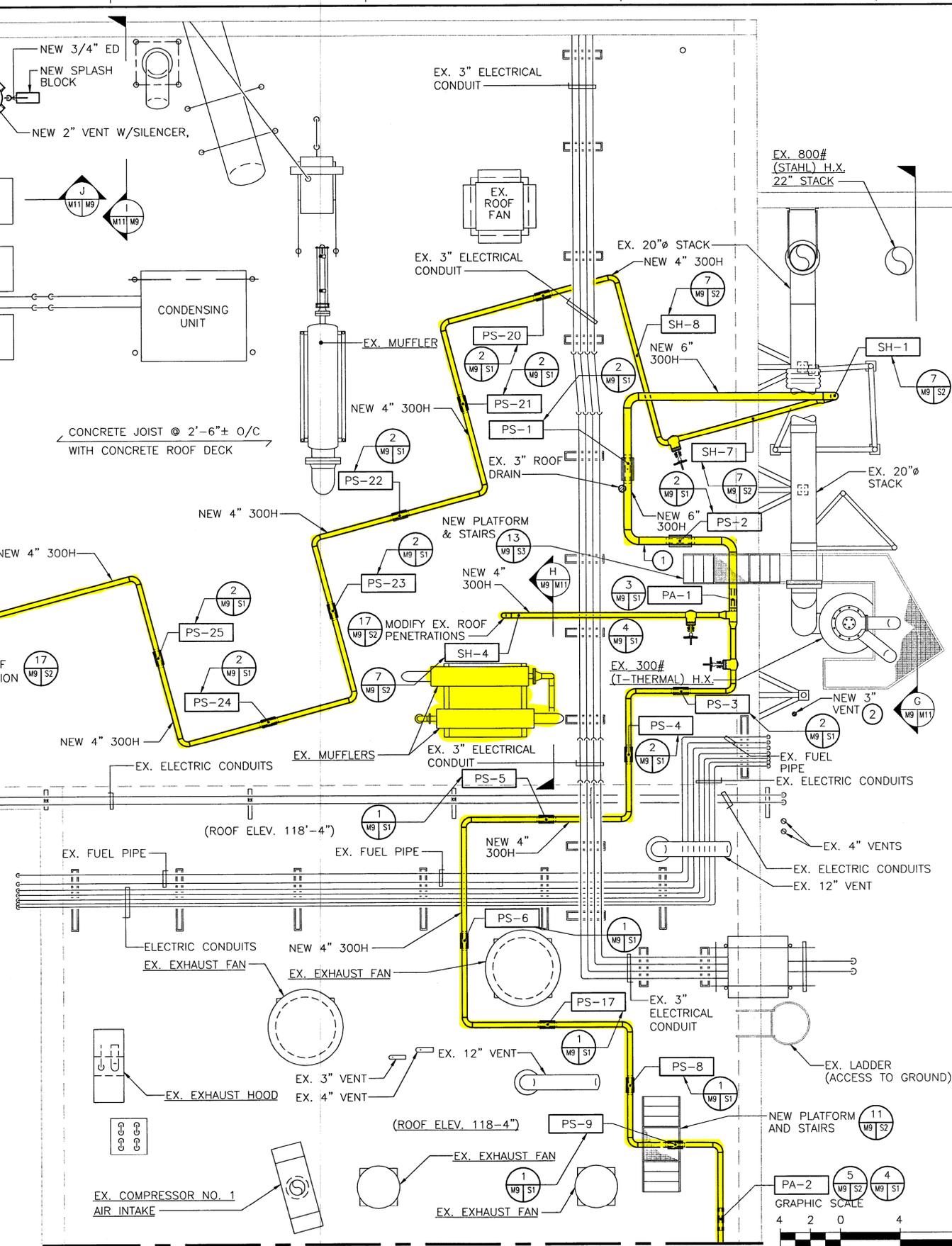
SCALE: 1/4"=1'-0"

GENERAL NOTES:

1. EXISTING ROOF IS HYPALON MEMBRANE ROOF. ALL MODIFICATIONS SHALL BE PERFORMED BY FACTORY CERTIFIED TECHNICIANS TO MAINTAIN WARRANTY.

DRAWING NOTES:

- ① INSULATION IN THIS AREA WILL BE INSTALLED AFTER DEMOLITION OF 6" 300H PIPING ON ROOF AND DURING PHASE II OF THIS PROJECT. DO NOT ENERGIZE ANY LINE BEFORE INSULATION IS INSTALLED. REFER TO PHASING DESCRIPTION IN THE SPEC.
- ② 3" VENT CONSTRUCTED OF ASTM A53 GALVANIZED SCHEDULE 40 PIPE. FILL HOLE IN WALL AROUND PIPE WITH NON-SHRINK GROUT. TERMINATE WHERE DIRECTED BY CONTRACTING OFFICER.



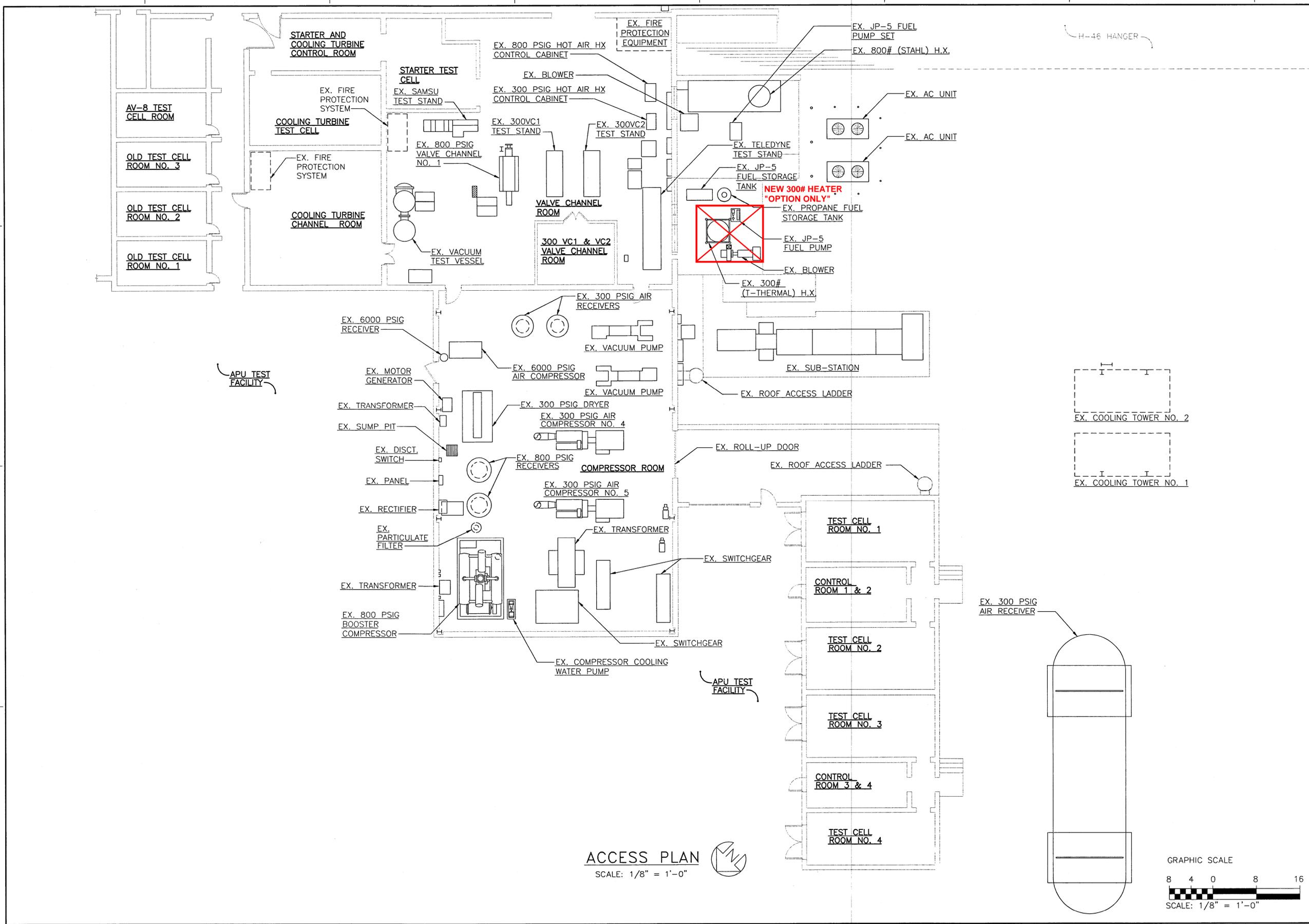
MATCHLINE C-C FOR CONTINUATION SEE M-10

SCALE: 1/4" = 1'-0"

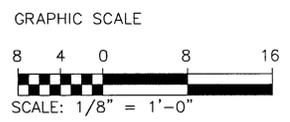
		DATE: 7/20/05 APPROVED: [Signature] PROJECT MANAGER: [Signature] DESIGN MANAGER: [Signature]
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS AIR STATION, CHERRY POINT, N.C. CP9174M, REPLACE PNEUMATIC TEST CELL PIPING, BUILDING 137		
CODE ID. NO. 80091 SIZE D SCALE: 1/4" = 1'-0" FED DRAWING NO. STA. PROJ. NO. CP9174M SPEC. NO. 05-99-3587 CONSTR. CONTR. NO. 015227 NAVFAC DRAWING NO. 4406710 SHEET 15 OF 23		SOUTH END - ROOF PLAN - NEW WORK M-9

8 7 6 5 4 3 2 1

D
C
B
A



ACCESS PLAN
SCALE: 1/8" = 1'-0"



DEPARTMENT OF THE NAVY MARINE CORPS AIR STATION, CHERRY POINT, N.C. CP9174M, REPLACE PNEUMATIC TEST CELL PIPING, BUILDING 137 ACCESS PLAN		DATE: 3/21/05 APPROVED: [Signature] ACTIVITY: SATISFACTORY TO	DATE: 3/21/05 APPROVED: [Signature] ACTIVITY: SATISFACTORY TO
CODE ID. NO. 80091 SCALE: 1/4" = 1'-0" FED DRAWING NO. STA. PROJ. NO. CP9174M SPEC. NO. 05-99-3587 CONSTR. CONTR. NO. 015227 NAIFAC DRAWING NO. 4406697 SHEET 2 OF 23	FEDERAL ID. NO. 182470-98-44-0282 DATE: 3/15/05 APPROVED: [Signature] ACTIVITY: SATISFACTORY TO	DATE: 3/21/05 APPROVED: [Signature] ACTIVITY: SATISFACTORY TO	DATE: 3/21/05 APPROVED: [Signature] ACTIVITY: SATISFACTORY TO
MARINE CORPS AIR STATION, CHERRY POINT, N.C. CP9174M, REPLACE PNEUMATIC TEST CELL PIPING, BUILDING 137 ACCESS PLAN		DATE: 3/21/05 APPROVED: [Signature] ACTIVITY: SATISFACTORY TO	DATE: 3/21/05 APPROVED: [Signature] ACTIVITY: SATISFACTORY TO

8 7 6 5 4 3 2 1

D
C
B
A

NO.	DESCRIPTION	DATE	APPROVED

APPENDIX 2 – Reference Specification Test Cell Piping B137 sections 15212 to 15216

SECTION 15212

HIGH AND MEDIUM PRESSURE COMPRESSED AIR PIPING
03/98

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.

AIR-CONDITIONING AND REFRIGERATION INSTITUTE (ARI)

ARI 520 (1990) Positive Displacement Refrigerant Compressors, Compressor Units and Condensing Units

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI B16.104 (1976) Valve Leakage Classification

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

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

ASME B1.20.1 (1983; R 1992) Pipe Threads, General Purpose (Inch)

ASME B40.1 (1991; Special Notice 1992) Gauges - Pressure Indicating Dial Type - Elastic Element

ASME B16.5 (1996) Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24

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

ASME B16.10 (1992) Face-to-Face and End-to-End Dimensions of Valve

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

ASME B16.20 (1993; Errata 1994) Metallic Gaskets for Pipe Flanges - Ring-Joint, Spiral-Wound, and Jacketed

ASME B16.34 (1996) Valves - Flanged, Threaded, and Welding End

ASME B 18.2.2 (1993) Square and Hex Nuts (Inch Series)

ASME B31.1 (1998) Power Piping

ASME B36.10 (1996) Welded and Seamless Wrought Steel Pipe

ASME BPVC SEC VIII D1 (1998) Boiler and Pressure Vessel Code: Section VIII Pressure Vessels, Division 1

ASME BPVC SEC IX (1995; Addenda 1995 and 1996) Boiler and Pressure Vessel Code: Section IX Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 53 (1996) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless

ASTM A 105 (1998) Standard Specification for Carbon Steel Forgings for Piping Applications

ASTM A 106 (1995) Seamless Carbon Steel Pipe for High-Temperature Service

ASTM A 182 (1996) Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service

ASTM A 193 (1996; Rev. B) Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service

ASTM A 194 (1998) Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service

ASTM A 216 (1998) Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service

ASTM A 234 (1999) Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service

ASTM A 269 (1996) Seamless and Welded Austenitic Stainless Steel Tubing for General Service

ASTM A 307 (1997) Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength

ASTM A 312 (1998; Rev. A) Seamless and Welded Austenitic Stainless Steel Pipes

ASTM A 351 (1994; Rev. A) Castings, Austenitic, Austenitic-Ferritic (Duplex), for Pressure-Containing Parts

ASTM A 380 (1996) Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and

Systems

ASTM A 403	(1996) Wrought Austenitic Stainless Steel Piping Fittings
ASTM B 127	(1993; Rev. A) Nickel-Copper Alloy (UNS N04400) Plate, Sheet, and Strip
ASTM B 61	(1993) Standard Specification for Steam or Valve Bronze Castings
ASTM B 62	(1993) Standard Specification for Composition Bronze or Ounce Metal Castings
ASTM B 164	(1993) Nickel-Copper Alloy Rod, Bar, and Wire
ASTM B 165	(1993) Nickel-Copper Alloy (UNS N04400) Seamless Pipe and Tube
ASTM B 366	(1998) Standard Specification for Factory-Made Wrought Nickel Nickel Alloy Fittings
ASTM B 407	(1996) Standard Specification for Nickel-Iron-Chromium Alloy Seamless Pipe and Tube
ASTM B 564	(1996) Nickel Alloy Forgings
ASTM B 574	(1999) Low-Carbon Nickel-Molybdenum-Chromium, Low-Carbon Nickel-Chromium-Molybdenum, Low-Carbon Nickel-Chromium-Molybdenum-Tungsten Alloy Rod
ASTM E 11	(1995) Wire-Cloth Sieves for Testing Purposes
ASTM E 381	(1994) Macroetch Testing Steel Bars, Billets, Blooms, and Forgings

AMERICAN WELDING SOCIETY, INC. (AWS)

AWS D1.1	(1996) Structural Welding Code Steel
ANSI/AWS Z49.1	(1994) Safety in Welding, Cutting and Allied Processes

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910.219	Mechanical Power Transmission Apparatus
-----------------	---

COMMERCIAL ITEM DESCRIPTIONS (CID)

CID A-A-1689	(Rev. B) Tape, Pressure-Sensitive Adhesive, (Plastic Film)
--------------	--

INTERNATIONAL STANDARDS ORGANIZATION (IOS)

Relays, Rated Not More Than 2000 Volts AC
or 750 Volts DC

NEMA ICS 6

(1993) Industrial Control and Systems
Enclosures

NEMA MG 1

(1993; Rev. 1-2) Motors and Generators

NATIONAL FLUID POWER ASSOCIATION (NFP(A))

NFP(A) T3.12.3 R2

(1992) Pressure Regulator - Industrial Type

PIPE FABRICATION INSTITUTE (PFI)

PFI ES-22

(1995) Color Coding of Piping Materials

PLUMBING AND PIPING INDUSTRY COUNCIL (PPIC)

PPIC GFSR

(1982) Guidelines for Seismic Restraints
(GFSR) of Mechanical Systems and Plumbing
Piping Systems

SOCIETY OF AUTOMOTIVE ENGINEERS, INC. (SAE)

SAE AMS 7276

(1992; Rev. D) Rings, Sealing Fluorocarbon
(FRM) Rubber High-Temperature Fluid
Resistant Very-Low Compression Set 70-80

SAE J 514

(1996) Hydraulic Tube, Fittings Standard

STEEL STRUCTURES PAINTING COUNCIL (SSPC)

SSPC SP 10

(1994) Near-White Blast Cleaning

1.2 RELATED REQUIREMENTS

Section 15050, "Basic Mechanical Materials and Methods," applies to this Section, with the additions and modifications specified herein.

1.3 SUBMITTALS

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

1.3.1 SD-02 Manufacturer's Catalog Data

- a. Piping and tubing
- b. Fittings
- c. Control valves
- d. Gaskets
- e. Silencers
- f. Bolts
- g. Gate Valves

- h. Pressure gages
- i. Identification labels for piping
- j. Temperature Switches

1.3.2 SD-03 Drawings

- a. Piping System Erection Drawings

1.3.2.1 Piping System Erection Drawings

The Contractor shall submit dimensioned drawings of all new 300C, 300H, and 800H piping systems prior to erection of any piping. Each component of the piping system shall be identified including size (nominal diameter), schedule, material rating, and end connection type. Locations and support type shall be shown. Insulation thickness and type shall be included. The weights of all components shall be included. The drawings must be accurate because they will be used for the verification of the piping stress analysis. The Contractor must perform measurements in the field prior to submitting the drawings to ensure that the piping system can be installed as shown on the Contract Drawing. The Contractor shall not use the Contract Drawings to make the piping system erection drawings. The Engineer will review the piping system erection drawings and use them to verify the pipe stress analysis. The Contractor cannot erect any piping until the field erection drawings are approved.

1.3.3 SD-06 Instructions

- a. Control Valves G

1.3.4 SD-12 Field Test Reports

- a. Pressure test G
- b. Leak tightness test G

1.3.5 SD-19 Operation and Maintenance Manuals

- a. Control Valves G

1.4 QUALITY ASSURANCE

Design, fabrication, installation, and testing of compressed air system shall conform to ASME B31.1 and ASME BPVC SEC IX, except as specified otherwise. In ASME B31.1 and ASME BPVC SEC IX, the advisory provisions shall be considered mandatory, as though the word "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.

1.4.1 Laboratory Test Reports and Material Control

Laboratory Test Reports and Material Control for compressed air piping systems:

1.4.1.1 Laboratory Test Reports

Furnish the following laboratory test reports for pipe, tube, fittings, valves, and other pressure containing components (except pressure gages) for each heat and lot of material.

- a. Full chemical analyses.
- b. Physical properties.
- c. Etch test per ASTM E 381 as modified for the alloy to verify pipe and tube are seamless and free of defects.

1.4.1.2 Material Control

The Contractor shall implement and maintain a material control system with markings and/or tags to identify positively each piece as to the type of metal.

1.4.2 Welding Requirements

Section 15216, "Welding Pressure Piping," and the following.

1.4.2.1 Butt Welded Joints

Butt welded joints shall be full penetration joints. At the Contractor's option, butt welded joints in systems with working pressures over 300 psig shall be full penetration welds with consumable inserts or backing rings.

1.4.3 Qualification of Inspection and Nondestructive Examination Personnel

Section 15216, "Welding Pressure Piping."

