VOLUME 1 OF 4

MATOC TASK ORDER
(SOUTH FLORIDA HUBZONE SMALL BUSINESS)

RFP NO: W91278-17-SFHZ-0001
CADD NO: MB16FT26

SPECIFICATIONS
FOR

DESIGN BUILD

FLIGHTLINE FIRE STATION

EGLIN AIR FORCE BASE, FLORIDA
(OKALOOSA COUNTY)

“GOOD ENGINEERING RESULTS IN A BETTER ENVIRONMENT”

U.S. ARMY ENGINEER DISTRICT, MOBILE
109 St. Joseph St
Mobile, Alabama 36602
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TO: UNRESTRICTED GULF COAST OFFERORS

SUBJECT: W91278-17-SFHZ-0001, Task Order Request for Proposal (RFP) for Design-Build Flight Line Fire Station and Storage Facility, Eglin AFB, FL

1. You are requested to submit a Firm-Fixed Priced (FFP) proposal as detailed in the specifications on the website that will be provided by e-mail from the Contract Specialist.

Description of Work: This work includes the design and construction of a 28,462 SF Fire Station and Tire Storage Facility utilizing conventional design and construction methods to accommodate the fire station requirements. The facility will be designed as permanent construction IAW DoD Unified Facilities Criteria (UFC) 1-200-01, General Building Requirements and UFC 1-200-02, High performance and Sustainable Building Requirements. Comply with DoD minimum Antiterrorism Standards for Buildings per UFC 4-010-01. The facility will include apparatus stalls, dispatch station, security forces, training and testing rooms, bedrooms, rest rooms/showers, laundry area, recreation room, day room, vending area, kitchen, dining area, administration area, and storage. Supporting facilities include concrete sidewalks, road re-alignment, parking, storm drainage, lighting, utilities, information systems and environmental measures required by law. The facility shall be design to withstand hurricane Category III force wind in addition to other vertical and horizontal loads.

The approximate cost range for the project is estimated to be between ($10,000,000.00 - $25,000,000.00)

The Programmed Amount for this project is $13,600,000.00.

Basis of Award: Low Bid

Construction Time: 540 calendar days

Liquidated Damages: Please refer to Specification Section 01 00 00

Wage Rates: Please refer to Specification Section 01 00 00

Minority and women goals are: 15.4% and 6.9%, respectively.

2. You are requested to submit your proposal not later than 2:00 pm (CST), Aug 29, 2017 electronically to the following email address: SAMCT-C@usace.army.mil

Proposals shall be emailed in .pdf format, hard copies are not required to be submitted.

It is requested that all technical questions be submitted to the Bidder’s Inquiry Portal in ProjNet at website http://www.projnet.org/projnet, in order to be considered for response.
and inclusion in the amendment. The cut-off date for submission of RFIs is **15 August 2017. Do not send RFI’s after this date.** All RFIs for this solicitation will be posted in the ProjNet website for your review. Please see Requests for Information attached.

3. If a Contractor does not wish to be considered for this particular task order, please respond in writing on or before the proposal due date indicating the reasons why.

4. Your proposal should include a cover letter (on company letterhead) documenting the submission of your proposal to include a signature by an officer of the company so duly authorized to bind the company contractually. Amendments shall be acknowledged by completion of blocks 15A and 15B, and 15C of Standard Form 30 Amendment form and returned with your proposal.

5. Price Proposal should include the following:

   a. The contractor shall provide a FFP proposal for performance of this project as identified in the Scope of Work.

   b. The FFP shall be structured as described in the solicitation, and shall match the format of the RFP Bidding Schedule.

   c. In accordance with Section 1004, paragraph 4.3.2.3 of the main IDIQ contract document, the prices for the CLINs, as offered in the original solicitation CLIN schedule, shall serve as the basis for establishing prices for all contract CLINS utilized in pricing this task order (and all modifications thereto), including the field overhead, design, and mark-ups, as applicable to the work involved in the requirement.