1.4.4 Training

Where special cleaning, flushing, material control, testing, and other special requirements are used on a contract, such as required for high pressure compressed air systems, conduct formal training programs for employees on the special requirements. Maintain records on such training which shall be available for inspection by the Contracting Officer. Certify that employees have satisfactorily completed the required training prior to performing work on the contract.

1.4.5 Y2K Compliance

All equipment provided under this Contract shall be Y2K compliant. The Contractor shall issue a statement with all submittals dealing with applicable equipment, including an electronic devices, that indicates the Contractor has verified that all equipment provided is Y2K compliant.

1.4.6 Country of Fabrication

- a. All piping, fittings, piping accessories, and valves, not manufactured, fabricated, and/or assembled in the United States of America or Canada must be manufactured, fabricated, and/or assembled by an ISO 9001 registered corporation.
- b. Submit ISO 9001 registration certificates for all corporations where the piping, fittings, piping accessories, and valves are not manufactured, fabricated, and/or assembled in the United States or Canada.

- * c. For all piping, fittings, piping accessories, and valves not fabricated in the United States or Canada, submit an independent test report for all materials to be provided.
- d. No piping, fittings, piping accessories, or valves manufactured, fabricated, and/or assembled in China including Taiwan are permitted to be provided in this Contract.

1.5 SAFETY PRECAUTIONS

1.5.1 Welding and Brazing

Safety in welding and cutting of pipe shall conform to ANSI/AWS Z49.1.

PART 2 PRODUCTS

2.1 300H PIPING SYSTEM

All piping systems labeled "300H" shall conform to this Paragraph.

2.1.1 Design Conditions

Piping, fittings, control valves, bolts, gaskets, and accessories shall be rated for 325 psig at 1,075 degrees F unless otherwise stated. No bending allowance or corrosion allowance is included. Although flanges are not rated for over 1,000 degrees F service, they shall be provided as specified and where directed on the Contract Drawings.

2.1.2 Pipe

- a. All pipe shall be seamless stainless steel conforming to ASTM A 312, Grade TP 304H, UNS Designation S30409. (Material shall be high temperature grade.) Pipe wall thickness shall be Schedule 40S. Wall thickness "schedule" and "weight" designations shall conform to ASME B36.10.
- b. The supplier or fabricator shall furnish mill chemical and physical test reports of material to the Contracting Officer.
- c. Any pipe delivered for incorporation of the work which shows any signs of improper welding techniques, signs of rust, or other forms of corrosion will be rejected.

2.1.3 Joints

- a. Joints 2 inches and smaller shall be socket welded. Some joints may be flanged, but only where specifically called out on the Contract Drawings.
- b. Joints 2-1/2 inches and larger shall be butt welded. Some joints may be flanged, but only where specifically called out on the Contract Drawings.

2.1.4 Stress Relieving

According to ASME B31.1, stress relieving is not required.

2.1.5 Fabrication and Erection

Fabrication and erection shall be in accordance with Section 15050, "Basic Mechanical Materials and Methods" and Section 15216, "Welding Pressure Piping."

2.1.6 Testing and Examinations

Hydrostatic testing and NDE examinations shall be performed in accordance with Section 15216, "Welding Pressure Piping." The hydrostatic test pressure for this piping system shall be 488 psig.

2.1.7 Flanges

Flanges shall be Class 300 welding neck in accordance with ANSI B16.5. Material shall conform to ASTM A 182, F316. Flange bore shall be Schedule 40S.

2.1.8 Fittings

- a. Fittings 2 inches and smaller shall be Class 3000 socket-welded in accordance with ASME B16.11. Material shall conform to ASTM A 403, WP 304H-S. (Material shall be high temperature grade.)
- b. Fittings 2-1/2 inches and larger shall be seamless, stainless steel butt-welded type in accordance with ASME B16.9 and shall be Schedule 40S. Material shall conform to ASTM A 403, WP 304H-S. (Material shall be high temperature grade.)

2.1.9 Bolting Materials

Bolting materials shall be continuous threaded alloy steel studs threaded in accordance with ASME B1.1, Class 2A. Material shall conform to ASTM A 193, Class 1, B8. Nuts shall be heat-treated, heavy, hexagonal nuts, semi-finished and in accordance with ASME B 18.2.2 and ASME B1.1, Class 2B. Material shall conform to ASTM A 194, Grade 8.

2.1.10 Unions

- a. Unions 2 inches and smaller shall be Class 3000 socket welded in accordance with ASME B16.11. Material shall conform to ASTM A 403, WP 304H-S. (Material shall be high temperature grade.)
- b. Union 2-1/2 inches and larger shall be made with flanges. Unions shall only be provided where specifically called out on the Contract Drawings.

2.1.11 Gaskets

Gaskets shall be rated for air service with minimum continuous rating of 325 psig at 1,100 degrees F. Gaskets shall be spirally wound, Type 304 stainless steel with non-asbestos filler material and carbon steel outer ring. Gaskets shall be 1/16 inch face and conform the flange face on which they are used.

2.1.12 Gate Valves

- a. 2 inches and Smaller: Class 300 standard port gate valve, cast or forged stainless steel body per ASTM A 351 Gr CF8M, with socket weld ends. Valve body and all components shall be rated for

maximum working pressure of 325 psig at 1,075 degrees F. Pressure and temperature ratings shall comply with ASME B16.34 (Standard Class). Valve shall have stellite faced seats and disc, 13 percent chrome stainless steel back seated stem; lip seal bonnet; outside screw and yoke, rising stem.

- b. 2-1/2 inches and Larger located inside: Class 300 gate valve, stainless steel body per ASTM A 351 Gr. CF8M, welding ends, stellite faced seat ring, flexible stellite faced wedge disc, 13 percent chrome stainless steel stem, rising stem. Bonnett shall be extended for high temperature service. Valve bonnett shall be bolted. Valve and all components shall be rated for a maximum working pressure of 325 psig at 1,075 degrees F. Pressure and temperature ratings shall comply with ASME B16.34 (Standard Class).
- c. 2-1/2 inches and larger located outside: Valves shall meet the specification for valves inside except valves located outside shall be full port. Valves located outside must be designed so that the valve will not hang-up in an open position if not actuated frequently.

2.1.13 Globe Valves, 2 inches and Smaller

Class 300 standard port globe valve, cast or forged stainless steel body per ASTM A 351 Gr CF8M, with socket weld ends. Valve body and all components shall be rated for maximum working pressure of 325 psig at 1,075 degrees F. Pressure and temperature ratings shall comply with ASME B16.34 (Standard Class). Valve shall have stellite faced seats and disc, 13 percent chrome stainless steel stem, outside screw and yoke, rising stem. Valve bonnet shall allow trim replacement while the valve is installed.

2.1.14 Control Valves

Refer to Paragraph titled "Control Valves" in this Section.

2.2 800H PIPING SYSTEM

All piping system labeled "800H" shall conform to this Paragraph.

2.2.1 Design Conditions

Piping, fittings, valves, and accessories including control valves shall be rated for 850 psig at 1,350 degrees F.

2.2.2 Pipe

All pipe shall be nickel-iron chromium alloy seamless pipe per ASTM B 407, Alloy UNS N08811, commonly referred to as INCOLOY Alloy 800. Pipe wall thickness shall be 0.6 inches, annealed at 2,100 degrees F. ASME B31.1 design stress in tension at 1,350 degrees F shall be 4,300 psi or greater. Piping system shall be certified by the manufacturer for this application.

2.2.3 Joints

Joints shall be butt welded except for connections to equipment which shall be flanged.

2.2.4 Stress Relieving

According to ASME B31.1, stress relieving is not required.

2.2.5 Fabrication and Erection

Fabrication and erection shall be in accordance with Section 15050, "Basic Mechanical Materials and Methods" and Section 15216, "Welding Pressure Piping."

2.2.6 Testing and Examinations

Hydrostatic testing and NDE examinations shall be performed in accordance with Section 15216, "Welding Pressure Piping." The hydrostatic test pressure for this piping system shall be 1,275 psig.

2.2.7 Flanges

Flanges shall be ring joint type, Class 1500 in accordance with ASME B16.5. Material shall be same as pipe material. Flanges shall be manufactured in accordance with ASTM B 574.

2.2.8 Fittings

Fittings for 2-1/2" NPS and above shall be butt-welded per ASME B16.9. Material thickness shall match pipe. Fittings shall be manufactured in accordance with ASTM B 366 WPWX for Alloy 800HT.

2.2.9 Bolting Materials

Bolting materials shall be continuous threaded alloy steel studs threaded in accordance with ASME B1.1, Class 2A. Material shall conform to ASTM A 193, B7. Nuts shall be heat-treated, heavy, hexagonal nuts, semi-finished and in accordance with ASME B 18.2.2 and ASME B1.1. Material shall conform to ASTM A 194, Grade 7.

2.2.10 Gaskets

Gaskets shall be rated for air service with minimum continuous rating of 850 psig at 1,350 degrees F. Gaskets shall be good for ring joint, Class 1500 flanges.

2.2.11 Gate Valves 2-1/2 inches and Larger:

Class 1500, conventional port gate valve, welding ends, Inconel body with trim, wedge, and seat designed for the pressure and temperature design conditions. Bonnett shall be extended for high temperature service. Valve bonnett shall be bolted. Valve body and all components shall be rated for 850 psig at 1,350 degrees F. Pressure and temperature class shall comply with ASME B16.34 (Standard Class).

2.3 300C PIPING SYSTEM

All piping systems labeled "300C" shall conform to this Paragraph.

2.3.1 Design Conditions

Piping, fittings, and accessories including valves shall be rated for 325 psig at 150 degrees F.

2.3.2 Pipe

All pipe shall be seamless carbon steel conforming to ASTM A 53, Grade B. Pipe wall thickness shall be Schedule "STD".

2.3.3 Joints

- a. Joints 2 inches and smaller shall be socket welded, except for valve connections which shall be threaded or flanged (refer to valve specification) and unions which shall be threaded.
- b. Joints 2-1/2 inches and larger shall be butt welded. Some joints may be flanged, but only where specifically called out on the Contract Drawings.

2.3.4 Stress Relieving

Not required.

2.3.5 Fabrication and Erection

Fabrication and erection shall be in accordance with Section 15050, "Basic Mechanical Material and Methods" and Section 15216, "Welding Pressure Piping".

2.3.6 Testing and Examinations

Hydrostatic testing and NDE examination shall be in accordance with Section 15216, "Welding Pressure Piping." The hydrostatic test pressure for this piping system shall be 488 psig.

2.3.7 Flanges

Flanges shall be Class 300 welding neck type in accordance with ASME B16.5 and raised face or as required to match the mating flange. Material shall conform to ASTM A 105. Welding neck flanges shall be bored to match the same ID as the attached pipe.

2.3.8 Fittings

- a. Fittings 2 inches and smaller shall be 3000 pound socket-welded in accordance with ASME B16.11. Material shall conform to ASTM A 105.
- b. Fittings 2-1/2 inches and larger shall be steel butt-welded in accordance with ASME B16.9 with the same wall thickness as the attached pipe. Material shall conform to ASTM A 234, Grade WPB.
- c. Mitered branches shall not be used. Use forged fittings.

2.3.9 Bolting Materials

Bolting materials shall be continuous threaded alloy steel studs threaded in accordance with ASME B1.1, Class 2A. Material shall conform to ASTM A 193, Grade B7. Nuts shall be heat-treated, heavy, hexagonal nuts, semi-finished and in accordance with ASME B 18.2.2 and ASME B1.1, Class 2B. Material shall conform to ASTM A 194, Grade 2H.

2.3.10 Unions

- a. Unions 2 inches and smaller shall be 3,000 pound forged steel

threaded with steel to steel seats. Material shall conform to ASTM A 105.

- b. Union 2-1/2 inches and larger shall be made with flanges. Unions shall only be provided where specifically called out on the Contract Drawings.

2.3.11 Gaskets

Gaskets shall be rated for air service with minimum continuous rating of 325 psig at 150 degrees F. Gaskets shall be spirally wound, Type 304 stainless steel with non-asbestos filler material and carbon steel outer ring. Gaskets shall be 1/16 inch face and conform to the flange face on which they are used.

2.3.12 Gate Valves

- a. 2 inches and Smaller: Class 300 gate valve, cast bronze body and bonnett, screwed ends; bronze seats, disc, and stem; union bonnett, solid wedge disc, integral seat, inside screw, rising stem, body and material to conform to ASTM B 61 or ASTM B 62. The valve shall conform to MSS SP-80, Class 300-B62, Type 2. Valve shall be rated for 300 psig saturated steam service and 600 psig non-shock cold water, oil, or gas service.
- b. 2-1/2 inches and larger: Class 300 steel gate valve, welded ends, bolted flanged bonnet, outside screw and yoke, rising stem, flexible or solid wedge disc, renewable seat rings. Materials shall be: Body and bonnet, ASTM A 216, Grade WCB or ASTM A 105; stem 13 percent chromium stainless steel; disc face and seat rings 13 percent chromium stainless steel and nickel-copper, stellite or a combination of stellite and 13 percent chromium stainless steel as recommended by its manufacturer for saturated air service. Face to face dimension shall conform to ASME B16.10. Pressure and temperature ratings shall comply with ASME B16.34 (Standard Class).

2.3.13 Control Valves

Refer to Paragraph titled, "Control Valves" in this Section.

2.4 800C PIPING SYSTEM

All piping systems labeled "800C" shall conform to this Paragraph.

2.4.1 Design Conditions

Piping, fittings, and accessories including control valves shall be rated for 850 psig at 150 degrees F.

2.4.2 Pipe

An pipe shall be seamless carbon steel conforming to ASTM A 53, Grade B. Pipe wall thickness shall be Schedule "STD".

2.4.3 Joints

Joints shall be butt welded except for connections to equipment which shall be flanged.

2.4.4 Stress Relieving

According to ASME B31.1, stress relieving is not required.

2.4.5 Fabrication and Erection

Fabrication and erection shall be in accordance with Section 15050, "Basic Mechanical Materials and Methods" and Section 15216, "Welding Pressure Piping."

2.4.6 Testing and Examinations

Hydrostatic testing and NDE examinations shall be performed in accordance with Section 15216, "Welding Pressure Piping." The hydrostatic test pressure for this piping system shall be 1,275 psig.

2.4.7 Flanges

Flanges shall be Class 600 welding neck type in accordance with ASME B16.5 and raised faced or as required to match the mating flange. Material shall conform to ASTM A 105. Welding neck flanges shall be bored to match the same ID as the attached pipe.

2.4.8 Fittings

- a. Fittings 2 inches and smaller shall be 3000 pound socket-welded in accordance with ASME B16.11. Material shall conform to ASTM A 105.
- b. Fittings 2-1/2 inches and larger shall be steel butt-welded in accordance with ASME B16.9 with the same wall thickness as the attached pipe. Material shall conform to ASTM A.234, Grade WPB.
- c. Mitered branches shall not be used. Use forged fittings.

2.4.9 Bolting Materials

Bolting materials shall be continuous threaded alloy steel studs threaded in accordance with ASME B1.1, Class 2A. Material shall conform to ASTM A 193, Class 1, B8. Nuts shall be heat-treated, heavy, hexagonal nuts, semi-finished and in accordance with ASME B 18.2.2 and ASME B1.1, Class 2B. Material shall conform to ASTM A 194, Grade 8.

2.4.10 Gaskets

Gaskets shall be rated for air service with a minimum continuous rating of 850 psig at 150 degrees F. Gaskets shall be spirally wound, Type 304 stainless steel with non-asbestos filler material and carbon steel outer ring. Gaskets shall be 1/16 inch face and conform to flange face on which they are used.

2.4.11 Gate Valves

None provided in this Contract.

2.4.12 Control Valves

Refer to Paragraph titled "Control Valves" in this Section.

2.5 VENT PIPING SYSTEM

All piping systems labeled "VENT" shall conform to this Paragraph.

2.5.1 Design Conditions

Piping, fittings, and accessories shall be rated for 15 psig at 800 degrees F.

2.5.2 Piping

All pipe 2 inches NPS and smaller shall be seamless carbon steel conforming to ASTM A 106, Grade B. All pipe 2-1/2 inches NPS and above shall be electric resistance welded black steel conforming to ASTM A 53, Grade B. Pipe wall thickness for 1/8 inch NPS through 3/4 inch NPS shall be Schedule "XSTG". Pipe wall thickness for 1 inch NPS and above shall be Schedule "STD".

2.5.3 Joints

- a. Joints 2 inches and smaller shall be socket welded, except for valve connections which shall be threaded or flanged (refer to specification) and unions which shall be threaded.
- b. Joints 2-1/2 inches and larger shall be butt welded except for valve connections which shall be flanged.

2.5.4 Stress Relieving

Not required.

2.5.5 Fabrication and Erection

Fabrication and erection shall be in accordance with Section 15050, "Basic Mechanical Materials and Methods" and Section 15216, "Welding Pressure Piping."

2.5.6 Testing and Examinations

Hydrostatic testing and NDE examinations for vent piping are not required.

2.5.7 Flanges

Flanges shall be Class 150 welding neck type in accordance with ASME B16.5 and raised or flat faced as required to match the mating flange. Material shall conform to ASTM A 105. Welding neck flanges shall be bored to match the same ID as the attached pipe.

2.5.8 Fittings

- a. Fittings 2 inches and smaller shall be 3000 pound socket-welded in accordance with ASME B16.11. Material shall conform to ASTM A 105.
- b. Fittings 2-1/2 inches and larger shall be steel butt-welded in accordance with ASME B16.9 with the same wall thickness as the attached pipe. Material shall conform to ASTM A 234, Grade WPB.
- c. Mitered branches may be used when reinforced according to ASME B31.1. Reinforcing shall consist of increased header thickness, increased outlet pipe thickness, strap or weld type reinforcement, welding

type reinforcement saddles, or a combination of these methods.

2.5.9 Bolting Materials

Bolting materials shall be mild steel, hexagonal head bolts with heavy hexagonal nuts conforming to ASTM A 307, Grade B.

2.5.10 Union Materials

- a. Unions 2 inches and smaller shall be 3,000 pound steel socket weld with steel to steel seats. Material shall conform to ASTM A 105.
- b. Unions 2-1/2 inches and larger shall be made with flanges.

2.5.11 Gates Valves

There are no valves in the "Vent Piping System." Vent piping must be directly open to atmosphere with no valves in between, however, there can be a vent muffler. Vent piping begins at a valve vented to atmosphere.

2.5.12 Control Valves

There are no valves in the "Vent Piping System." Vent piping must be directly open to atmosphere with no valves in between, however, there can be a vent muffler. Vent piping begins at a valve vented to atmosphere.

2.6 INSTRUMENT TUBING SYSTEM

All instrumentation tubing for control valves shall conform to this Paragraph. Pressure transmitter sensing lines shall conform to the appropriate piping system specification. Pressure regulating valve sensing lines and any other lines that directly connect into a piping system other than the 300C system shall conform to the appropriate piping system specifications.

2.6.1 Design Conditions

Tubing, fittings, valves, and accessories shall be rated for 2,000 psig at 800 degrees F.

2.6.2 Tubing

All tubing shall be seamless, fully annealed, stainless steel tubing conforming to ASTM A 269 Grade TP316. The ends shall be plugged before shipment. Outside diameter and wall thickness shall be as follows:

Outside Diameter (Inches)	Wall Thickness (Inches)
1/4	0.028
3/8	0.032
1/2	0.035
5/8	0.042
3/4	0.049

2.6.3 Joints and Fittings

- a. Fittings shall be flareless compression Type 316 stainless steel. Approved fittings are as follows:

CPI by Park-Hannifan
SWAGELOCK by Swagelock Company
TYLOCK by Tylock International

- b. Joints shall be made in strict accordance with manufacturer's instructions.