The Contractor's costs for the CLINs may be equal to or less than, but shall not exceed the costs shown in the contract CLIN schedule. The Government reserves the right to obtain breakdowns of the proposals, in the event discussions of prices are required in order to resolve differences between the proposals and the Government’s estimate. Such price discussions, normally, will be conducted with all Contractors that are competing on the same task order. However, a Contractor may be excluded from discussions, in the interest of efficiency and timeliness of the award of a task order, if their price is so unreasonable that it will have little or no chance of becoming competitive."

The Government reserves the right to verify Contractor past performance information which may include reference checks and reviews of surveys found in the Past Performance Information Retrieval System (PPIRS). The Government reserves the right to verify past and present performance on any projects performed by the Offeror. The Offeror will be given an opportunity to address adverse past performance information, if the Offeror has not had a previous opportunity to review the rating. Recent contracts with interim ratings that are below “Satisfactory” will be examined to ensure that corrective measures are being implemented. The Contracting Officer will consider the number and severity of the problems, the appropriateness and/or effectiveness of any corrective actions taken (not just planned or promised), and the Offeror's overall work record. Prompt corrective action in isolated instances may not outweigh overall negative trends.
6. A Contractor Site Visit has been scheduled for 0900 hrs on **08 August 2017**. The purpose of the site visit is for contractors to become familiar with the existing site conditions and to facilitate formal generation of related questions. Attendance at the contractor site visit is **strongly** recommended. Due to Base Security requirements, site operations, and limited field staff available for construction contractor site visits, this scheduled site visit will be the only one offered. Individual requests for site visits will not be granted. Contractors will be required to email or call Mr. Brian Jenner with the Corps of Engineers' Eglin Resident office no later than 1500 hrs on 02 August 2017 and instructions on gate access will be given at that time. Request for attendance received after the date shown above will not be accepted. The number of attendees is limited to four from each firm.

**Name:** Mr. Brian Jenner

**Email:** Brian.K.Jenner@usace.army.mil

Contractors must meet at the project site, Eglin AFB, Florida at the time and date listed above. Contractors will be required to register with Mr. Brian Jenner for installation access, and will be required to provide a valid driver’s license, proof of insurance, and vehicle registration to gain access to the installation. Requests for Information (RFIs) generated from the site visit should be entered into the ProjNet contractor RFI system for responses. This will give the Government time to investigate and prepare technical questions formally submitted to the Bidder’s Inquiry Portal in ProjNet at website [http://www.projnet.org/projnet](http://www.projnet.org/projnet).

7. Pricing submitted for this task order shall be good for a period of **120 calendar days** after the proposal due date. The Government reserves the right to conduct discussions if the Contracting Officer determines that discussions are necessary or are otherwise in the Government's best interest. However, the Government intends to make award on the basis of initial offers, without discussions.

Sincerely,

Kyle M. Rodgers
Contracting Officer

Attachments:
Request for Information
FAR Clause 52.204-9 – Personal Identity Verification of Contractor Personnel
Calculation Form for Compliance with FAR 52.236-1
REQUESTS FOR INFORMATION

Any questions about this solicitation, including technical questions about plans and specifications, shall be submitted via the Bidder Inquiry Portal in ProjNet at https://www.projnet.org. Questions should be submitted no later than 15 August 2017 at 2:00 p.m. Central Time to allow time for a response, and amendment to the solicitation if necessary. On this date and time the portal will be closed. For technical questions, no other means of communication, e-mail, fax, or telephone will be accepted. Oral exchanges between Offerors and the Government prior to award of the contract will not be binding. In addition to information available to Offerors on the Bidder Inquiry Portal, any substantive information or changes concerning this solicitation will be furnished to all Offerors as an amendment to the solicitation if the information is necessary to the submittal of offers or bids. To submit and review inquiry items, prospective Offerors must use the Bidder Inquiry Key presented below and follow the instructions listed below the key for access. From this page Offerors can view all inquiries for this solicitation or add an inquiry. A prospective Offeror who submits a comment/question will receive an acknowledgement of their comment/question via email, followed by a response to their comment/question posted to the ProjNet system after it has been processed by the USACE technical team.

The Solicitation Number is: W91278-17-SFHZ-0001

The Bidder Inquiry Key is: JU2B8F-WK6D46

Specific Instructions for ProjNet Bid Inquiry Access:
1. From the ProjNet home page linked above, click on Quick Add on the upper right side of the screen.
2. Identify the Agency. This should be marked as USACE.
3. Key. Enter the Bidder Inquiry Key listed above.
4. Email. Enter the email address you would like to use for communication.
5. Click Continue. A page will then open saying that a user account was not found and will ask you to create one using the provided form.
6. Enter your First Name, Last Name, Company, City, State, Phone, Email, Secret Question, Secret Answer, and Time Zone. Make sure to remember your Secret Question and Answer as they will be sued from this point on to access the ProjNet system.
7. Click Add User. Once this is completed you are now registered within ProjNet and are currently logged into the system.

Specific Instructions for Future ProjNet Bid Inquiry Access:
1. For future access to ProjNet, you will not be emailed any type of password. You will utilize your Secret Question and Secret Answer to log in.
2. From the ProjNet home page linked above, click on Quick Add on the upper right side of the screen.
3. Identify the Agency. This should be marked as USACE.
4. Key. Enter the Bidder Inquiry Key listed above.
5. Email. Enter the email address you used to register previously in ProjNet.
6. Click Continue. A page will then open asking you to enter the answer to your Secret Question.
7. Enter your Secret Answer and click Login. Once this is completed you are now logged into the system.

Offerors are requested to review the solicitation and amendments in their entirety, as well as to review the Bidder Inquiry Portal for previous questions and responses, prior to submission of a new inquiry on the Portal. The call center for the ProjNet operates weekdays from 8 AM to 5 PM U.S. Central Time. The telephone number is 1-800-428-HELP (4357).

CAUTION: ANY INQUIRY SUBMITTED AND ANSWERED WITHIN THIS SYSTEM, WILL BE ACCESSIBLE TO VIEW BY ALL INTERESTED OFFERORS OR BIDDERS ON THIS SOLICITATION.
52.204-9 PERSONAL IDENTITY VERIFICATION OF CONTRACTOR PERSONNEL (JAN 2011)


(b) The Contractor shall account for all forms of Government-provided identification issued to the Contractor employees in connection with performance under this contract. The Contractor shall return such identification to the issuing agency at the earliest of any of the following, unless otherwise determined by the Government;

   (1) When no longer needed for contract performance.

   (2) Upon completion of the Contractor employee’s employment.

   (3) Upon contract completion or termination.

(c) The Contracting Officer may delay final payment under a contract if the Contractor fails to comply with these requirements.

(d) The Contractor shall insert the substance of clause, including this paragraph (d), in all subcontracts when the subcontractor’s employees are required to have routine physical access to a Federally-controlled facility and/or routine access to a Federally-controlled information system. It shall be the responsibility of the prime Contractor to return such identification to the issuing agency in accordance with the terms set forth in paragraph (b) of this section, unless otherwise approved in writing by the Contracting Officer.

(End of Clause)
CALCULATION FORM FOR Work Performed by the Contractor

A. Clearly describe the work to be self-performed by the prime contractor:


B. Calculation of Self-Performed Work:

Total Contract Value $________

Deduct Subcontracted MEP Value - $________

Deduct Prime Contractor G&A, Home office overhead, markups for Profit, bond, taxes, and any other Burdens on the labor or materials - $________

Corrected Contract Value B1 $________

Identify and give the dollar value of all work being done on the Site by the prime contractor’s own organization and its forces, which includes the cost of labor performed and materials brought on site. Exclude all prime contractor G&A, home office overhead, markups for profit, bond, taxes, and any other ODCS or burdens on the labor or materials.