2.7 CONTROL VALVES

All control valves shall be designed in accordance with ASME B31.1. Control valves shall be from either Valtek, Fisher, or Dresser-Mason Neilan. No other valve manufacturer is acceptable. All control valves and accessories shall be provided by one manufacturer. The control valves shall be warranted for a minimum of one year in accordance with Contract requirements. The Contractor shall provide the services of the control valve manufacturer or the control valve manufacturer's authorized representative to make as many field visits as necessary to perform start-up services including verify proper installation, verify proper line cleaning prior to first operation, proper actuation, and proper control. The assigned person shall witness actual operation and verify with the Contracting Officer that the control valves are operating within the requirements of these Specifications including providing the required pressure, temperature, and flow for each system as specified. The assigned person shall issue a field report for each visit indicating observations actions, and final acceptance. All materials for the control valves must be selected based on the pressure, temperature, and flow conditions specified. The valve trim must be sized based on the "normal operating conditions" specified. The valve materials and actuator must be selected based on the "maximum upstream design conditions" specified. The valve manufacturer may provide a different body size only where it can be proven necessary to provide proper flow control. All working pressure and temperature ratings shall comply with ASME B16.34. All control valves shall be selected to operate for a majority of the design conditions in the 20 to 80 percent open range. All control valves shall experience severe temperature changes and shall be constructed for this duty. In addition, valves shall be constructed for a minimum of 100,000 full temperature cycles in a 30 year period. Instrument air for the actuation of all valves is available from the 300C piping system which has maximum design conditions of 350 psig at 150 degrees F and normal operating conditions of 300 psig at 100 degrees F. Provide all tubing and other fittings and devices necessary to operate control valves. For all new control valves and emergency shut-off valves, provide an air set with regulator, filter, and gage. Provide a relief valve device if necessary to protect the actuator from overpressure in the event of a failure of the regulator. Noise from each valve shall not exceed 95 dBA at 3 feet from the valve. Trim must be selected to take noise requirements in consideration. Valve manufacturers can use the credit from insulation and insulation blanket (if provided) to reduce noise, however, calculations must consider actual materials and thicknesses being provided. Refer to Section 15080, "Mechanical Insulation."

2.7.1 300 PSIG Valve Channel Nos. 1 and 2 (300 VC1 & 300 VC2)

Replace four existing control valves including actuator and accessories for each channel consisting of valve tags HCV-1, CCV-1, PRV-1, and LTV-1 for 300 VC1 and HCV-2, CCV-2, PRV-2, and LTV-2 for 300 VC2. The valves are described as an assembly and must be selected and provided as such. The submittal must provide evidence that the function of each valve in the

valve channel was taken into consideration in its selection. The description and specification below will describe 300VC1 and shall be the same for 300VC2.

2.7.1.1 Description

The 300VC1 is used as a test stand for various aircraft engine parts. The pressure temperature, and flow of compressed air is controlled upstream of the test piece via HVC-1, CCV-1 and PRV-1. Valves HVC-1 and CCV-1 are manually modulated to control temperature. Hot and cold air mixes downstream of HVC-1 and CCV-1 to achieve the operator's desired temperature and then enters PRV-1 which is manually modulated to regulate pressure and flow. Downstream of PRV-1 is an existing flow measuring device and then the test piece. The flow measuring device consists of an orifice type device which can be modulated for different desired flow ranges, hence the pressure drop through the orifice will vary accordingly. The test piece style may change from one test to the next and therefore the pressure drop through the test piece will change accordingly. Downstream of the test piece is LTV-1. Valve LTV-1 is closed prior to running a test and pressure is ramped in the test stand so that an operator can spot leaks in the test stand before actual testing begins. Valve LTV-1 is opened fully during testing. Downstream of LTV-1, the compressed air travels through approximately 25 feet of piping and then vents to atmosphere.

2.7.1.2 All Valves

All four valves are pneumatically actuated. Their position is set by a manually adjusted panel-mounted loading regulator. Provide new actuators and positioners. Provide new pneumatic tubing leading from the control valve to the existing manual loading regulator. Re-use the existing loading regulators.

2.7.1.3 Valve HCV-1

- a. Flow Conditions: Valve HCV-1 will be modulated to regulate flow of hot air for temperature control. Normal operating conditions upstream of HCV-1 shall be between 260 to 290 psig at 950 degrees F. Select valve trim size based on 260 psig upstream pressure. Downstream conditions will vary depending on the required conditions downstream of PRV-1. Refer to the specification of PRV-1.
- b. Material Specification: The maximum upstream design conditions shall be 325 psig at 1,075 degrees F. The valve body, trim, both end connections, and all other materials shall be designed for these maximum upstream conditions and shall be a minimum Class 300. Body size and end connections shall be 3 inch NPS. Valve ends shall be welded. Valve shall be globe style with the flow direction down (or over). Valve body shall be cast stainless steel per ASTM A 351, Grade CF8M. Trim characteristic shall be equal percentage. Valve plug shall be cage guided and balanced. Trim shall be constructed of 316SS with stellite facing. Trim shall be field replaceable so that a new CV can be provided. Bonnett shall be bolted and shall be designed for high temperature service, extended bonnett is preferred. Packing, gaskets, and cylinder O-rings shall meet the high temperature requirements. Linear actuator shall be spring and diaphragm, spring to close, air to open, and shall provide modulating control. Valve shall be installed in vertical position and all components shall be designed

for this condition. Leakage class designation shall be Class IV in accordance with ANSI B16.104. Re-use existing loading regulator.

- c. Insulation Blanket: Provide an insulation blanket in accordance with Section 15080, "Mechanical Insulation."

2.7.1.4 Valve CCV-1

- a. Flow Conditions: Valve CCV-1 will be modulated to regulate flow of cold air for temperature control. Normal operating conditions upstream of CCV-1 shall be between 260 to 290 psig at 100 degrees F. Select valve trim size based on 260 psig upstream pressure. Downstream conditions will vary depending on the required conditions downstream of PRV-1. Refer to the specification of PRV-1.

- b. Material Specification: The maximum upstream design conditions shall be 325 psig at 150 degrees F. Select valve trim size based on 260 psig upstream pressure. The maximum downstream conditions shall be the maximum downstream conditions that could be achieved with a fully open HCV-1 and fully closed PRV-1, approximately 325 psig at 1,075 degrees F. The valve body, trim, both end connections, and all other materials shall be designed for these maximum upstream and downstream conditions, except that the very hot air will not flow through the valve but will contact the downstream parts of the valve. As a minimum, the valve shall be Class 300. Body size and end connections shall be 3 inch NPS. Valve ends shall be welded. Valve shall be globe style with flow direction down (or over). Valve body shall be cast stainless steel per ASTM A 351, Grade CF8M. Trim characteristic shall be equal percentage. Valve plug shall be cage guided and balanced. Trim shall be constructed of 316SS with stellite facing. Trim shall be field replaceable so that a new Cv can be provided. Bonnett shall be bolted and shall be standard type, or as recommended by the manufacturer to be extended type. Linear actuator shall be spring and diaphragm, spring to close, air to open, and shall provide modulating control. Valve shall be installed in vertical position and all components shall be designed for this condition. Leakage class designation shall be Class IV in accordance with ANSI B16.104 for a 300 psig differential pressure. Re-use existing loading regulator.

- c. Insulation Blanket: Not required for this valve.

2.7.1.5 Valve PRV-1

- a. Flow Conditions: Valve PRV-1 will regulate pressure into the test piece. The valve will be a pressure balanced design. The valve actuator shall contain a spring to regulate downstream pressure sensed from an external connection on the downstream side of the valve. Re-use existing tap. The spring shall be biased by a manually modulated control signal to change the pressure regulating set point. Normal operating conditions upstream of PRV-1 shall vary, depending on the downstream conditions of HCV-1 and CCV-1 which shall directly correspond to the required downstream conditions of PRV-1. The downstream conditions are variable within a range that is required for each test piece. Pressure shall range from 2.5 psig to as close to 300 psig as possible (with valves HCV-1 and/ or CCV-1 and PRV-1 wide open). Temperature shall range

from 100 to 900 degrees F which shall be accomplished with a mix of hot and cold air by modulating HCV-1 and CCV-1. Flow shall range from 1,200 to 16,200 lb/hr. Valves HCV-1, CCV-1, and PRV-1 must be selected to provide all possible downstream conditions.

- b. **Material Specification:** The maximum upstream design conditions shall be the maximum downstream conditions that could be achieved with a fully open HCV-1 and/or CCV-1, approximately 325 psig at 1,075 degrees F. The valve body, trim, both end connections, and all other materials shall be designed for these maximum upstream conditions and as a minimum shall be Class 300. Body size and end connections shall be 4 inch NPS. Valve ends shall be butt welded. Valve shall be globe style with flow direction either up or down (under or over). Valve body shall be cast stainless steel per ASTM A 351, Grade CF8M. Trim characteristic shall be equal percentage. Valve plug shall be cage guided, unbalanced. Trim shall be constructed of 316SS with stellite facing. Trim shall be field replaceable so that a new Cv can be provided. Bonnett shall be designed for high temperature service, extended bonnett is preferred. Packing, gaskets, and cylinder O-rings shall meet the high temperature requirements. Linear actuator shall be spring and diaphragm, spring to close, air to open, and shall provide pressure regulating control. Leakage class designation shall be Class IV in accordance with ANSI B16.104 for a 300 psig differential pressure. Re-use existing manual loading regulator for bias signal, pressure set point control.
- c. **Insulation Blanket:** Provide an insulation blanket in accordance with Section 15080, "Mechanical Insulation."

2.7.1.6 Valve LTV-1

- a. Valve LTV-1 will be an on/off service valve which will be closed prior to commencing each test to check for a leak in the test stand assembly. It will be fully open during testing and will not be modulated. Normal operating conditions shall vary as described in the downstream conditions of PRV-1 minus the pressure drop through the test stand. Downstream operating conditions consist of approximately 25 feet of piping and then the air is vented to atmosphere through a silencer. The valve trim shall be the largest Cv available for the body size.
- b. **Material Specification:** The maximum upstream design conditions shall be the maximum downstream conditions that could be achieved with a fully open HCV-1 and/or CCV-1 and PRV-1, approximately 325 psig at 1,075 degrees F. The valve body, trim, both end connections, and all other material shall be designed for these maximum upstream conditions. Body size and end connections shall be 4 inch NPS. Valve ends shall be welded. Valve shall be either globe style or two piece ball style. Valve body shall be cast stainless steel per ASTM A 351, CF8M or ASTM A 182, F316. Trim characteristic shall be linear. For globe valve, plug shall be cage guided, unbalanced. Trim shall be constructed of 316SS with stellite facing. Bonnett shall be bolted and shall be designed for high temperature service, extended bonnett is preferred. Packing, gaskets, and cylinder O-ring shall meet the high temperature requirements. Actuator shall be spring and diaphragm, spring to open air to close, and shall provide on/off control. Leakage class designation shall be Class IV in accordance with ANSI B16.104 for a

300 psig differential pressure. Provide a positioner which shall receive a control signal from the existing manual loading station.

- c. Insulation Blanket: Provide an insulation blanket in accordance with Section 15080, "Mechanical Insulation."

2.7.2 Starter Channel Nos. 1 and 2 (SC1 & SC2)

Replace five existing control valves including actuator and accessories for each channel consisting of valve tags HCV-7, CCV-7, PRV-7, FV-7 and VV-7 for SC1 and HCV-8, CCV-8, PRV-8, FV-8, and VV-8 for SC2. The valves are described as an assembly and must be selected and provided as such. The submittal must provide evidence that the function of each valve in the valve channel was taken into consideration in its selection. The description and specification below will describe SC1 and shall be the same for SC2.

2.7.2.1 Description

SC1 is used as a test stand for engine starters of various aircraft. The pressure, temperature, and flow of compressed air is controlled upstream of the test piece via valves HCV-7, CCV-7, and PRV-7. Valves HCV-7 and CCV-7 are manually modulated to control temperature. Hot and cold air mixes downstream HCV-7 and CCV-7 to achieve the operator's desired temperature, and the enters PRV-7 which is manually modulated to regulate pressure and flow. Downstream of PRV-7 is a branch connection. Air can go straight through the connection to FV-7 or take the branch and go to VV-7. Valve FV-7 is an on/off valve and is manually operated to allow the operator to ensure that he has the correct flow conditions before starting the test. Valve VV-7 shall be a modulating service valve which will be utilized to vent air to heat up the piping from the beginning of the valve channel to the branch connection for VV-7 prior to each test run. The valve shall be automatically modulated with a pneumatic type temperature controller and shall be provided with a manual loading regulator with a changeover valve for manual control. Prior to testing a starter, FV-7 is closed and VV-7 is in automatic temperature control and vents to atmosphere. After the line is warmed up and the operating flow conditions are established, FV-7 is opened and VV-7 is manually closed and testing begins. The engine starter to be tested is downstream of FV-7. Air flows through the starter then into the room.

2.7.2.2 All Valves

All five valves are pneumatically actuated. Except for VV-7, their position is set by a manually adjusted panel-mounted loading regulator. Provide new actuators and positioners. Provide new pneumatic tubing leading from the control valve to the existing manual loading regulator. Re-use the existing loading regulators. For VV-7, provide new actuators, positioners, tubing, loading regulator and temperature controller.

2.7.2.3 Valve HCV-7

- a. Flow Conditions: Valve HCV-7 will be modulated to regulate flow of hot air for temperature control. Normal operating conditions upstream of HCV-7 shall be between 260 to 290 psig at 950 degrees F. Select valve trim size based on 260 psig upstream pressure. Downstream conditions will vary depending on the required conditions downstream of PRV-7. Refer to the specification of PRV-7.

- b. Material Specification: The maximum upstream design conditions shall be 325 psig at 1,075 degrees F. The valve body, trim, both end connections, and all other material shall be designed for the maximum upstream conditions and shall be as a minimum Class 300. Body size and end connections shall be 3 inch NPS. Valve ends shall be welded. Valve shall be globe style with the flow direction down (or over). Valve body shall be cast stainless steel per ASTM A 351, Grade CF8M. Trim characteristic shall be equal percentage. Valve plug shall be cage guided and balanced. Trim shall be constructed of 316SS with stellite facing. Trim shall be field replaceable so that a new Cv can be provided. Bonnett shall be bolted and shall be designed for high temperature service, extended bonnett is preferred. Packing, gaskets, and cylinder O-rings shall meet the high temperature requirements. Linear actuator shall be spring and diaphragm, spring to close, air to open, and shall provide modulating control. Leakage class designation shall be Class IV in accordance with ANSI B16.104 for a 300 psig differential pressure. Re-use existing loading regulator.
- c. Insulation Blanket: Provide an insulation blanket in accordance with Section 15080, "Mechanical Insulation".

2.7.2.4 Valve CCV-7

- a. Flow Conditions: Valve CCV-7 will be modulated to regulate flow of cold air for temperature control. Normal operating conditions upstream of CCV-7 shall be between 260 to 290 psig at 100 degrees F. Select valve trim size based on 260 psig upstream pressure. Downstream conditions will vary depending on the required conditions downstream of PRV-7. Refer to the specification of PRV-7.
- b. Material Specification: The maximum upstream design conditions shall be 325 psig at 150 degrees F. The maximum downstream conditions shall be the maximum downstream conditions that could be achieved with a full open HCV-7 and fully closed PRV-7, approximately 325 psig at 1,075 degrees F. The valve body, trim, both end connections, and all other materials shall be designed for these maximum upstream and downstream conditions, except that the very hot air will not flow through the valve but will contact the downstream parts of the valve. As a minimum, the valve shall be Class 300. Body size and end connections shall be 3 inch NPS. Valve ends shall be welded. Valve shall be globe style with flow direction down (or over). Valve body shall be cast stainless steel per ASTM A 351, Grade CF8M. Trim characteristic shall be equal percentage. Valve plug shall be cage guided and balanced. Trim shall be constructed of 316SS with stellite facing. Trim shall be field replaceable so that a new Cv can be provided. Bonnett shall be bolted and shall be standard type or as recommended by the manufacturer to be extended type. Leakage class designation shall be Class IV in accordance with ANSI B16.104 for a 300 psig differential pressure. Re-use existing loading regulator.
- c. Insulation Blanket: Not required for this valve.

2.7.2.5 Valve PRV-7

- a. Flow Conditions: Valve PRV-7 will regulate pressure to the

starter. The valve will be a pressure balanced design. The valve actuator shall contain a spring to regulate downstream pressure sensed from an external connection on the downstream side of the valve. The external connection shall be a minimum 5 feet downstream of the valve. The spring shall be biased by a manually modulated control signal to change the pressure regulating set point. Normal operating conditions upstream of PRV-7 shall vary, depending on the downstream conditions of HCV-7 and CCV-7 which shall directly correspond to the required downstream conditions of PRV-7. The downstream conditions are variable within a range that is required for each starter. Pressure shall range from 20 to 60 psig. Temperature shall range from 100 to 650 degrees F which shall be accomplished with a mix of hot and cold air by modulating HCV-7 and CCV-7. Flow shall range from 1,200 to 10,800 lb/hr. Valves HCV-7, CCV-7, and PRV-7 must be selected to provide all possible downstream conditions within the three ranges.

- b. **Material Specification:** The maximum upstream design conditions shall be the maximum downstream conditions that could be achieved with a fully open HCV-7 and/or CCV-7, approximately 325 psig at 1,075 degrees F. The valve body, trim, both end connections, and all other materials shall be designed for these maximum upstream conditions and shall be a minimum Class 300. Body size and end connections shall be 3 inch NPS. Valve ends shall be welded. Valve shall be globe style with flow direction either up or down (under or over). Valve body shall be cast stainless steel per ASTM A 351, Grade CF8M. Trim characteristic shall be equal percentage. Valve plug shall be cage guided, balanced. Trim shall be constructed of 316SS with stellite facing. Trim shall be field replaceable so that a new CV can be provided. Bonnett shall be bolted and shall be designed for high temperature service, extended bonnett is preferred. Packing, gaskets, and cylinder O-rings shall meet the high temperature requirements. Linear actuator shall be spring and diaphragm, spring to close, air to open, and shall provide modulating control. Leakage class designation shall be Class IV in accordance with ANSI B16.104 for a 300 psig differential pressure. Re-use existing loading regulator.
- c. **Insulation Blanket:** Provide an insulation blanket in accordance with Section 15080, "Mechanical Insulation".

2.7.2.6 Valve VV-7

- a. **Flow Conditions:** Valve VV-7 will be a modulating service valve which will be utilized to vent air to heat up the upstream piping prior to commencing each test run. The valve shall be automatically modulated with a pneumatic type temperature controller and shall be provided with a manual loading regulator with a changeover valve for manual control. The valve will be in automatic temperature control service when heating the upstream piping prior to testing. The valve will be closed during testing. Normal operating conditions shall vary as described in the downstream conditions of PRV-7 minus some small pressure drop due to pipe losses. Downstream conditions for VV-7 shall consist of approximately 3 feet of 1-1/2 inch NPS piping and then approximately 15 feet of 4 inch NPS piping and then a vent silencer (Silencer No. 2) where the air will be vented to atmosphere. Downstream conditions of VV-8 shall consist of approximately 18 feet of 2 inch NPS piping and then approximately 15 feet of 4 inch

NPS piping and then a vent silencer (Silencer No. 2) where the air will be vented to atmosphere. Both SC1 and SC2 vent into the common 4 inch NPS line to Silencer No. 2. The vent silencer selection must be coordinated with the selection of VV-7 and VV-8. Refer to the Paragraph titled "VENT SILENCERS" in this Section. The valve trim shall be the largest Cv available for the body size.

- b. **Material Specification:** The maximum upstream design conditions shall be the maximum downstream conditions that could be achieved with a fully open HCV-7 and/or CCV-7 and PRV-7, approximately 325 psig at 1,075 degrees F. The valve body, trim, both end connections, and all other materials shall be designed for these maximum upstream conditions and as a minimum shall be Class 300. Body size and end connections shall be 1-1/2 inch NPS. Valve ends shall be socket welded. Valve shall be either globe or two piece ball style. Valve body shall be cast stainless steel per ASTM A 351, CF8M or ASTM A 182, F316. Trim characteristic shall be equal percent. For globe valve, plug shall be cage guided, unbalanced. Trim shall be constructed of 316SS with stellite facing. Trim shall be filed replaceable so that a smaller CV can be provided. Bonnett shall be bolted and shall be designed for high temperature service, extended bonnett is preferred. Packing, gaskets, and cylinder O-rings shall meet the high temperature requirements. Actuator shall be spring and diaphragm, spring to open, air to close, and shall provide modulating control. Leakage class designation shall be Class IV in accordance with ANSI B16.104 for a 300 psig differential pressure. Provide a positioner if necessary to be used with the temperature controller and manual by-pass.
- c. **Temperature Controller and Manual By-pass:** For each of valve VV-7 and VV-8, provide a pneumatic type temperature controller and manual loading regulator with a changeover valve for manual control. Valve VV-7 and VV-8 shall have separate controllers, loading regulators, changeover valves, and temperature sensors for individual, independent control. These devices shall be provided in an enclosure(s) which shall be mounted using Uni-Strut type hardware in the Starter and Cooling Turbine Control Room where directed by the Contracting Officer. The temperature controller shall consist of a gas filled temperature bulb immersed in the 2 inch NPS 300H header via a 304 stainless steel thermowell. The temperature bulb shall be connected to a pneumatic controller which shall compare the temperature to an operator adjusted set point and then vary a pneumatic signal to VV-7 or VV-8 to maintain process temperature at or near set point. The temperature controller shall provide proportional-only control. The controller box shall have a process temperature gage and an output pressure gage. The temperature bulb shall be rated for up to 1,200 degrees F. The temperature span shall be 100 to 800 degrees F. Provide a minimum of 15 feet of capillary tube. The manual loading station shall allow the temperature controller to be overridden so that an operator can position the valve as desired.
- d. **Insulation Blanket:** Provide an insulation blanket in accordance with Section 15080, "Mechanical Insulation".

2.7.2.7 Valve FV-7

- a. **Flow Conditions:** Valve FV-7 will be an on/off service valve which will be closed prior to testing to prevent air from reaching the

starter while air is diverted through VV-7 to heat up the main. Valve FV-7 will be open during testing. Normal operating conditions shall vary as described in the downstream conditions of PRV-7 minus the pressure drop of the piping in between. Downstream operating conditions consist of approximately 10 feet of 2 inch NPS piping and then the air goes through the starter and is then vented to atmosphere. The valve trim shall be the largest Cv available for the body size.

- b. **Material Specification:** The maximum upstream design conditions shall be the maximum downstream conditions that could be achieved with a fully open HCV-7 and/or CCV-7 and PRV-7, approximately 325 psig at 1,075 degrees F. The valve body, trim, both end connections, and all other materials shall be designed for these maximum upstream conditions and as a minimum shall be Class 300. Body size and end connections shall be 2-1/2 inch NPS. Valve ends shall be butt welded. Valve shall be either globe style or two piece ball style. Valve body shall be cast stainless steel per ASTM A 351, CF8M or ASTM A 182, F316. Trim characteristic shall be linear. For globe valve, plug shall be cage guided, unbalanced. Trim shall be constructed of 316SS with stellite facing. Bonnett shall be bolted and shall be designed for high temperature service, extended bonnett is preferred. Packing, gaskets, and cylinder O-rings shall meet the high temperature requirements. Actuator shall be spring and diaphragm, spring to close, air to open, and shall provide on/off control. Leakage class designation shall be Class IV in accordance with ANSI B16.104 for a 300 psig differential pressure. Re-use existing loading regulator. Provide devices which shall fully open and fully close valve in two second duration.
- c. **Insulation Blanket:** Provide an insulation blanket in accordance with Section 15080, "Mechanical Insulation".

2.7.3 300H Cooling Turbine Channel Main Header Vent Valve (VV-9)

Replace the existing control valve including actuator and accessories.

2.7.3.1 Flow Conditions

Valve VV-9 shall be a modulating service valve which will be utilized to vent air to heat up the piping from the air heat exchanger to and including the header located in the Cooling Turbine Channel Room. The valve shall be automatically modulated with a pneumatic type temperature controller and shall be provided with a manual loading regulator with a changeover valve for manual control. Normal operating conditions upstream of VV-9 shall be between 260 to 290 psig at 950 degrees F. Select valve trim size based on 260 psig upstream pressure. Downstream conditions will consist of approximately 15 feet of piping and then a vent silencer (Silencer No. 1) where the air will be vented to atmosphere. The vent silencer selection must be coordinated with the selection of VV-9. Refer to Paragraph titled "VENT SILENCERS" in this Section. The valve trim shall be the largest Cv available for the body size.

2.7.3.2 Material Specification

The maximum upstream design conditions shall be 325 psig at 1,075 degrees F. The valve body, trim, both end connections and all other materials shall be designed for the maximum upstream conditions and as minimum shall be Class 300. Body size and end connections shall be 2 inch NPS. Valve

ends shall be socket welded. Valve shall be globe style. Valve body shall be cast stainless steel per ASTM A 351, CF8M. Trim characteristic shall be equal percentage. Plug shall be cage guided, unbalanced. Trim shall be constructed of 316SS with stellite facing. Trim shall be field replaceable so that a smaller Cv can be provided. Bonnett shall be bolted and shall be designed for high temperature service, extended bonnett is preferred. Packing, gaskets, and cylinder O-ring shall meet the high temperature requirements. Actuator shall be spring and diaphragm, air to close, spring to open, and shall provide modulating control. Leakage class designation shall be Class IV in accordance with ANSI B16.104 for a 300 psig differential pressure. Provide a positioner if necessary to be used with the temperature controller and manual by-pass.

2.7.3.3 Temperature Controller and Manual By-pass

Provide a pneumatic type temperature controller and manual loading regulator with a changeover valve for manual control. These devices shall be provided in an enclosure(s) which shall be mounted on the wall 4 feet above ground below VV-9 using Uni-Strut type hardware. The temperature controller shall consist of a gas filled temperature bulb immersed in the 4 inch NPS 300H header via a 304 stainless steel thermowell. The temperature bulb shall be connected to a pneumatic controller which shall compare the temperature to an operator adjusted set point and then vary a pneumatic signal to VV-9 to maintain process temperature at or near set point. The temperature controller shall provide proportional-only control. The controller box shall have a process temperature gage and an output pressure gage. The temperature bulb shall be rated for up to 1,200 degrees F. The temperature span shall be 100 to 1,000 degrees F. Provide a minimum of 15 feet of capillary tube. The manual loading station shall allow the temperature controller to be overridden so that an operator can position the valve as desired.

2.7.3.4 Insulation Blanket

Provide an insulation blanket an insulation blanket in accordance with Section 15080, "Mechanical Insulation".

2.7.4 300C Emergency Shut Off Valve (FV-10)

Provide a new valve in the 300C header which will shut when an emergency stop button is pressed. The Contractor shall wire a circuit in all of the 300C emergency stop buttons as shown on the Contract Drawings. The buttons that close the 300C valve (FV-10) shall also close the 800C valve (FV-11).

2.7.4.1 Flow Conditions

Normal operating conditions upstream and downstream of FV-10 shall be 300 psig at 100 degrees F. The valve trim shall be the largest size available for the body size. This valve is for on/off service only and pressure drop shall be minimized.

2.7.4.2 Material Specification

The maximum upstream conditions will be 325 psig at 150 degrees F. Body and end connections shall be 6 inch NPS. Valve shall be Class 300. Valve ends shall be welded. Valve shall be globe or ball type. Body and bonnett shall be ASTM A 216, Grade WCB. Stem shall be 13 percent chromium stainless steel; seat ring 13 percent chromium stainless steel; and disc 13 percent chromium stainless steel faced. Plug shall be cage guided,

unbalanced. Actuator shall be spring and diaphragm, air to open, spring to close, and shall provide on/off control. Leakage class designation shall be Class IV in accordance with ANSI B16.104 for a 350 psig differential pressure. A positioner is not required.

2.7.4.3 3 Way Solenoid Valve, Manual Reset

Provide a 3 way solenoid valve that will block air to the actuator and vent air in the actuator to allow it to spring close when an emergency stop button is depressed. The solenoid valve shall have a manual reset lever which will require an operator to reset before air can re-enter FV-10. The solenoid valve shall be spring return to the close position. The reset lever shall have the ability to be manually moved into the latched position only when the solenoid is energized. Locate the solenoid valve at ground level adjacent to the valve, properly mounted. The valve shall be 120V AC. Valve shall be rated for maximum differential pressure of 250 psig at 180 degrees F. Valve materials shall be stainless steel. Valve enclosure shall be Type 1, general purpose. Solenoid valve shall be located downstream of regulating valve for actuator.

2.7.4.4 Insulation Blanket

Not required.

2.7.5 800C Emergency Shut-Off Valve (FV-11)

Provide a new valve in the 800C leader which will shut when an emergency stop button is pressed. The Contractor shall wire a circuit in the 800C emergency stop button as shown on the Contract Drawings. The button that shuts off the 800C valve (FV-11) shall also close the 300C valve (FV-10).

2.7.5.1 Flow Conditions

Normal operating conditions upstream and downstream of FV-11 shall be 800 psig at 100 degrees F. The valve trim shall be the largest available for the body size. This valve is for on/off service only and pressure drop shall be minimized.

2.7.5.2 Material Specification

The maximum upstream conditions will be 850 psig at 150 degrees F. Body and end connections shall be 4 inch NPS. Valve shall be Class 600. Valve ends shall be welded. Valve shall be globe or ball type. Body and bonnet shall be ASTM A 216, Grade WCB. Stem shall be 13 percent chromium stainless steel; seat ring 13 percent chromium stainless steel; and disc 13 percent chromium stainless steel faced. Plug shall be cage guided, unbalanced. Actuator shall be spring and diaphragm, air to open, spring to close, and shall provide on/off control. Leakage class designation shall be Class IV in accordance with ANSI B16.104 for a 850 psig differential pressure. A positioner is not required.

2.7.5.3 3 Way Solenoid Valve, Manual Reset

Provide a 3 way solenoid valve that will block air to the actuator and vent air in the actuator to allow it to spring close when an emergency stop button is depressed. The solenoid valve shall have a manual reset lever which will require an operator to reset before air can re-enter FV-11. The solenoid valve shall be spring return to the close position. The reset lever shall have the ability to be manually moved into the latched position

only when the solenoid is energized. Locate the solenoid valve at ground level adjacent to the valve, properly mounted. The valve shall be 120V AC. Valve shall be rated for maximum differential pressure of 250 psig at 180 degrees F. Valve materials shall be stainless steel. Valve enclosure shall be Type 1, general purpose. Solenoid valve shall be located downstream of regulating valve for actuator.

2.7.5.4 Insulation Blanket

Not required for this valve.

2.8 PRESSURE TRANSMITTERS

2.8.1 General

Relocate existing transmitters in the Cooling Turbine Channel Room. The Contractor shall provide new fittings per each piping system specification and shall provide tubing, wire, and conduit for re-connecting. Provide new transmitter brackets.

2.9 TEMPERATURE TRANSMITTERS

2.9.1 General

Relocate existing transmitters in the Cooling Turbine Channel Room. The Contractor shall provide new fittings per piping system specification. Provide new wiring and conduit for reconnecting. Provide new transmitter brackets.

2.9.2 Thermowell

Provide threaded, tapered thermowells constructed of 304 stainless steel rated for 350 psig at 1250 degrees F. Immersion length of each thermowell shall be a minimum of 1/3 of the pipe diameter.

2.10 Transmitter Brackets

Mounting brackets shall be provided for all transmitters. Brackets for 2-inch pipe mounting shall be provided. Brackets shall be of carbon steel construction with carbon steel bolts coated with the manufacturers standard polyurethane paint. Brackets for panel mounting shall not be acceptable.

2.11 PRESSURE GAGE

2.11.1 General

Provide pressure gages only where called out new on Contract Drawings.

2.11.2 Type

ASME B40.1, Grade A, Type 316 stainless steel, Bourbon-tube pressure gage, with bottom stem mounted connection. Design for maximum operating conditions of 350 psig at 1250 degrees F.

2.11.3 Case

Drawn steel with non-shatterable safety glass lens. Provide blowout rear to prevent glass shatter. Diameter shall be 3-1/2" minimum.

2.11.4 Connector

304 stainless steel with 1/4 inch male NPT.

2.11.5 Scale

White coated aluminum with permanently marked etchings.

2.11.6 Range

Units shall appear in PSIG. PSIG range shall be 0 - 500 psig. Graduations shall be in 4 psig increments.

2.11.7 Accuracy

One percent of full scale per ASME B40.1, accuracy Grade A.

2.11.8 Pressure Gage Accessories

- a. Isolation Valves: For all pressure gages, provide 1/4 inch NPS needle shutoff valve. Valves shall be located minimum 2 inches outside of insulation. Valve for 300H service shall be rated for 350 psig at 1250 degrees F. Valve for 300C service shall be rated for 350 psig at 150 degrees F.
- b. Branch Connection: For all pressure gages, provide a branch with an isolation valve for bleed-off.
- c. Snubber: ASTM A 351 Type 304 Stainless Steel body rated for 350 psig at 1250 degrees F. Snubber element shall be sintered stainless steel.

2.12 TEMPERATURE SWITCH

Provide a temperature switch installed in the 300H system which shall cut-out the burner for the 300 psig Hot Air Heat Exchanger. The existing burner management system is a Fireye 100 system. The Contractor shall perform all work necessary to have the burner cut-out when the temperature switch makes.

2.12.1 General

Fluid vapor shall act on a diaphragm/piston assembly to actuate a snap-acting electrical switching element. The switch shall be rated for 325 psig at 1,100 degrees F. The dead band shall be a maximum of 15 degrees F. The switch shall be remotely mounted via a minimum 10 foot long capillary tube. The switch enclosure shall be rated for wet outdoor service. Switch shall be automatic reset. Switch shall be single pole, double throw. Switch shall have 1/4 inch threaded connection into socket welded thermowell.

2.13 VENT SILENCERS

Provide a vent silencer (Silencer No. 1) downstream of VV-9 and another silencer (Silencer No. 2) downstream of the common vent line of VV-7 and VV-8. Vent silencers shall be located outside on the building roof, supported as detailed on the drawings. Silencer shells shall be made of 14 gage 304 stainless steel. Inlet diffusers shall be made of 3/16 inch thick 304 stainless steel and the acoustic pack shall be of fiberglass. All

other internals of the muffler shall be of 304 stainless steel. Inlet flange shall be a 2 inch Class 300 raised face weldneck type design. The vent silencer shall be of annular ring design. Vent shall be designed to prevent rain water from falling back into the vent pipe through silencer. Provide a 3/4 inch drain connection.

2.13.1 System Design Conditions - Silencer No. 1

The maximum system condition the muffler must accommodate is 4,000 scfm air at 1,100 degrees Fahrenheit temperature. The sound level at the outlet of the muffler at these conditions shall Silencer No. 1 be in accordance with Paragraph 2.13.6. The vent piping will have 3 inches of calcium silicate insulation. The silencer will be located approximately 15 feet downstream of Vent Valve No. 9 (VV-9). The silencer manufacturer shall coordinate with the VV-9 valve manufacturer to obtain the proper sound levels and minimum pressure drop through the valve. The normal upstream pressure of VV-9 will be 300 psig. Refer to paragraph in this Section titled "300H Cooling Turbine Channel Main Header Vent Valve (VV-9)".

2.13.2 System Design Conditions - Silencer No. 2

The maximum system condition the muffler must accommodate is 4,000 SCFM air at 1,100 degrees F temperature. The sound level at the outlet of the muffler at these conditions shall be in accordance with Paragraph 2.13.6. The vent piping will have 3 inches of calcium silicate insulation. The silencer shall serve both VV-7 and VV-8 and shall be located approximately 43 feet downstream of VV-7 and approximately 20 feet downstream of VV-8. The silencer manufacturer shall coordinate with the VV-7 and VV-8 valve manufacturer to obtain the proper sound levels and minimum pressure drops through the valves. The upstream pressure of VV-7 and VV-8 will vary. Refer to Paragraph in this Section titled "Valve VV-7".

2.13.3 Inlet Nozzle and Diffuser

The inlet nozzle and diffuser shall be designed to withstand the thermal and impact stresses encountered in high pressure and high temperature blowdowns to atmosphere. The inlet nozzle shall be 10 gage 304 stainless steel.

2.13.4 Diffuser

The diffuser shall provide controlled pressure expansion to atmosphere insuring optimum flow distribution within the silencer plenum and shall be constructed of 304 stainless steel with continuous full penetration welding. The diffuser shall provide a shift or conversion of low frequencies to the more easily attenuated high frequency bands and shall counteract and/or neutralize the reaction forces from the valve.

2.13.5 Inlet Plenum

The inlet plenum shall be provided with an ample depth of dense acoustical fill and shall be faced with a 14 gage solid impingement liner to prevent or reduce shell radiated noise. The plenum threshold level (TL) shall be compatible with the silencer dynamic insertion loss (DIL).

2.13.6 Broad-Band Performance

Panel, depth, density and length/gap ratios shall provide broad-band performance based upon anticipated frequency content and noise amplitude.

The acoustic fill shall be fiberglass. The fill shall be packed under not less than 10 percent compression to eliminate voids and shall be provided with annular spacers to prevent settlement under these severe operating conditions. The fill in the muffler shall be protected with one wrap of glass cloth. In high temperature-high velocity service, the acoustic fill shall be protected with an additional wrap of stainless steel mesh screen. All perforated face sheets shall be 23 percent open with 3/32 inch dia. (min.) holes on staggered center. The heavier gages for larger sizes shall have correspondingly larger holes. The maximum sound pressure level shall be as follows:

Octave Band (Hz)	Silenced Sound Pressure Level at 10 Feet (dBA)
31.5	79
63	82
125	84
250	84
500	84
1000	84
2000	84
4000	84
8000	80

2.14 IDENTIFICATION LABELS FOR PIPING

Labels for pipes 3/4 inch O.D. and larger shall bear printed legends to identify contents of pipes and arrows to show direction of flow. Except that of pipes smaller than 3/4 inch O.D., labels shall have color coded backgrounds to signify levels of hazard in accordance with PFI ES-22. Legends and type and size or characters shall also conform to PFI ES-22. Labels shall be made of plastic sheet in conformance with CID A-A-1689 with pressure-sensitive adhesive suitable for the intended applications or they may be premolded of plastic to fit over specific pipe outside diameters 3/4 inch and larger. For pipes smaller than 3/4 inch O.D., furnish brass identification tags 1 1/2 inches in diameter with legends in depressed black-filled characters. Provide labels which indicate that insulation does not contain asbestos.