B2 $________

Percentage of work done by Prime = B2/B1 x 100%

(B2) $________/(B1)________ x100% = _______ %
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**EGLIN AIR FORCE BASE, FLORIDA**

**BIDDER'S NAME:**

---

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<th>Item No.</th>
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**Signature Certification**

Offeror's above signature accedes that his firm has included his proposed final MATOC CLIN pricing into his Task Order proposal, in order to arrive at an overall proposed price for this Task Order.

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NOTES FOR BIDDING SCHEDULE

NOTE NO. 1. To better facilitate the receipt and proposal process, all modifications to proposals are to be submitted on copies of the latest bid schedules as published in the solicitation or the latest amendment thereto. In lieu of indicating additions/deductions to contract line items, bidder should state the revised prices for each item. The company name should be indicated on all pages of the bidding schedule to preclude being misplaced.

NOTE NO. 2. Bidders must insert a price on all numbered items of the Bidding Schedule. Failure to do so will disqualify the bid.

NOTE NO. 3. If a modification to a bid is submitted and provides for a job adjustment to the total estimated cost, the application of the job adjustment to each unit price and/or job price, in the bid schedule must be stated or, if it is not stated, the bidder agrees that the job adjustment shall be applied on a pro rata basis to every bid item in the bid schedule.

NOTE NO. 4. CONDITIONS GOVERNING AWARD OF TASK ORDERS.

Only one task order will be awarded on this Bid Schedule and award will be made to the low bidder on the Base Bid and all Options, in accordance with the following clause:

52.217-5 EVALUATION OF OPTIONS

Except when it is determined in accordance with the FAR 17.206(b) not to be in the Government’s best interests, the Government will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. Evaluation of the options will not obligate the Government to exercise the option(s).

(End of clause)

The Government may require the delivery of the numbered line items, identified in the schedule as option items, in the quantity and at the price stated in the schedule. Subject to the availability of funds, the Contracting Officer may exercise Bid Option No. 1 by written notice to the Contractor within 120 days of Notice to Proceed (NTP). Subject to the availability of funds, the Contracting Officer may exercise Bid Option Nos. 2, 3 and 4 by written notice to the Contractor within 365 days after NTP.

NOTE NO. 5. The programmed amount (PA) for this project is $13,600,000.00. Please note that the PA includes costs for Government supervision and overhead and amounts set aside by the Government for contingencies.

NOTE NO. 6. ADDITIONAL SUBMISSION REQUIREMENTS:

a. Upon the Government’s request, the offeror shall submit a price breakdown of the bid items directly to the Mobile District Office. Details on where and how to send the breakdown will be provided by the requesting official making the request on behalf of the Government. The format of the breakdown will be left up to the offeror. However, as a minimum, the offeror shall provide pricing for the major categories of work under each bid item, for example: site improvements, landscaping, electrical, mechanical, etc. This information will not be needed sooner than three (3) working days after the proposal submission due date.
NOTE NO. 7. CHECKLIST FOR THE BIDDING SCHEDULE:

a. Is it completely filled out? Y__ NA__

b. It may not be altered either as to quantities or as to items offered. Y__ NA__

c. There can be no language of limitation either as to quantities or as to items offered. Y__ NA__

d. If you corrected your numbers, have you initialed these corrections? Y__ NA__

e. If the bidding schedule has been changed by Amendment, is the bidding schedule that you are submitting from the most recent amendment? Y__ NA__

f. Do prices for each bid item include all costs, mark-ups and taxes (if any taxes are imposed)? Y__ NA__

g. Is the cost of obtaining your performance and payment bond included in the total bid price specified on the bid schedule? Y__ NA__

h. In preparing your bid, remember the Corps does not make advanced payments on its contracts Y__ NA__