2.15 FRESH WATER

Fresh water for cleaning, flushing, and testing shall be clean and potable.

PART 3 EXECUTION

3.1 INSTALLATION

Install materials and equipment as indicated and in accordance with manufacturer's recommendations.

3.1.1 Piping

Fabrication, assembly, and welding, shall conform to ASME B31.1 for all piping of the air system. Piping shall follow the general arrangement shown. Cut piping accurately to measurements established for the work. Work piping into place without springing or forcing, except where cold-springing is specified. Where pipe passes through building structure, pipe joints shall not be concealed, but shall be located where they may be readily inspected and building structure shall not be weakened. Avoid interference with other piping, conduit, or equipment. Except where

specifically shown otherwise, vertical piping shall run plumb and straight and parallel to walls.

3.1.1.1 Fittings

Use long radius ells to reduce pressure drops. Pipe bends shall have a uniform radius of at least five times the pipe diameter and must be free from any appreciable flattening, wrinkling, or thinning of the pipe. Mitering of pipe to form elbows, notching straight runs to form full sized tees, or any similar construction shall not be used. Make branch connections with welding tees, except factory made forged welding branch outlets or nozzles having integral reinforcements conforming to ASME B31.1 may be used. Bending of piping is not permitted.

3.1.1.2 Clearances for Welding

Provide clearances from walls, ceilings, and floors to permit the installation of joints. The clearances shall be at least 6 inches for pipe sizes 4 inches and less, 10 inches for pipe sizes over 4 inches, and sufficient in corners. However, the specified clearances shall not waive requirements for welders to be qualified for the positions to be welded. Consider that there must be clearance for pipe insulation and thermal expansion movement.

3.1.1.3 Cleaning

Before jointing and erection of piping or tubing, thoroughly clean interiors of pipe sections, tube, and components. In steel pipe, loosen scale and other foreign matter by rapping sharply and expel by wire brush and swab. Blow out steel and stainless steel pipe and copper tube and components with compressed air at 100 psig or more. Maintain cleanliness by closure of pipe/tube openings with caps or plugs. Before making final terminal connections, blow out complete system with compressed air at 100 psig or more.

3.1.1.4 Changes in Pipe Size

Use reducing fittings for changes in pipe size. The use of bushings will not be permitted. In horizontal lines, 2 1/2 inches and larger, reducing fittings shall be of the eccentric type to maintain the bottom of the lines in the same plane.

3.1.1.5 Drainage and Flexibility

Compressed air piping shall be free of unnecessary pockets and pitched approximately 3 inches per 100 feet in the direction of flow to low points. Where pipes must be sloped so that condensate flows in opposite direction to air flow, slope 6 inches per 100 feet or greater. Provide flexibility by use of fittings, loops, and offsets in piping.

3.1.2 Threaded Joints

Where possible use pipe with factory cut threads, otherwise cut pipe ends square, remove fins and burrs, and cut taper pipe threads in accordance with ASME B1.20.1. Threads shall be smooth, clean, and full cut. Apply thread tape to male threads only. Work piping into place without springing or forcing. Backing off to permit alignment of threaded joints will not be permitted. Engage threads so that not more than three threads remain exposed.

3.1.3 Flanged Joints

Install using calibrated torque wrenches or feeler gage methods to assure proper gasket compression. Calibrate torque wrench immediately prior to use.

3.1.3.1 Welding

Perform welding in accordance with qualified procedures using qualified welders and welding operators. Do not perform welding when the quality of the completed weld could be impaired by the prevailing working or weather conditions. The Contracting Officer will determine when weather or working conditions are unsuitable for welding. Welding of hangers, supports, and plates to structural members shall be in accordance with AWS D1.1. Mark welding detail drawings to identify the welder making the joint.

3.1.3.2 Cleaning for Welding

Surfaces to be welded shall be free from loose scale, slag, rust, paint, oil, and other foreign material. Joint surfaces shall be smooth and free from defects which might affect proper welding. Clean each layer of weld metal thoroughly by wire brushing, grinding, or chipping prior to inspection or deposition of additional weld metal.

3.1.3.3 Welding of Valves

Welding of Valves: Disassemble valves subject to damage from heat during welding and reassemble after installation. Open valves two or three turns off the seat when not subject to heat damage during welding; do not backseat valve.

3.1.4 Valves

Install valves in conformance with ASME B31.1 at the locations indicated and elsewhere as required for the proper functioning of the system.

3.1.4.1 Globe Valves

Install globe valves so that the pressure will be below the disk.

3.1.5 Hangers and Supports

Refer to Section 15140 "Pipe Hangers and Supports."

3.1.6 Pressure Gages

Install per manufacturer's instructions.

3.1.6.1 Cleaning of System

Clean the various system components before final closing as the installations are completed. Remove foreign matter from equipment and surrounding areas. Preliminary or final tests will not be permitted until the cleaning is approved by the Contracting Officer.

3.1.7 Pipe Sleeves

Provide pipe sleeves where pipes and tubing pass through masonry or

concrete walls, floors, roofs, and partitions. Hold sleeves securely in proper position and location before and during construction. All sleeves shall be of sufficient length to pass through entire thickness of walls, partitions, or slabs. Extend sleeves in floor slabs 2 inches above the finished floor. Refer to details on Contract Drawings.

3.1.8 Flashing for Buildings

Provide flashing as indicated where pipes pass through building roofs and outside walls. Refer to details on Contract Drawings.

3.1.9 Unions and Flanges

Provide unions and flanges where necessary to permit easy disconnection of piping and apparatus, and as indicated. Provide a union for each connection having a screwed-end valve. Install dielectric unions or flanges between ferrous and non-ferrous piping, equipment, and fittings; except that bronze valves and fittings may be used without dielectric couplings for ferrous-to-ferrous or non-ferrous to non-ferrous connections.

3.1.10 Identification of Piping

Identify piping by symbols of "300H", "300C", and "800H", "800C", "INSTRUMENT AIR", and "ASBESTOS FREE". Use commercially manufactured piping identification labels. Space identification marking on runs not farther apart than 25 feet.

3.2 CLEANING AND CLEANNESS REQUIREMENTS

Cleaning and cleanness requirements shall conform to the following.

3.2.1 Cleaning Before Installation

Clean piping, components, and equipment before installation by blowing cold (300C) compressed air through piping. Provide pancake screens upstream of each control valve during blowing. Remove debris and pancake screen. The Contractor shall ensure that the piping is supported for the blow-out service. The air flow through each branch shall be varied during blow-out cleaning to get the particles in the system to empty out. Blowing of the lines shall also be performed to remove moisture in the lines. Remove all instrumentation during blow-outs.

3.2.2 Maintaining Cleanness During Installation

Maintain cleanness of piping, components, and equipment during installation. Dirt and debris producing operations shall be performed so that dirt and debris fall away from system openings; otherwise, provide covers over openings to preclude contamination. Cap, plug, cover, or bag openings and pipe ends and secure with tape when they are not required to be open for the performance of work. Metal caps, plugs, and covers shall be austenitic stainless steel. Plastic items and tape shall be free of substances that can have a harmful effect on stainless steel and other corrosion-resistant metals in the system.

3.3 FIELD QUALITY CONTROL

3.3.1 Examinations

Refer to Section 15216, "Welding Pressure Piping."

3.3.2 Testing

3.3.2.1 General Requirements, Testing

Perform testing after cleaning and acceptance of cleanness. Contractor shall provide everything required for tests. Tests shall be subject to the approval of the Contracting Officer.

3.3.2.2 Hydrostatic and Leak Tightness Tests

a. Preliminary Preparation

Remove or isolate from the system the compressor, air dryer, filters, instruments, and equipment which would be damaged by water during hydrostatic tests and reinstall after successful completion of tests.

b. Performance of Hydrostatic Tests

Hydrostatically test piping systems in accordance with ASME B31.1. Vent or flush air from the piping system. Pressurize system for 10 minutes with water at one and one-half times design working pressure, then reduce to design working pressure and check for leaks and weeps.

c. Compressed Air Leak Tightness Test

After satisfactory completion of hydrostatic pressure test, blow systems dry with clean, oil-free compressed air, and test with clean, dry air at design working pressure. Brush joints that were not tested via NDE with soapy water solution to check for leaks. Install a calibrated test pressure gage in piping system to observe any loss in pressure. Maintain required test pressure for a sufficient length of time to enable an inspection of joints and connections.

3.3.2.3 Operational Tests

Test equipment as in service to determine compliance with contract requirements and warranty. During the tests, test equipment under every condition of operation. Test safety controls to demonstrate performance of their required function. Completely test system for compliance with specifications.

3.3.2.4 Start-Up Acceptance Test

- a. General: The Contractor shall assist the Engineer in performing a start-up acceptance test. The Government has tasked the Engineer to verify that the piping system is expanding and contracting in accordance with the piping system design.
- b. Installed Dimensions: The Contractor shall provide as-built piping system erection drawings of those submitted in Paragraph 1.3.2.1 of this Section. The Contractor shall field verify all dimensions before insulating piping.
- c. Thermocouple Wire and Measuring Rod Test Points: The Contractor shall provide thermocouple wiring and measuring rods at a minimum of 30 locations on the existing and new 300H and 800H piping systems as directed by the Engineer on the reviewed piping system erection drawings submittal. The thermocouple wiring shall be

bonded to the outside surface of the pipe. The thermocouple wire shall be rated for up to 1,250 degrees F of service. Wiring shall be provided so that it can be connected to a meter while standing on the ground or roof in the vicinity of the pipe. The Contractor shall provide a temporary meter which will allow the Engineer to read the surface temperature of the pipe. The meter and wiring shall have an accuracy +/-10 degrees F. Adjacent to the locations that the thermocouple wiring is installed, the Contractor shall provide two 1/2 inch NPS rods (open hollow pipe) slightly tacked to the pipe. The rods shall be placed 90 degrees apart and shall be attached radially to the pipe. The material of the rods at the connection to the pipe shall be 304 stainless steel. The rods shall protrude a minimum of 3 inches beyond the insulation. The rods will be used by the Engineer in conjunction with surveying equipment to take displacement measurements when the pipe is heated and expands. The Contractor will be required to remove the rods and thermocouples after the measurements are taken and patch the insulation.

- d. Access: The Contractor shall provide labor and equipment which shall afford the Engineer access to the test points.
- e. Scheduling: The Engineer will do his testing within two weeks after a pipe system is completed and heated up.

3.4 INSTRUCTION TO GOVERNMENT PERSONNEL

Provide 1 man-day of instruction to Government personnel in accordance with Section 15050, "Basic Mechanical Materials and Methods" for control valves.

-- End of Section --

SECTION 15216

WELDING PRESSURE PIPING

03/98

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.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B31.1	(1998) Power Piping
ASME BPVC SEC I	(1998) Boiler and Pressure Vessel Code: Section I Power Boilers
ASME BPVC SEC II-C	(1998) Boiler and Pressure Vessel Code: Section II Material Part C - Welding Rods, Electrodes, and Filler Metals
ASME BPVC SEC V	(1998) Boiler and Pressure Vessel Code: Section V Nondestructive Examination
ASME BPVC SEC IX	(1998) Boiler and Pressure Vessel Code: Section IX Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators

AMERICAN SOCIETY FOR NONDESTRUCTIVE TESTING, INC. (ASNT)

ASNT SNT-TC-1A	(1992) Recommended Practice
----------------	-----------------------------

AMERICAN WELDING SOCIETY, INC. (AWS)

AWS A2.4	(1993) Symbols for Welding, Brazing and Nondestructive Examination
AWS A3.0	(1994) Welding Terms and Definitions Including Terms for Brazing, Soldering Thermal Spraying and Thermal Cutting
AWS D1.1	(1996) Structural Welding Code Steel
AWS D10.9	(1980) Qualification of Welding Procedures and Welders for Piping and Tubing
AWS QC1	(1988) AWS Certification of Welding Inspectors
ANSI/AWS Z49.1	(1994) Safety in Welding, Cutting and Allied Processes

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910

Occupational Safety and Health Standards

29 CFR 1926

Safety and Health Regulations for
Construction

1.2 RELATED REQUIREMENTS

Section 15050, "Basic Mechanical Materials and Methods" applies to this section with the additions and modifications specified herein.

1.3 DEFINITIONS

AWS A3.0 and applicable ANSI piping documents.

1.4 SUBMITTALS

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

1.4.1 SD-04 Drawings

- a. Welding pressure piping

1.4.1.1 Welding Pressure Piping

Show location, length, and type of welds, and indicate postweld heat treatment and nondestructive testing as required.

1.4.2 SD-08 Statements

- a. Welding procedures qualification G
- b. Nondestructive examination (NDE) procedures G
- c. NDE personnel certification procedures G
- d. Inspector certification G

Submit inspector certification and NDE personnel certification for record.

1.4.2.1 Welding Procedures and Qualifications

- a. Specifications and Test Results: Submit copies of the welding procedure specifications and procedure qualification test results for each type of welding required. Approval of any procedure does not relieve the Contractor of the responsibility for producing acceptable welds. Submit this information on the forms printed in ASME BPVC SEC IX or their equivalent. Welding procedures shall include QW-482 "Suggested Format for Welding Procedure Specification (WPS)" AND QW-483 "Suggested Format for Procedure Qualification Record (PQR)".
- b. Certification: Before assigning welders or welding operators to the work, submit their names, together with certification that each individual is performance qualified as specified. Do not start welding work prior to procedure qualification. The certification shall state the type of welding and positions for which each is qualified, the code and procedure under which each is qualified, date qualified, and the firm and individual certifying the qualification tests. Welding certificates shall include QW-484 "Suggested Format for Manufacturer's Record of

Welder or Welding Operator Qualification Tests (WPQ)".

1.4.3 SD-18 Records

a. Weld identifications G

1.4.3.1 Weld Identifications

Submit a list of the welders' names and symbol for each welder. To identify welds, submit written records indicating the location of welds made by each welder or welding operator.

1.5 QUALITY ASSURANCE

1.5.1 Procedures

Develop and qualify procedures for welding metals included in the work. Do not start welding until welding procedures, welders, and welding operators have been qualified. Perform qualification testing by an approved testing laboratory, or by the Contractor if approved by the Contracting Officer in accordance with the qualified procedures. Notify the Contracting Officer at least 24 hours in advance of the time and place of the tests. When practicable, perform the qualification tests at or near the work site. Maintain current records of the test results obtained in welding procedure, welding operator/welder performance qualifications, and nondestructive examination (NDE) procedures. These records shall be readily available at the site for examination by the Contracting Officer. Qualify the procedures for making transition welds between different materials or between plates or pipes of different wall thicknesses. ASME B31.1 requirements for branch connections may be used in lieu of detailed designs. Unless otherwise specified, the choice of welding process shall be the responsibility of the Contractor.

1.5.1.1 Previous Qualifications

Welding procedures, welders, and welding operators previously qualified by test may be accepted for the work without requalification provided that the following conditions are fulfilled:

- a. Copies of welding procedures, procedure qualification test records, and welder and welding operator performance qualification test records are submitted and approved in accordance with the paragraph entitled "Submittals."
- b. Testing was performed by an approved testing laboratory or technical consultant or by the Contractor's approved quality control organization.
- c. The welding procedures, welders, and welding operators were qualified in accordance with ASME BPVC SEC IX or AWS D10.9, AR-2 level; and base materials, filler materials, electrodes, equipment, and processes conformed to the applicable requirements of this specification.
- d. The requirements of paragraph entitled "Welder and Welding Operator Performance Qualification" for renewal of qualification were met, and records showing name of employer and period of employment using the process for which qualified are submitted as evidence of conformance.

1.5.1.2 Performance

The Contractor shall be responsible for the quality of joint preparation, welding, and examination. Clearly identify and record materials used in the welding operations. The examination and testing defined in this specification are minimum requirements. Provide additional examination and testing as necessary to achieve the quality required.

1.5.2 Welding Procedures Qualification

Qualification of the welding procedures for each group of materials to be welded is required as indicated in ASME BPVC SEC IX. Record in detail and qualify the "Welding Procedure Specifications" for every welding procedure proposed. Qualification for each welding procedure shall conform to the requirements of ANSI Standards and to this specification. The welding procedures shall specify end preparation for welds, including cleaning, alignments, and root openings. Preheat, interpass temperature control, and postheat treatment of welds shall be as required by ANSI Piping documents, unless otherwise indicated or specified. Describe the type of backing rings or consumable inserts, if used, and, if they are to be removed, the removal process. Welding procedure qualifications shall be identified individually and referenced on the shop drawings or suitably keyed to the contract drawings.

1.5.3 Welder and Welding Operator Performance Qualification

Qualify each welder and welding operator assigned to work covered by this specification by performance tests using equipment, positions, procedures, base metals, and electrodes or bare filler wires from the same specification, classification, or group number that will be encountered on his assignment. Welders or welding operators who make acceptable procedure qualification tests will be considered performance-qualified for the welding procedure used. Determine performance qualification in accordance with ASME B31.1, and as specified.

1.5.4 Renewal of Qualification

Requalification of a welder or welding operator shall be required under one or any combination of the following conditions:

- a. When a welder or welding operator has not used the specific welding process for a period of 3 months. The period may be extended to 6 months if the welder has been employed on another welding process.
- b. There is specific reason to question the welder's ability to make welds that will meet the requirements of the specifications.
- c. The welder or welding operator was qualified by an employer other than those firms performing work under this contract and a qualification test has not been taken within the preceding 12 months. Renewal of qualification under this condition need be made on only a single test joint or pipe of any thickness, position, or material to reestablish qualification for any thickness, position, or material for which the welder or welding operator had qualified previously.

1.5.5 Qualification of Inspection and (NDE) Personnel

Qualification of Inspection and Nondestructive Examination (NDE) Personnel:

Qualify inspection and nondestructive examination personnel in accordance with the following requirements:

1.5.5.1 Inspector Certification

Qualify welding inspectors in accordance with AWS QC1.

1.5.5.2 NDE Personnel Certification Procedures

Certify NDE personnel and establish a written procedure for the control and administration of NDE personnel training, examination, and certification. Base procedures on appropriate specific and general guidelines of training and experience recommended by ASNT SNT-TC-1A, Supplement A-Radiographic, Supplement B-Magnetic particle, and Supplement D-Liquid Penetrant.

1.5.6 Symbols

Conform to AWS A2.4.

1.5.7 Safety

Conform to ANSI/AWS Z49.1, 29 CFR 1910-SUBPART Q, "Welding, Cutting, and Brazing," 29 CFR 1926-SUBPART J, "Welding and Cutting."

1.6 ENVIRONMENTAL

Do not perform welding when the quality of the completed weld could be impaired by the prevailing working or weather conditions. The Contracting Officer will determine when weather or working conditions are unsuitable for welding.

1.7 DELIVERY AND STORAGE

Deliver filler metals, electrodes, fluxes and other welding materials to the site in manufacturers' original packages and store in a dry space until used. Label and design packages properly to give maximum protection from moisture and to assure safe handling.

PART 2 PRODUCTS

2.1 WELDING MATERIALS

Comply with ASME BPVC SEC II-C. Welding equipment, electrodes, welding wire, and fluxes shall be capable of producing satisfactory welds when used by a qualified welder or welding operator using qualified welding procedures.

PART 3 EXECUTION

3.1 WELDING

Do not deviate from applicable codes, approved procedures and approved shop drawings without prior written approval from the Contracting Officer. Materials or components with welds made off the site will not be accepted if the welding does not conform to the requirements of this specification unless otherwise specified. Assign each welder or welding operator an identifying number, letter, or symbol that shall be used to identify his welds. For carbon steel piping systems, each welder or welding operator shall apply his mark adjacent to his weld using an approved rubber stamp or felt-tipped marker with permanent, weatherproof ink or other approved

methods that do not deform the metal. For seam welds, place identification marks adjacent to the welds at 3 foot intervals. Confine identification by die stamps or electric etchers to the weld reinforcing crown, preferably in the finished crater. For stainless steel or Inconel piping systems, identification shall be on a stainless steel tag strapped to the pipe not more than 6 inches from the weld. Do not stamp or etch stainless steel or Inconel piping systems. The markers, bands, and tags are to be provided by the Contractor.

3.2 WELDING OPERATORS

Perform welding in accordance with qualified procedures using qualified welders and welding operators.

3.3 SUPPORTS

Welding of hangers, supports, and plates to structural members shall conform to AWS D1.1 and meet the requirements in Section 15140, "Pipe Hangers and Supports".

3.4 EXAMINATIONS AND TESTS

Visual and nondestructive examinations shall be performed by the Contractor to detect surface and internal discontinuities in completed welds. Employ the services of a qualified commercial inspection or testing laboratory approved by the Contracting Officer. The qualified commercial inspection or testing laboratory shall be responsible for all radiographic, liquid penetrant, and magnetic particle testing for the 300H and 800H piping systems. The Contractor shall be responsible for all other examinations and tests. Visually examine welds and radiographic, liquid penetrant, or magnetic particle, examination shall be required as indicated in Tables IV and V attached to this section. The 300H and 800H piping systems each have a design temperature of 1250 degrees F; therefore all welds require some form of radiography, liquid penetrant, or magnetic particle as dictated in Table 136.4 of ASME B31.1 and repeated in this specification in Table V. The 300C and 800C piping systems have a design temperature below 350 degrees F and therefore visual examination is required for all welds of these piping systems. When examination and testing indicates defects in a weld joint, a qualified welder shall repair the weld in accordance with the paragraph entitled "Corrections and Repairs" of this Section.

3.4.1 Visual Examination

Visually examine welds as follows:

- a. Before welding -- for compliance with requirements for joint preparation, placement of backing rings or consumable inserts, alignment and fit-up, and cleanliness.
- b. During welding -- for conformance to the qualified welding procedure.
- c. After welding -- for cracks, contour and finish, bead reinforcement, undercutting, overlap, and size of fillet welds.

3.4.2 Nondestructive Examination

NDE shall be in accordance with written procedures. Procedures for radiographic, liquid penetrant, and wet magnetic particle tests and methods shall conform to ASME BPVC SEC V. The approved procedure shall be

demonstrated to the satisfaction of the Contracting Officer's QA personnel. In addition to the information required in ASME BPVC SEC V, the written procedures shall include:

- a. Timing of the nondestructive examination in relation to the welding operations.
- b. Safety precautions.

3.4.3 Examinations and Tests by the Government

The Government reserves the right to perform inspection and supplemental nondestructive or destructive tests as deemed necessary. The cost of supplemental NDE will be borne by the Government. Correction and repair of defect and re-examination of weld repairs shall be performed by the Contractor at no additional cost to the Government. Inspection and tests will conform to paragraphs "Visual Examination" and "Nondestructive Examination", except that destructive test may also be required. When destructive test are ordered by the Contracting Officer and performed by the Contractor and the specimens or other supplemental examinations indicate that the materials and workmanship do not conform to the contract requirements, the cost of the test, corrections, and repairs shall be borne by the Contractor. When the specimens or other supplemental examinations of destructive tests indicate that the materials or workmanship do not conform to the specification requirements, the cost of the test and repairs will be borne by the Government. When destructive tests are made, repairs shall be made by qualified welders or welding operators using welding procedures which will develop the full strength of the members cut. Welding shall be subject to inspection and tests in the mill, shop, and field. When materials or workmanship do not conform to the specification requirements, the Government reserves the right to reject the work at any time before final acceptance of the system containing the weldment.

3.5 ACCEPTANCE STANDARDS

3.5.1 Visual

The following indications are unacceptable:

- a. Cracks--external surface.
- b. Undercut on surface which is greater than 1/32 inch deep provided that the remaining wall thickness is not less than the minimum design thickness.
- c. Weld reinforcement:

- (1) ASME B31.1, conform to Table I.

TABLE I
REINFORCEMENT OF GIRTH AND LONGITUDINAL BUTT WELDS

Thickness of Base Metal, inches	Maximum Thickness of Reinforcement for Design Temperature		
	Greater than 750oF	350oF-750oF	Less Than 350oF
	inch	inch	inch
Up to 1/8, incl.	1/16	3/32	3/16
Over 1/8 to 3/16, incl.	1/16	1/8	3/16
Over 3/16 to 1/2, incl.	1/16	5/32	3/16
Over 1/2 to 1, incl.	3/32	3/16	3/16
Over 1 to 2, incl.	1/8	1/4	1/4
Over 2	5/32	The greater of 1/4 in. or 1/8 times the width of the weld in inches.	

NOTES:

1. For double welded butt joints, this limitation on reinforcement given above shall apply separately to both inside and outside surfaces of the joint.
2. For single welded butt joints, the reinforcement limits given above shall apply to the outside surface of the joint only.
3. The thickness of weld reinforcement shall be based on the thickness of the thinner of the materials being joined.
4. The weld reinforcement thicknesses shall be determined from the higher of the abutting surfaces involved.
5. Weld reinforcement may be removed if so desired.

- d. Lack of fusion on surface.
- e. Incomplete penetration (applies only when inside surface is readily accessible).
- f. Convexity of fillet weld surface greater than 10 percent of longest leg plus 0.03 inch.
- g. Concavity in groove welds.
- h. Concavity in fillet welds greater than 1/16 inch.
- i. Fillet weld size less than indicated or greater than 1 1/4 times the minimum specified fillet leg length.

3.5.2 Magnetic Particle Examination

The following relevant indications are unacceptable:

- a. Any cracks and linear indications.
- b. Rounded indications with dimensions greater than 3/16 inch.
- c. Four or more rounded indications in a line separated by 1/16 inch

or less edge-to-edge.

- d. Ten or more rounded indications in any 6 square inches of surface, with the major dimension of this area not to exceed 6 inches, with the area taken in the most unfavorable location relative to the indications being evaluated.

3.5.3 Liquid Penetrant Examination

Indications whose major dimensions are greater than 1/16 inch shall be considered relevant. The following relevant indications are unacceptable:

- a. Any cracks or linear indications.
- b. Rounded indications with dimensions greater than 3/16 inch.
- c. Four or more rounded indications in a line separated by 1/16 inch or less edge-to-edge.
- d. Ten or more rounded indications in any 6 square inches of surface, with the major dimension of this area not to exceed 6 inches, with the area taken in the most unfavorable location relative to the indications being evaluated.

3.5.4 Radiography

Welds that are shown by radiography to have any of the following discontinuities are unacceptable:

- a. Any type of crack or zone of incomplete fusion or penetration.
- b. Any other elongated indication which has a length greater than:
 - (1) 1/4 inch for t up to 3/4 inch, inclusive;
 - (2) 1/3 t for t from 3/4 inch to 2 1/4 inches, inclusive;
 - (3) 3/4 inch for t over 2 1/4 inches where t is the thickness of the thinner portion of the weld.

("t" pertains to the thickness of the weld being examined. If a weld joins two members having different thickness at the weld, "t" is the thinner of these two thicknesses.)

- c. Any group of indications in line that have an aggregate length greater than t in a length of 12t, except where the distance between the successive indications exceeds 6L where L is the longest indication in the group.
- d. Porosity in excess of that shown acceptable in Appendix A-250, Acceptance Standard for Radiographically Determined Rounded Indications in Welds, ASME BPVC SEC I.

3.5.5 Ultrasonic Examination

Not permitted in this project.

3.6 CORRECTIONS AND REPAIRS

Remove defects and replace welds as specified in ASME B31.1, unless

otherwise specified. Repair defects discovered between weld passes before additional weld material is deposited. Wherever a defect is removed, and repair by welding is not required, the affected area shall be blended into the surrounding surface eliminating sharp notches, crevices, or corners. After defect removal is complete and before rewelding, reexamine the area by the same test methods which first revealed the defect to ensure that the defect has been eliminated. After rewelding, reexamine the repaired area by the same test methods originally used for that area. For repairs to base material, the minimum examination shall be the same as required for butt welds. Indication of a defect shall be regarded as a defect unless reevaluation by NDE or by surface conditioning shows that no unacceptable indications are present. The use of foreign material to mask, fill in, seal, or disguise welding defects will not be permitted.

TABLE IV
EXAMINATIONS AND TESTS FOR VARIOUS MATERIALS AND SERVICES

Examinations or Tests Required

Material or Application	Visual	Radiographic	Magnetic Particle or Liquid Penetrant	Ultra-sonic
High-alloy austenitic or nickel steels or nickel alloys for other than cryogenic or vacuum service				
a. Tack welds	Yes	No	No	No
b. Root passes	Yes	No	Yes	No
c. Intermediate passes	Yes	No	No	No
d. Completed weld	Yes	100 percent	Yes (PT only)	No
Stainless steel to carbon steel				
a. Completed weld	Yes	Yes	Yes (PT only)	No
Carbon steel piping systems				
a. Tack welds	Yes	No	No	No
b. Root passes	Yes	No	No	No
c. Intermediate passes	Yes	No	No	No
d. Completed weld	Yes	No	No	No

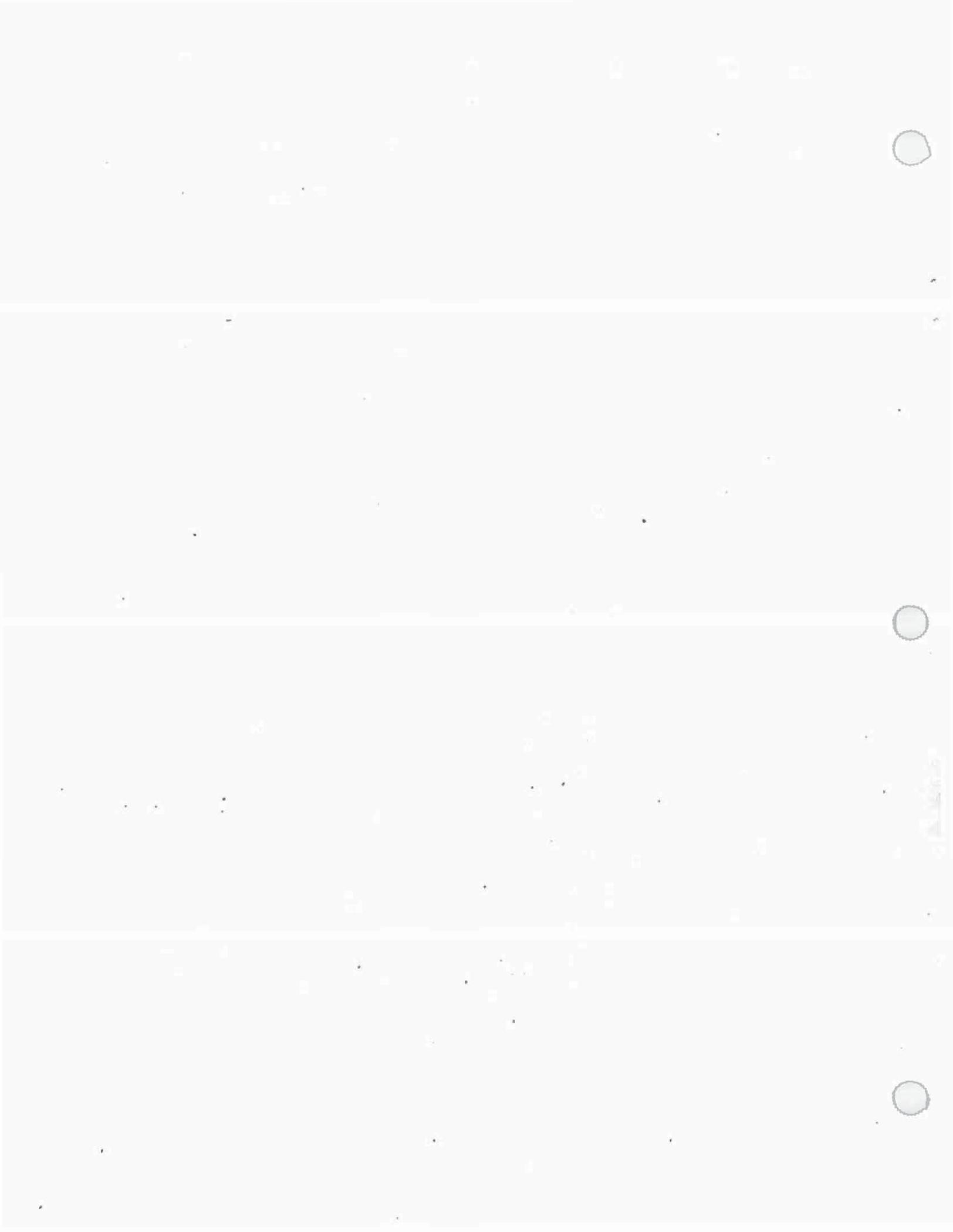
TABLE V
MANDATORY MINIMUM NONDESTRUCTIVE EXAMINATIONS FOR ASME B31.1 PIPING

	Temperatures over 750 degrees F and at all pressures.	Temperatures between 350 degrees F and 750 degrees F inclusive and at all pressures over 1052 psig gage	All others
Buttwelds (Girth and Longitudinal)	RT for NPS over 2 inches MT or PT for NPS 2 inches and less.	RT for over 2 inch NPS with thickness over 3/4 inch. Visual for all sizes with thickness 3/4 inch or less.	Visual for all sizes and thicknesses.
Welded Branch Connections (Size indicated is Branch Size)	RT for NPS over 2 inch MT or PT for NPS 2 inch and less.	RT for branch over 4 inch NPS and thickness of branch over 3/4 inch. Visual for all sizes with branch thickness 3/4 inch or less.	Visual for all sizes and thicknesses.
Fillet, Socket Welds	PT or MT for all sizes and thicknesses.	Visual for all sizes and thicknesses.	Visual for all sizes and thicknesses.

NOTES:

1. Thickness refers to pressure boundary wall thickness (such as pipe wall, fitting wall, or nozzle wall thickness).
2. All welds must be given a visual examination in addition to type of specific nondestructive examination specified.
3. NPS-Nominal Pipe Size.
4. RT-Radiographic examination; MT-magnetic particle examination; PT-liquid penetrant examination.
5. RT of branch welds shall be performed before any nonintegral reinforcing material is applied.
6. The thickness of buttwelds is defined as the thicker of the two abutting ends after end preparation.
7. Temperatures and pressures shown are design.
8. In lieu of radiography of welded branch connections when required above, liquid penetrant or magnetic particle examination is acceptable and, when used, shall be performed at the lesser of one-half of the weld thickness or each 1/2 inch of weld thickness and all accessible final weld surfaces.
9. For nondestructive examination of the pressure retaining component, refer to the standards listed in applicable code or the manufacturing specifications.

-- End of Section --



APPENDIX 3 – REPLACE PIPING-SHOP 940 HAZMAT REPORT



August 13, 2021

To: Mason & Hangar
222 Central Park Avenue, Suite 1200
Virginia Beach, Virginia 23462

Attn: Mr. Ram Surenderen, AIA, NCARB, LEED AP BD+C
Project Manager

Re: Asbestos and Lead Paint Survey
Project XH98495, Replace Shop 940 Piping and Valves
Replace 300 PSIG Fuel Fired Heat Exchanger
Building 137, FRC-E
GET Project No. VB21-151E

1.0 Introduction

As authorized by Mr. Ram Surenderen, Project Manager for Mason & Hangar, GET Solutions, Inc. (GET) personnel performed a non-invasive hazardous materials survey for the building materials that have the potential for disturbance as part of this project. The survey was performed by Mr. Chris Hahn, Industrial Hygienist with GET, on July 28, 2021.

It is **GET's** understanding that the renovation project will involve the replacement of all 940-shop piping including valves as well as an existing 300 PSIG network heat exchanger (NHE) to include a new 300 PSIG FFHE and all associated accessories. Shop 9 is located within Building 137 within the FRC-East portion of MCAS Cherry Point.

The scope of the survey for the buildings consisted of the following items only:

- Non-invasive survey of suspect asbestos-containing materials (ACM).
- Screening for the presence of lead-containing paint (LCP).

2.0 Asbestos-Containing Material (ACM)

Asbestos is a type of fiber-like mineral that is heat, flame-retardant, and corrosion-resistant. Asbestos was widely used in building, construction and insulation materials subject to heat and damage from chemicals. Occupational Safety and Health Administration (OSHA)'s specific definition of asbestos is any material containing "chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos."

Asbestos-containing material (ACM) is any material with more than 1 percent asbestos, according to OSHA and the Environmental Protection Agency (EPA) standards. Asbestos-containing materials might include insulation, fire-retardant applications, floor tiles and roofing products.

2.1 Methodology

The asbestos survey was conducted as part of a planned demolition of the buildings. As such, the survey was conducted in accordance with the Environmental Protection Agency's (EPA) National Emissions Standard for Hazardous Air Pollutants (NESHAP), Asbestos Hazard Emergency Response Act (AHERA), and State of North Carolina Regulations. This protocol included a non-invasive visual survey and sampling for suspect asbestos containing materials at the above referenced buildings. All samples were collected by appropriately accredited Inspectors and submitted to EMSL Analytical, Inc. (EMSL) in Cinnaminson, New Jersey. EMSL is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) and the State of North Carolina to analyze suspect asbestos-containing bulk materials. A total of 11 samples and/or sample layers were analyzed using Polarized Light Microscopy (PLM) following EPA Method 600/R-93/116.

2.2 Results (Refer also to Appendix A for Laboratory Reports)

Table I: ACM Testing Results – Project XH98495, Replace Shop 940 Piping and Valves Replace 300 PSIG Fuel Fired Heat Exchanger Building 137, FRC-E MCAS Cherry Point, North Carolina July 28, 2021			
Sample #	Sample Location	Sample Type	Analytical Results
0001	300 PSIG FFHE Unit Exterior -16" Pipe	Pipe Insulation	NAD
0002	300 PSIG Unit at Bottom Exterior	Pipe Insulation	NAD
0003	300 PSIG Unit	PI Fabric Wrap	NAD
0004	300 PSIG Unit	PI Fabric Wrap	NAD
0005	Exterior Piping	Outer Pipe Insulation	NAD
0006	Exterior Piping	Inner Pipe Insulation	NAD
0007	Exterior Piping	Innermost Pipe Insulation	NAD
0008 0008A	Mechanical Room Adjacent to Air Compressor	PI Wrap PI	NAD NAD
0009	Shop Area Ceiling-Cold Water Piping	PI Wrap	NAD
0010	Shop Area Ceiling-Hot Water Piping	PI Wrap	NAD

%-C – Percent Chrysotile Asbestos Fibers, PI = Pipe Insulation Wrap, NAD = No Asbestos Identified

2.3 Conclusions and Recommendations

Asbestos containing material(s) were not identified during this study.