END OF BIDDING SCHEDULE
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EXPLANATION OF BID ITEMS

GENERAL: This section comprises an explanation of the bid items identified in the bid schedule for each item of work. The bid schedule and the contract drawings shall be worked together to identify the various items of work to which each bid item will apply. The Contractor shall bid the work under the applicable bid item for the specific areas identified in the bid schedule. All work specified herein shall be accomplished in accordance with the requirements of the technical provisions of the specifications and the contract drawings. Payment described for the various bid items will be full compensation for all labor, materials, and equipment required to complete the work. Compensation for any item of work described in the contract but not listed in the bid schedule shall be included in the payment for the item of work to which it is made subsidiary.

BASE BID

1.1 Payment under Bid Item No. 1.1 "Design of Flightline Fire Station and Associated Site Work and Utilities" will constitute full compensation for furnishing all materials, plant, tools, labor, and associated incidentals necessary to complete the design of the new facility, and associated site work and utilities. Bid item shall include design for all associated geotechnical, structural, architectural, mechanical, plumbing, electrical, and all site and utilities identified in the RFP criteria drawings and specifications. Bid Item shall include the design of Landscaping; Furniture, Fixtures, and Equipment (FF&E); Audio-Visual Equipment; and First-In Alerting Smart Station System to be procured and installed under Bid Option Nos. 1, 2, 3 and 4.

1.2 Payment under Bid Item No. 1.2 "Construction of Flightline Fire Station and Associated Site Work and Utilities" will constitute full compensation for furnishing all materials, plant, tools, labor, and associated incidentals necessary to complete the construction of the facility, and associated site work and utilities. Bid item shall include the construction for all associated structural, architectural, mechanical, plumbing, electrical, and all site and utilities identified in the RFP criteria drawings and specifications.

BID OPTION NO. 1

1.3 Payment under Bid Item No. 1.3 "Landscaping" will constitute full compensation for furnishing all materials, plant, tools, labor, and associated incidentals necessary to procure and install the landscaping for the new Flightline Fire Station as identified in the RFP criteria drawings and specifications.

BID OPTION NO. 2

1.4 Payment under Bid Item No. 1.4 "Procurement and Installation of New FF&E" will constitute full compensation for furnishing all materials, plant, tools, labor, and associated incidentals necessary to procure and install the new Furniture, Fixtures, and Equipment (FF&E) associated with the new Flightline Fire Station as identified in the RFP criteria drawings and specifications.
BID OPTION NO. 3

1.5 Payment under Bid Item No. 1.5 "Procurement and Installation of New Audio-Visual Equipment" will constitute full compensation for furnishing all materials, plant, tools, labor, and associated incidentals necessary to procure and install the new Audio-Visual equipment associated with the new Flightline Fire Station as identified in the RFP criteria drawings and specifications.

BID OPTION NO. 4

1.6 Payment under Bid Item No. 1.6 "Procurement and Installation of new First-In Alerting Smart Station System" will constitute full compensation for furnishing all materials, plant, tools, labor, and associated incidentals necessary to procure and install the new First-In Alerting Smart Station System associated with the new Flightline Fire Station as identified in the RFP criteria drawings and specifications.

-End of Section-
PART 1   GENERAL

1.1  COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK

1) Commence design under this portion of the contract within 8 calendar days after the date the Contractor receives the notice to proceed.

2) The entire design and construction of the facility shall be completed and ready for use not later than the calendar days indicated in the RFP Letter after the receipt of the notice to proceed. This time stated for completion shall include final cleanup of the premises. Provisions stipulated for planting and maintenance of grass are excluded from the completion time.

3) The time required for the Government to review the design submittals, attend review conferences, and the Contractor to incorporate review comments as specified in specification Section 01 10 12 entitled Design After Award, paragraph: "Design Schedule", will be included in the calendar days, indicated in the RFP Letter.

1.2  LIQUIDATED DAMAGES - CONSTRUCTION

(a) If the Contractor fails to complete the work within the time specified in the contract, or any extension, the Contractor shall pay to the Government as liquidated damages, the sum of $439.00 for each day of delay.