GET offers the following observations regarding the information presented in **Table I**:

- Most areas behind solid walls, and floors were inaccessible and could not be visually surveyed for the presence of ACM. ACM including, but not limited to, thermal pipe and pipe fitting insulation may exist in these locations. Additionally, the following materials should be considered asbestos containing until sampling determines otherwise: interior boiler components, fire door insulation, vermiculite insulation within cinderblock walls, pipe flanges and gaskets, and vapor barrier behind the façade. Sampling of these materials will require exploratory demolition and/or additional sampling prior to renovation/demolition.

2.4 Applicable Regulations

EPA / NESHAP Regulations for Asbestos Containing Materials

The U.S. Environmental Protection Agency promulgated the National Emission Standards for Hazardous Air Pollutants (NESHAP) [40 CFR Part 61], which addresses the application, removal, and disposal of asbestos-containing materials (ACM). Under NESHAP the following categories are defined for asbestos-containing materials:

Friable - When dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

Non-friable - When dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Category I Non-friable ACM - Packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than 1% asbestos.

Category II Non-friable ACM – Any material, excluding Category I Non-friable ACM, containing more than 1% asbestos.

Regulated Asbestos Containing Material (RACM) – One of the following:

1. Friable ACM
2. Category I Non-friable ACM that has become friable.
3. Category I Non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading.
4. Category II Non-friable ACM that has a high probability of becoming, or has become, friable by the forces expected to act on the material in the course of demolition or renovation operations.

Under NESHAP, the following actions are required:

1. Prior to the commencement of demolition or renovation activities, the building owner must inspect the affected facility or part of the facility where the demolition or renovation activities will occur for the presence of asbestos.

2. Remove all RACM from the facility before any activity begins that would break up, dislodge, or similarly disturb the material or preclude access for subsequent removal.
3. RACM need not be removed prior to demolition if:
 - a) It is Category I non-friable ACM that is not in poor condition.
 - b) It is on a facility component that is encased in concrete or other similar material and is adequately wet whenever exposed.
 - c) It was not accessible for testing and was therefore not discovered until after demolition began and because of the demolition the material cannot be safely removed.
 - d) It is Category II non-friable ACM and the probability is low that the material will become crumbled, pulverized, or reduced to powder during demolition.

3.0 Lead-Containing Paint

3.1 Methodology

GET was requested to perform a lead-containing paint screening. The screening was conducted by collecting paint chip samples from painted surfaces within the buildings in those areas that will be disturbed during the pending renovation/demolition. The paint chip samples were submitted under chain-of-custody protocol to EMSL Analytical, Inc. (EMSL), a National Lead Laboratory Accreditation Program (NLLAP), located in Cinnaminson, New Jersey. EMSL analyzed the lead content of the sample utilizing Flame Atomic Absorption via Environmental Protection Agency (EPA) Method SW846 7420. The reporting limit for this method is 10 micrograms of lead. The results of this analysis were compared to the Environmental Protection Agency (EPA) threshold for lead-based paint of 0.5% by weight.

Positive: Lead is present at or above the HUD & DPOR standard of 0.5% by weight on *one or more* of the components.

Negative: Lead is not present at or above the HUD & DPOR standard of 0.5% by weight on any of the components.

The Occupational Safety and Health Administration (OSHA) considers any paint with detectable lead as lead-containing paint. And therefore, if detectable lead is present on surfaces that are impacted by renovation or demolition activities, then the OSHA Lead in Construction Standard (OSHA 29 CFR 1926.62) would be applicable.

3.2 Results (Refer also to Appendix A for Laboratory Reports)

Table II: Lead Paint Testing Results – Project XH98495, Replace Shop 940 Piping and Valves Replace 300 PSIG Fuel Fired Heat Exchanger Building 137, FRC-E MCAS Cherry Point, North Carolina July 28, 2021 (Refer also to sample results)		
Sample Number	Sample Location	Analytical Results % by Weight
940 L-1	Exterior Tank at 300 PSIG Unit- Yellow	0.037
940 L-2	Mechanical Room Valve-Blue	0.29
940 L-3	Mechanical Room Compressed Air Piping-Gray	0.11
940 L-4	Mechanical Room Equipment Pedestal-Yellow	0.0094
940 L-5	Mechanical Room 12" Piping- Black	0.29
940 L-6	Mechanical Room 3" Piping- Green	0.032

Lead based paint greater than or equal to 0.5% by weight under the HUD and EPA guidelines was not identified associated with building materials samples as part of this study (See Table III Above). Lead was detected in paint at a lower concentration associated with the surfaces sampled. As such, the OSHA Standard 29 CFR 1926.62 does apply to the demolition of this building.

3.3 Recommendations: OSHA Regulations for Lead-Based/Lead-Containing Paint

It is important to note that OSHA, under its Lead in Construction standard (29 CFR 1926.62, Paragraph d), does not define acceptable levels of lead in paint at which no exposure to airborne lead (above the action level) would be expected. Rather, OSHA defines airborne concentrations, and references specific types of work practices and operations from which a lead hazard may be generated. Environmental and personnel monitoring should be conducted during any removal/demolition process (as appropriate) to verify that actual personal exposures are below the Permissible Exposure Limit (PEL). Under OSHA requirements, the contractor performing the work will be required to conduct this monitoring and follow all the other

requirements found under 29 CFR 1926.62. Demolition debris associated with this project should be characterized using the TCLP Method for lead prior to disposal.

GET recommends that all workers impacting painted surfaces as part of this project receive OSHA Lead in Construction Awareness training and that engineering controls and hygiene practices described in 29 CFR 1926.62 be followed during the disturbance of painted surfaces.

GET appreciates the opportunity to provide you with these environmental consulting services. Should you have any questions regarding this report or require additional services, please feel free to contact us at your convenience.

Respectfully Submitted,

G E T Solutions, Inc.

A handwritten signature in black ink, appearing to read "T.C. Hahn", with a horizontal line extending to the right.

T. Christopher Hahn, REM
Director of Environmental Services
North Carolina Asbestos Inspector No. 13186
Attachments: Limitations, Laboratory Analysis and Chain-Of-Custody Documentation

4.0 Limitations

This report has been prepared for the exclusive use of Mason & Hangar and/or their agents and assigns. This service was performed in accordance with generally accepted environmental practices. No other warranty, expressed or implied, is made. Our conclusions and recommendations are based, in part, upon information provided to us by others and our site observations. We have not verified the completeness or accuracy of the information provided by others, unless otherwise noted. Our observations and recommendations are based upon conditions readily visible at the site at the time of our site visit, and upon current industry standards. Areas inspected for the referenced materials herein were limited to those designated by the Client.

During this study, suspect material samples were analyzed for lead-based paint. As with any similar survey of this nature, actual conditions exist only at the precise locations from which suspect samples were collected. Certain inferences are based on the results of this sampling and related testing to form a professional opinion of conditions in areas beyond those from which the samples were collected. It is also understood that this is a non-invasive survey so that it is possible that concealed materials may be present that were not accessible during the original survey. No other warranty, expressed or implied, is made.

Under this scope of services, **GET** assumes no responsibility regarding response actions (e.g. O&M Plans, Encapsulation, Abatement, Removal, etc.) initiated as a result of these findings. **GET** assumes no liability for the duties and responsibilities of the Client with respect to compliance with these regulations. Compliance with regulations and response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements and should be performed by appropriately qualified and licensed personnel, as warranted.

GET Solutions, Inc. by virtue of providing the services described in this report, does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies any conditions at the site that may present a potential danger to public health, safety, or the environment. The Client agrees to notify the appropriate local, state, or federal public agencies as required by law, or otherwise to disclose, in a timely manner, any information that may be necessary to prevent any danger to public health, safety, or the environment. The contents of the report should not be construed in any way as a recommendation to purchase, sell, or develop the project site.

Asbestos Analytical Results and Chain-Of Custody Documentation



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Tel/Fax: (800) 220-3675 / (856) 786-5974

<http://www.EMSL.com> / cinnaslab@EMSL.com

EMSL Order: 042118822

Customer ID: GETS42

Customer PO: VB21-151E

Project ID:

Attention: Chris Hahn
GET Solutions, Inc.
5465 Greenwich Rd
Virginia Beach, VA 23462

Phone: (757) 472-9802

Fax: (757) 518-1704

Received Date: 07/29/2021 9:20 AM

Analysis Date: 08/03/2021

Collected Date:

Project: Shop 940 / Piping Replacement / VB21-151E

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
940-B-1 <small>042118822-0001</small>	300 PSIG Unit Ext. Pipe 16" - Pipe Insulation	White Fibrous Homogeneous	20% Cellulose 5% Glass HA: 1	75% Non-fibrous (Other)	None Detected
940-B-2 <small>042118822-0002</small>	300 PSIG Unit @Bottom - Pipe Insulation	White Non-Fibrous Homogeneous	5% Glass HA: 2	95% Non-fibrous (Other)	None Detected
940-B-3 <small>042118822-0003</small>	300 PSIG Unit - Pipe Insulation Fabric Wrap	White Fibrous Homogeneous	95% Glass HA: 3	5% Non-fibrous (Other)	None Detected
940-B-4 <small>042118822-0004</small>	300 PSIG Unit - Pipe Insulation Fabric Wrap	White Fibrous Homogeneous	95% Glass HA: 3	5% Non-fibrous (Other)	None Detected
940-B-5 <small>042118822-0005</small>	Exterior Piping - Pipe Insulation - Outer	White Fibrous Homogeneous	90% Min. Wool HA: 4	10% Non-fibrous (Other)	None Detected
940-B-6 <small>042118822-0006</small>	Exterior Piping - Pipe Insulation - Inner	White Fibrous Homogeneous	90% Min. Wool HA: 5	10% Non-fibrous (Other)	None Detected
940-B-7 <small>042118822-0007</small>	Exterior Piping - Pipe Insulation - Inner Most	White Fibrous Homogeneous	90% Min. Wool HA: 6	10% Non-fibrous (Other)	None Detected
940-B-8-Wrap <small>042118822-0008</small>	Mechanical Room Adjacent to Air Compressure - Pipe Wrap	White Non-Fibrous Homogeneous	20% Glass HA: 7	80% Non-fibrous (Other)	None Detected
940-B-8-Insulation <small>042118822-0008A</small>	Mechanical Room Adjacent to Air Compressure - Pipe Insulation	Gray Fibrous Homogeneous	30% Min. Wool HA: 7	70% Non-fibrous (Other)	None Detected
940-B-9 <small>042118822-0009</small>	Shop Area - Cold Water Piping - Pipe Wrap	White Non-Fibrous Homogeneous	10% Cellulose 5% Glass HA: 8	85% Non-fibrous (Other)	None Detected
940-B-10 <small>042118822-0010</small>	Shop Area - Hot Water Piping - Pipe Wrap	White Fibrous Homogeneous	15% Cellulose 5% Glass HA: 9	80% Non-fibrous (Other)	None Detected

Initial report from: 08/03/2021 19:22:38



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Tel/Fax: (800) 220-3675 / (856) 786-5974

<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order: 042118822

Customer ID: GETS42

Customer PO: VB21-151E

Project ID:

Analyst(s)

Gregory Barry (1)

Keishla Vazquez Caraballo (10)

Samantha Rundstrom, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NJ DEP 03036, PA ID# 68-00367, LA #04127

Initial report from: 08/03/2021 19:22:38



Asbestos Bulk Building Materials - Chain of Custody

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

EMSL Order Number / Lab Use Only

042118822

PHONE: (800) 220-3675
EMAIL: CinnAsbtab@EMSL.com

EMSL ANALYTICAL, INC.
TESTING LABS - PRODUCTS - TRAINING

Customer ID:		Billing ID:	
Company Name: <u>GET Solutions Inc</u>		Company Name:	
Contact Name: <u>Chris Hahn</u>		Billing Contact:	
Street Address: <u>5465 Greenwich Rd</u>		Street Address: <u>SAME</u>	
City, State, Zip: <u>VA Beach, VA 23462</u>	Country: <u>USA</u>	City, State, Zip:	Country:
Phone: <u>757-518-1703</u>		Phone:	
Email(s) for Report: <u>chahne.getsolutionsinc.com</u>		Email(s) for Invoice:	

Project Information

Project Name/No: Shop 940 Piping Replacement Purchase Order: V821-151E

EMSL LIMS Project ID: (if applicable, EMSL will provide)

US State where samples collected: NC State of Connecticut (CT) must select project location:

Commercial (Taxable) Residential (Non-Taxable)

Sampled By Name: Chris Hahn Sampled By Signature: [Signature] No. of Samples in Shipment: 10

Turn-Around-Time (TAT)

3 Hour 6 Hour 24 Hour 32 Hour 48 Hour 72 Hour 96 Hour 1 Week 2 Week

Please call ahead for large projects and/or turnaround times 6 Hours or Less. *32 Hour TAT available for select tests only; samples must be submitted by 11:30am.

Test Selection

PLM - Bulk (reporting limit)

PLM EPA 600/R-93/116 (<1%)
 PLM EPA NOB (<1%)
 POINT COUNT

400 (<0.25%) 1,000 (<0.1%)

POINT COUNT w/ GRAVIMETRIC

400 (<0.25%) 1,000 (<0.1%)

NIOSH 9002 (<1%)
 NYS 198.1 (Friable - NY)
 NYS 198.6 NOB (Non-Friable - NY)
 NYS 198.8 (Vermiculite SM-V)

TEM - Bulk

TEM - Bulk
 TEM EPA NOB
 NYS NOB 198.4 (Non-Friable-NY)
 TEM EPA 600/R-93/116 w Milling Prep (0.1%)

Other Tests (please specify)

Positive Stop - Clearly Identified Homogeneous Areas (HA)

RECEIVED
 EMSL
 CINNAMINSON, N.J.
 2021 JUL 29 AM 10:04

Sample Number	HA Number	Sample Location	Material Description
940 B-1	1	300 PSIG Unit Ext. Pipe 16"	Pipe Insulation
940 B-2	2	300 PSIG Unit @ Bottom	Pipe Insulation
940 B-3	3	300 PSIG Unit	Pipe Insulation Fabric Wrap
940 B-4	3	" "	" " "
940 B-5	4	Exterior Piping	Pipe Insulation - Outer
940 B-6	5	Exterior Piping	Pipe Insulation - Inner
940 B-7	6	" "	Pipe Insulation Inner most
940 B-8	7	Mechanics Room Adjacent to Air Compressor	Pipe Insulation
940 B-9	8	Shop Area - Cold Water Piping	Pipe Wrap
940 B-10	9	Shop Area - Hot Water Piping	Pipe Wrap

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Method of Shipment: FEDEX Sample Condition Upon Receipt: 100

Relinquished by: [Signature] Date/Time: 7-28-21/1600 Received by: [Signature] Date/Time: 7-29-21 920A

Controlled Document - Asbestos Bulk R5 03/18/2021 AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

Lead Paint Analytical Results and Chain-Of Custody Documentation



EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077

Phone/Fax: (856) 303-2500 / (856) 786-5974

<http://www.EMSL.com>

cinnaminsonleadlab@emsl.com

EMSL Order:	202105834
CustomerID:	GETS42
CustomerPO:	VB21-151E
ProjectID:	

Attn: **Chris Hahn**
GET Solutions, Inc.
5465 Greenwich Rd
Virginia Beach, VA 23462

Phone: (757) 518-1703
 Fax: (757) 518-1704
 Received: 07/29/21 10:30 AM
 Collected: 7/27/2021

Project: **Shop 940 Piping Replacement**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

<i>Client Sample Description</i>	<i>Lab ID</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Weight</i>	<i>Lead Concentration</i>
940-L-1 Site: exterior tank @ 300 PSIG - yellow	202105834-0001	7/27/2021	7/30/2021	0.2549 g	0.037 % wt
940-L-2 Site: mechanical room - value blue	202105834-0002	7/27/2021	7/30/2021	0.2610 g	0.29 % wt
940-L-3 Site: mechanical room - compressed air line - grey	202105834-0003	7/27/2021	7/30/2021	0.2605 g	0.11 % wt
940-L-4 Site: mechanical room - pedestal - yellow	202105834-0004	7/27/2021	7/30/2021	0.2552 g	0.0094 % wt
940-L-5 Site: mechanical room - 12" pipe - black	202105834-0005	7/27/2021	7/30/2021	0.2587 g	0.29 % wt
940-L-6 Site: mechanical room - 3" pipe - green	202105834-0006	7/27/2021	7/30/2021	0.2760 g	0.032 % wt

Phillip Worby, Lead Laboratory Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.

Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NELAP Certifications: NJ 03036, NY 10872, PA 68-00367, AIHA-LAP, LLC ELLAP 100194, A2LA 2845.01

Initial report from 08/03/2021 11:35:21



Lead Chain of Custody

EMSL Order Number / Lab Use Only

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

PHONE: (800) 220-3675

EMAIL: CinnaminsonLeadLab@emsl.com

202105834

EMSL ANALYTICAL, INC.
TESTING LABS • PRODUCTS • TRAINING

Customer Information		Billing Information	
Customer ID:		Billing ID:	
Company Name:	GET Solutions, Inc	Company Name:	
Contact Name:	Chris Hahn	Billing Contact:	
Street Address:	5465 Greenwich Road	Street Address:	SAME
City, State, Zip:	VA Bch, VA 23462	City, State, Zip:	
Country:	USA	Country:	
Phone:	757-518-1703	Phone:	
Email(s) for Report:	chahn@getsolutionsinc.com	Email(s) for Invoice:	

Project Information			
Project Name/No:	shop 940 Piping Replacement	Purchase Order:	VB21-151E
EMSL LIMS Project ID:		US State where samples collected:	NC
(If applicable, EMSL will provide)		State of Connecticut (CT) must select project location:	<input type="checkbox"/> Commercial (Taxable) <input type="checkbox"/> Residential (Non-Taxable)
Sampled By Name:	Chris Hahn	Sampled By Signature:	<i>[Signature]</i>
		No. of Samples in Shipment:	

Turn-Around-Time (TAT)

3 Hour
 6 Hour
 24 Hour
 32 Hour
 48 Hour
 72 Hour
 96 Hour
 1 Week
 2 Week

Please call ahead for large projects and/or turnaround times 6 Hours or Less. *32 Hour TAT available for select tests only; samples must be submitted by 11:30am.