(b) If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.

(c) If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

1.3  SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01  Preconstruction Submittals

Hazard Analysis; G,RO

Request for Interruption of Utility Services; G,RO

Request for Road Closures; G,RO
1.4 CONTRACTOR RESPONSIBILITY

The Contractor is responsible for the construction of all work. In order to ensure quality, the Contractor shall develop a Quality Control Plan in accordance with Section: 01 45 00.00 10 QUALITY CONTROL. In order to allow the Government to monitor the Contractor's progress and review his work, the Contractor shall develop a submittal register as specified in Section: 01 33 00 SUBMITTAL PROCEDURES.

1.5 DESIGNER OF RECORD

The Contractor shall identify and have on his staff a Designer of Record for each submittal identified in the Contractor Submittal Register. A Designer of Record may be responsible for more than one submittal. All areas of work shall be accounted for by a listed Designer of Record. Designers of Records shall approve all submittals they are responsible for prior to submittal to the Government. Designers of Record required to be registered in the State of Florida shall be so licensed.

1.6 FACTORY EQUIPMENT TESTS

All pieces of equipment that require factory testing will be witnessed by the Contracting Officer representative (COR). The Contractor shall notify the COR prior to any tests.

1.7 CONTRACT DRAWINGS, MAPS AND SPECIFICATIONS

a) The Contractor will be furnished on CD ROM/DVD one electronic set of: a reproducible set of the advertised solicitation, including contract clauses, plans, and specifications; solicitation drawing and model file(s); and all amendments. The work shall conform to the specifications and the contract drawings listed in the technical provisions. The solicitation drawings serve as the Contract Documents that such functions shall be based upon.

b) The building design was developed using Autodesk Revit and civil/sitework design was developed using AutoCAD Civil 3D. The Government BIM model was utilized to develop the contract drawings. Model elements were generally developed to a minimum "Level of Development 200" which is defined as "graphically represented within the BIM as a system, object, or assembly in terms of quantity, size, shape, location, and orientation. Non-Graphic information may also be attached to the model elements."
of Development may vary slightly for some elements. The model elements were developed using the basis of design systems and do not reflect actual systems that were selected, procured, and installed by the Contractor. The models were the Government's instruments of service and as such no guarantee or warranty is provided as to the accuracy or level of development contained therein. The Government furnished BIM model shall not be utilized for shop drawings, fabrication, coordination studies, layout or relied upon or utilized for any other design or construction related purposes. The site and facility shall be constructed as required by the contract documents; 2D drawings and specifications.

c) Omissions from the drawings or specifications, the mis-description of details of work which are manifestly necessary to carry out the intent of the drawings and specifications which are customarily performed shall not relieve the Contractor from performing such omitted or mis-described details of the work but they shall be performed as if fully and correctly set forth and described in the drawings and specifications.

d) The Contractor shall check all drawings furnished him immediately upon their receipt and shall promptly notify the Contracting Officer's Representative of any discrepancies. Figures marked on drawings shall in general be followed in preference to scale measurements. Large scale drawings shall in general govern small scale drawings. The Contractor shall compare all drawings and verify the figures before laying out the work and will be responsible for any errors which might have been avoided thereby.

e) The drawings and maps for this solicitation are hereby incorporated by reference into these specifications. Any schedules included in the drawings are for the purpose of defining requirements other than quantities.

NOTE: Refer to the folio of drawings for the index of drawings in this solicitation.

1.8 HAZARD ANALYSIS

A hazard analysis plan, as described in Section 1, Article 01.A.05 of the Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, latest edition, is required for this contract and shall be submitted within ten (10) days after Notice To Proceed (NTP).

1.9 PHYSICAL DATA

a. Data and information furnished or referred to below is for the Contractor's information. The Government shall not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

(1) The indications of physical conditions on the drawings and in the specifications are the result of site investigations by surveys.