MATRIX	METHOD	INSTRUMENT	REPORTING LIMIT	SELECTION
CHIPS <input checked="" type="checkbox"/> % by wt. <input type="checkbox"/> ppm (mg/kg) <input type="checkbox"/> mg/cm ²	SW 846-7000B	Flame Atomic Absorption	0.008% (80ppm)	<input type="checkbox"/>
Reporting Limit based on a minimum 0.25g sample weight	SW 846-6010D	ICP-OES	0.0004% (4ppm)	<input type="checkbox"/>
AIR	NIOSH 7082	Flame Atomic Absorption	4µg/filter	<input type="checkbox"/>
	NIOSH 7300M / NIOSH 7303M	ICP-OES	0.5µg/filter	<input type="checkbox"/>
	NIOSH 7300M / NIOSH 7303M	ICP-MS	0.05µg/filter	<input type="checkbox"/>
WIPE <input type="checkbox"/> ASTM <input type="checkbox"/> NON-ASTM	SW 846-7000B	Flame Atomic Absorption	10µg/wipe	<input type="checkbox"/>
If no box is checked, non-ASTM Wipe is assumed	SW 846-6010D	ICP-OES	1.0µg/wipe	<input type="checkbox"/>
TCLP	SW 846-1311 / 7000B / SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	SW 846-1311 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
SPLP	SW 846-1312 / 7000B / SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	SW 846-1312 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
TTLIC	22 CCR App. II, 7000B	Flame Atomic Absorption	40mg/kg (ppm)	<input type="checkbox"/>
	22 CCR App. II, SW 846-6010D*	ICP-OES	2mg/kg (ppm)	<input type="checkbox"/>
STLC	22 CCR App. II, 7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	22 CCR App. II, SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
Soil	SW 846-7000B	Flame Atomic Absorption	40mg/kg (ppm)	<input type="checkbox"/>
	SW 846-6010D*	ICP-OES	2mg/kg (ppm)	<input type="checkbox"/>
Wastewater	SM 3111B / SW 846-7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
Unpreserved				<input type="checkbox"/>
Preserved with HNO3 <input type="checkbox"/> PH<2	EPA 200.7	ICP-OES	0.020 mg/L (ppm)	<input type="checkbox"/>
Drinking Water	EPA 200.5	ICP-OES	0.003 mg/L (ppm)	<input type="checkbox"/>
Unpreserved				<input type="checkbox"/>
Preserved with HNO3 <input type="checkbox"/> PH<2	EPA 200.8	ICP-MS	0.001 mg/L (ppm)	<input type="checkbox"/>
TSP/SPM Filter	40 CFR Part 50	ICP-OES	12 µg/filter	<input type="checkbox"/>
Other:				<input type="checkbox"/>

Sample Number	Sample Location	Volume / Area	Date / Time Sampled
940 L-1	Exterior Tank 300PSIG - yellow		7-27-21 0900
940 L-2	Mechanical Room - Valve - Blue		7-27-21 1030
940 L-3	Mechanical Rm - Compressed Air Line - Gray		7-27-21 1115
940 L-4	Mechanical Rm. Pedestal - yellow		7-27-21 1145
940 L-5	Mechanical Rm 12" Pipe - Black		7-27-21 1200

Method of Shipment:	FEDEX	Sample Condition Upon Receipt:	
Relinquished by:	<i>[Signature]</i>	Received by:	<i>[Signature]</i> FedEx
Date/Time:	7-28-21 1600	Date/Time:	7/29/21 10:30
Relinquished by:		Received by:	

Controlled Document - COC-25 Lead R16 4/19/2021 *6010C Available Upon Request

AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

* PER PREVIOUS PRICES - Flame AA - (40) *

APPENDIX 4 – PERFORMANCE APPENDIX FORM (PAP)

Performance Assessment Plan

MONTHLY EVALUATION

MONTH: _____ **YEAR:** _____

Evaluation Factor	Yes	No	N/A	Comments
<p><i>Experience of Personnel</i></p> <p>1. Did the team identified in the proposal actively participate in the project?</p> <p>2. If personnel substitutions were needed, was the degree of technical competence maintained?</p>				
<p><i>Working Relationships</i></p> <p>1. Did the Construction team participate in the design process (i.e. attend meetings, provide insight, etc.)? Were the coordination meetings between Construction and Design team personnel documented?</p> <p>2. Did the Design team participate in the construction process (i.e. attend CQC meetings, perform field oversight, etc.)? Were coordination meetings between Construction and Design team personnel documented?</p> <p>3. Did the collaboration between the Construction and Design Team deliver a high value innovative facility? - Were Total Operating Cost minimized - What LEED points can be obtained - Was energy efficiency optimized, and the energy goals exceeded.</p> <p>4. Was the budget management process clear; was an estimate submitted on time with each design submittal. Was the estimate updated to reflect the changes in the design submittal?</p> <p>5. Did the Contractor's team effectively manage the project budget and the User's requirements to meet the customer's needs? Was project budget and emphasis in cost control exhibited in the estimate? (Contractor to document in comments block</p>				

<p>materials/systems innovations and provision of higher quality than required in the RFP Part 4)</p> <p><i>Additional factors to be developed during Partnering.</i></p>				
<p>Quality Control</p> <p>1. Were re-submittals of design deliverables or construction rework required this month?</p> <p>2. Were as built redlines updated this month?</p> <p><i>Additional factors to be developed during Partnering.</i></p>				
<p>Timely Performance</p> <p>1. Is the Contractor on schedule?</p> <p>2. Is the Contractor maintaining the schedule? (Can the Government confirm the project is on schedule?)</p> <p>3. Is the Contractor following his schedule?</p> <p><i>Additional factors to be developed during Partnering.</i></p>				
<p>Effectiveness of Management</p> <p>1. Did the Government need to intercede in resolving a subcontractor issue?</p> <p><i>Additional factors to be developed during Partnering.</i></p>				
<p>Compliance with Labor Standards</p> <p>1. Did payrolls have to be resubmitted this month due to inaccuracies or errors?</p> <p><i>Additional factors to be developed during Partnering.</i></p>				
<p>Compliance with Safety Standards</p> <p>1. Were there any lost time accidents this month?</p>				

<i>Additional factors to be developed during Partnering.</i>				
--	--	--	--	--

GENERAL PERFORMANCE COMMENTS THIS MONTH:

Concurrence:

CM/ROICC Representative _____ Date _____.

Project Manager _____ Date _____.

Contractor Representative _____ Date _____.

APPENDIX 5-

PERMITS RECORDS OF DECISION (PROD) FORM

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:	WORK ORDER NUMBER:
	LOCATION:	
	GOVERNMENT PROJECT MANAGER:	
**Use referenced notes where additional space required.		
Air Quality	PERMIT: Construction	Date Obtained: Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**	
	Issuing Agency:	
	Special Provisions and Requirements:**	
Air Quality	PERMIT: Operating	Date Obtained: Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**	
	Issuing Agency:	
	Special Provisions and Requirements:**	
Air Quality	PERMIT: Asbestos Demolition & Removal	Date Obtained: Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**	
	Issuing Agency:	
	Special Provisions and Requirements:**	
Air Quality	PERMIT: Other	Date Obtained: Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**	
	Issuing Agency:	
	Special Provisions and Requirements:**	

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:	WORK ORDER NUMBER:	
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Water Pollution	PERMIT: Wastewater Collection System	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Water Pollution	PERMIT: Wastewater Pump Station	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:		
Water Pollution	PERMIT: Wastewater Treatment Plant	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Water Pollution	PERMIT: Pretreatment, i.e. Oil/Water Separator	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:	WORK ORDER NUMBER:	
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Water Pollution	PERMIT: Septic System	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Water Pollution	PERMIT: Erosion & Sediment Control	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Water Pollution	PERMIT: Stormwater Management	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Water Pollution	PERMIT: Other	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:	WORK ORDER NUMBER:	
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Discharge Permit	PERMIT: New or Increased Capacity NPDES	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Discharge Permit	PERMIT: General NPDES (≥1 Acre Land Disturbance)	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Discharge Permit	PERMIT: Other	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Drinking Water	PERMIT: Water Distribution System	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:	WORK ORDER NUMBER:	
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Drinking Water	PERMIT: Water Treatment Plant	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Drinking Water	PERMIT: Well Construction	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Drinking Water	PERMIT: Underground Injection	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Drinking Water	PERMIT: Other	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:	WORK ORDER NUMBER:	
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Fuel Tanks	PERMIT: Underground Storage Tank Construction	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Fuel Tanks	PERMIT: Underground Storage Tank Operating		
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Fuel Tanks	PERMIT: Other	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions, and Requirements:		
Solid and Hazardous Waste	PERMIT: Hazardous Waste Treatment, Storage, Disposal, Handling	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:	WORK ORDER NUMBER:	
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Solid and Hazardous Waste	PERMIT: Landfill	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Solid and Hazardous Waste	PERMIT: Used Oil Collection Center, Aggregation Point, Transporter & Transfer Facility	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Solid and Hazardous Waste	PERMIT: Other	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Coastal Management Permit	PERMIT: Coastal Consistency Determination Authorization	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:	WORK ORDER NUMBER:	
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Coastal Management Permit	PERMIT: Coastal Barrier	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Coastal Management Permit	PERMIT: Floodplain Management	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Coastal Management Permit	PERMIT: Other	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	PERMIT: Work in Navigable Waters	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:	WORK ORDER NUMBER:	
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Other Permits	PERMIT: Dredging	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	PERMIT: Clearing	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	PERMIT: Essential Fish Habitat Assessment Consultation	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	PERMIT: Marine Mammal Protection Act	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:	WORK ORDER NUMBER:	
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Other Permits	PERMIT: Take Permits	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	PERMIT: Work in Wetlands	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	PERMIT: Digging Permit	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	PERMIT: Traffic	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:	WORK ORDER NUMBER:	
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Other Permits	PERMIT: Airport Hazard/Airfield Safety Clearances	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	PERMIT: Railroad Crossing	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	PERMIT: Historic Preservation	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	PERMIT: Noise Abatement	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:	WORK ORDER NUMBER:	
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Other Permits	PERMIT: Endangered/Species/Critical Habitat	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	PERMIT: Other	Date Obtained:	Date Closed:
<input type="checkbox"/>	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

Prepared by: _____

Date _____

APPENDIX 6A – BVD UNDER 150K

Attachment (1)

**BEST VALUE DETERMINATION GUIDELINES
\$3,000 - \$150,000**

(Schedule Purchases are subject to FAR 8.4, DFARS 208.4, and DFARS PGI Supplement 208.405-70)

- FAR 8.4 required that you make a best value determination before placing Multiple Award Schedule (MAS) orders above the micro-purchase limit (currently \$3,000).
- The Navy Furniture BPAs shall be the primary source for FF&E. Refer to Specification Section E20.
- For orders between \$3,000 and \$150,000, review pricing from at least three sources and UNICOR. (FAR 8.405-1(c))
- Seek additional price discounts from the contractor offering the best value. (FAR 8.405-1(d))

1. Brief Description of Item, System or Component to be Procured:

2. Did you review the required number of sources under the BPA and/or Federal Supply Schedule? YES NO

3. Identify the Navy Furniture BPA or other Federal Supply Schedule utilized or indicate not applicable.

4. Was UNICOR included in the review? YES NO

5. List the name(s) and contract number(s) of contractor(s) who were considered:

List three or more contractors' names, contract numbers and business size reviewed.

6. Identify the contractor recommended as the best value.

7. When you sought additional price reductions, were they received? YES NO

8. Identify price with discounts for the recommended best value contractor.

9. Is installation, site preparation, design or ancillary services included in this project? YES NO If yes, be sure that the installation, site preparation, design or ancillary services are included as separate line items in each quote.

10. Are you selecting the lowest priced item? YES NO If no, indicate in addition to price, those factors listed below, considered in your decision.

- Price
- Special features required in effective program performance:
- Trade-in considerations
- Probable life of the item selected as compared with that of a comparable item: .
- Warranty considerations:
- Maintenance availability
- Past performance
- Environmental and energy efficiency considerations
- Comfort/suitability of the item:
- Delivery terms
- Your administrative costs
- Training needed or provided
- Technical qualifications
- Compatibility with existing furniture / Products / Technology (circle appropriate category)
- Other (*specify*):

11.

Best Value Determination:

A narrative justification for each box checked above for other than low price selection must be attached. Describe the evaluation factor, how the recommended best value contractor's offer met or exceeded the standard for each factor, and why the offeror represents the best value to the Government compared to the other offerors.

SUBMITTING OFFICIAL (PRIME CONTRACTOR'S INTERIOR DESIGNER)

In accordance with FAR 8.404(b), all agency specific regulations and statutes applicable to this purchase are attached. I have reviewed the findings and documentation attached and I have affirmatively determined them to be complete and accurate.

Name: _____ Title: _____ Date: _____

Telephone: _____ Email: _____

Signature: _____

APPENDIX 6B – BVD OVER 150K

Attachment (2)

**BEST VALUE DETERMINATION GUIDELINES
Greater than \$150,000**

(Schedule Purchases are subject to FAR 8.4, DFARS 208.4, and DFARS PGI Supplement 208.405-70)

- FAR 8.4 required that you make a best value determination before placing Multiple Award Schedule (MAS) orders above the micro-purchase limit (currently \$3,000).
- The Navy Furniture BPAs shall be the primary source for FF&E. Refer to Specification Section E20.
- For orders greater than \$150,000, all BPA holders for the applicable schedule shall be given an opportunity to compete for the requirement. In addition, UNICOR shall also be solicited. (DFARS PGI 208.405-70)
- Seek additional price discounts from the contractor offering the best value. (FAR 8.405-1(d))

1. Brief Description of Item, System or Component to be Procured:

2. Were all BPA holders and/or Federal Supply Schedule holders given the opportunity to propose on the requirement?
YES NO

3. Identify the Navy Furniture BPA or other Federal Supply Schedule utilized or indicate not applicable.

4. Was UNICOR included in the review? YES NO

5. Provide evidence of affording all BPA holder and/or Federal Supply Schedule holders the opportunity to compete. Also, provide evidence that UNICOR was solicited.

6. List the name(s) and contract number(s) of contractor(s) who responded to the request for proposal for this requirement:
List contractors' names, contract numbers and business size for those who responded.

7. Provide copies of all quotes received and reviewed.

8. Identify the contractor recommended as the best value.

9. When you sought additional price reductions, were they received? YES NO

10. Identify price with discounts for the recommended best value contractor.

11. Is installation, site preparation, design or ancillary services included in this project? YES NO
If yes, be sure that the installation, site preparation, design or ancillary services are included as separate line items in each quote.

12. Are you selecting the lowest priced item? YES NO
If no, indicate in addition to price, those factors listed below, considered in your decision.

- Price
- Special features required in effective program performance:
- Trade-in considerations
- Probable life of the item selected as compared with that of a comparable item: .
- Warranty considerations:
- Maintenance availability
- Past performance
- Environmental and energy efficiency considerations
- Comfort/suitability of the item:
- Delivery terms
- Your administrative costs
- Training needed or provided
- Technical qualifications
- Compatibility with existing furniture / Products / Technology (circle appropriate category)
- Other (*specify*):

13.
Best Value Determination:
A narrative justification for each box checked above for other than low price selection must be attached. Describe the evaluation factor, how the recommended best value contractor's offer met or exceeded the standard for each factor, and why the offeror represents the best value to the Government compared to the other offerors.

SUBMITTING OFFICIAL (PRIME CONTRACTOR'S INTERIOR DESIGNER)

In accordance with FAR 8.404(b), all agency specific regulations and statutes applicable to this purchase are attached. I have reviewed the findings and documentation attached and I have affirmatively determined them to be complete and accurate.

Name: _____ Title: _____ Date: _____

Telephone: _____ Email: _____

Signature: _____

APPENDIX 7 – PERFORMANCE RATING METHOD COMPLIANCE FORM 2013

Compliance Forms— Performance Rating Method

The following pages provide a sample performance rating report that conforms to the requirements of the rating method. An electronic version is available for download from ASHRAE's website.

This form is intended for use with the Performance Rating Method of ASHRAE/IES Standard 90.1 (Appendix G) when a rating shell is not used. If a rating shell is used, it should automatically generate a version of the rating report. If this form is used instead, the user should fill in the form using information taken from the output reports of the simulation program.

In addition to this form, the user should submit completed forms from the other chapters of the User's Manual. Those forms document the proposed design and its features, and they also make it clear where the proposed design under the rating method differs from the prescriptive requirements. Finally, as noted at the bottom of this form, the user should provide a list that describes all instances where input assumptions differ between the baseline building and proposed design runs.

The performance rating report has several sections designed to make clear to the rating personnel what the building characteristics are and how the rating method has been applied to it.

Project Name and Information

This section begins with a basic statement that the project complies with the mandatory requirements of the Standard and notes the date of the plans upon which the performance rating runs are based. This section also records basic information about the project, the people involved, the heating fuel, and the weather data used for the rating analysis. There is also space to summarize the areas and uses within the building.

Advisory Messages

This section reports information from the simulation runs that is helpful in identifying modeling problems or special situations.

Performance Rating Result

This final section is prepared by the person responsible for the building performance rating submittal to the rating authority.

Energy Use and Energy Cost Summary

These sections summarize the energy use breakouts by end use and by fuel type. They also show the percent difference between the proposed and the baseline buildings. When the percentage value is less than 100%, then the proposed design is better than the baseline.

Performance Rating Report

Project Name:		
Project Address:		Date:
Designer of Record:	Email:	Telephone:
Contact Person:	Email:	Telephone:
City:		
Principal heating source: <input type="checkbox"/> Fossil fuel <input type="checkbox"/> Fossil/electric hybrid and purchased heat <input type="checkbox"/> Electricity <input type="checkbox"/> Other		

Space Summary

Building Use	Conditioned Area (ft ² or m ²)	Unconditioned Area (ft ² or m ²)	Total Area (ft ² or m ²)
Total			

Advisory Messages

	Proposed Building Design	Baseline Building	Difference Proposed – Baseline
Number of hours heating loads not met (system/plant)			
Number of hours cooling loads not met (system/plant)			
Number of warnings			
Number of errors			
Number of defaults overridden			

Simulation General

	Proposed Building Design	Baseline Building	Baseline same as Proposed?
Simulation program			
Weather data			
Utility rates			

Performance Rating Result

The proposed and baseline buildings comply with the mandatory requirements of ANSI/ASHRAE/IES Standard 90.1–2013 and meet the Performance Rating Method requirement.

Individual certifying authenticity of the data provided in this analysis:

Signature	Title
-----------	-------

Performance Rating Report

Project Name:		
Contact Person:	Email:	Telephone:

Energy and Cost Summary by Fuel Type*

End Use	Energy Type	Proposed Building		Baseline Building		Proposed / Baseline Energy (%)
		Energy (10 ⁶ Btu/yr or MJ/yr)	Peak (10 ³ Btu/h or kW)	Energy (10 ⁶ Btu/yr or MJ/yr)	Peak (10 ³ Btu/h or kW)	
Lighting—conditioned						
Lighting—unconditioned						
Space heating (1)						
Space heating (2)						
Space cooling						
Pumps						
Heat rejection						
Fans—interior ventilation						
Fans—interior exhaust						
Fans—parking garage						
Service water heating						
Office equipment						
Elevators and escalators						
Refrigeration (food, etc.)						
Cooking (commercial)						
Total building consumption						

Energy Summary by End Use*

	Proposed Building		Baseline Building		Percentage Improvement 100 x (1 – Proposed Energy Cost / Baseline Energy Cost) %
	Energy Use (10 ⁶ Btu/yr or MJ/yr)	Energy Cost (\$/yr)	Energy Use (10 ⁶ Btu/yr or MJ/yr)	Energy Cost (\$/yr)	
Electricity					
Natural gas					
Other fossil fuel					
District steam					
Total nonsolar					
Solar or site recovered					
Total including solar					

* These results use assumptions for showing compliance during a typical year; actual energy costs may be substantially different.



Mason & Hanger

A Day & Zimmermann Company

Mason & Hanger

300 West Vine Street
Suite 1500
Lexington, KY 40507
859.252.9980

masonandhanger.com