(2) Weather Conditions. The location is subject to atmospheric temperature ranging from plus 7 degrees to plus 103 degrees Fahrenheit as determined from the U. S. Weather Bureau Station at Pensacola, Florida. The mean annual precipitation at Niceville, Florida is 58.85 inches and the mean monthly precipitation varies from a low of 3.12 inches in May to a high of 8.05 inches in July.
(3) Transportation facilities.

(a) Railroads. The Seaboard System Railroad and the Burlington Northern Railroad serve Pensacola, Florida, the nearest railhead. The Contractor shall investigate the availability of sidings, and shall make all arrangements for use of any sidings for the delivery of any materials and equipment to be used on the work.

(b) Highways. The site is served by U. S. Highway 85. Highway 85 connects the City of Crestview, Interstate 10, and finally the City of Fort Walton Beach. U. S. Highway No. 98 connects Pensacola and Fort Walton Beach, Florida, and runs along the mainland adjacent and parallel to Santa Rosa Island. The site of the work is accessible from Crestview and Fort Walton Beach by bridge and paved road. The Contractor shall make his own investigation of available roads for transportation, load limits for bridges and roads, and other conditions affecting the transportation of materials and equipment to the site. Highway 85 is the main north/south corridor for Crestview/Eglin/ Fort Walton Beach. As such, traffic will be extremely heavy between 6:00-8:00 AM, and 4:00 to 6:00 PM. This could delay access to the site during these periods.

(c) Waterways. The Fort Walton Beach, FL area is served by the Gulf Intracoastal Waterway. If the Contractor desires to use barge transportation for materials shipment, he shall make his own arrangements with commercial concerns for loading/off loading facilities. Government barge facilities at Eglin Air Force Base are not available for Contractor use.

1.10 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

a. This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance with the contract clause entitled "Default: (Fixed Price Construction)". In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

(1) The weather experienced at the project site during the contract period must be found to be unusually severe. Unusually severe weather is defined as hurricanes, floods, tornados, or earthquakes.

(2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

(3) The contractor's progress schedule must reflect completion of the project within the specified contract duration including all weather except that as defined as unusually severe in (a)(1).

b. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY
WORK DAYS BASED ON (5) DAY WORK WEEK

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |

SECTION 01 00 00 Page 4
c. Upon acknowledgement of the Notice to Proceed and continuing throughout the contract, the contractor will record on its daily Contractor Quality Control report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor’s scheduled work day.

d. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph b, above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the Contract Clause entitled "Default (Fixed Price Construction)".

1.11 INTERRUPTION OF UTILITY SERVICES

   a. Planned interruptions of utility services (electrical power, water, natural gas, etc.) shall be detailed and coordinated by the Contractor. Requests for interruptions shall be submitted in writing by the Contractor to the Contracting Officer's Representative at least 10 (ten) working days before the planned outage.

   Contractor shall not interrupt service(s) until approval has been granted. Requests shall include facility/facilities affected, date of scheduled outage, and duration. Requests for interruption of service(s) will not be approved until all equipment and materials required for that particular phase of work are on the job site. Interruptions will be allowed Monday through Friday for the following times: 7:15 A.M. until 11:00 A.M. and 12:30 P.M. until 4:00 P.M. and will be limited to 4 hours. If weekend (Saturday and Sunday) outages are required or are preferred, they shall be coordinated as specified above.

1.12 CONTRACTOR INITIATED ROAD CLOSURES

The Contractor shall insure that access to Roads is maintained at all times unless closure is approved by the COR. Planned road closures shall be detailed and coordinated by the Contractor. Requests for road closures shall be submitted in writing by the Contractor to the Contracting Officer's Representative at least 10 (ten) working days before the planned closure. When it becomes necessary to close roads for construction, the contractor shall immediately put in place the necessary signs and barricades required. All traffic control devices (signs, barricades, pavement markings, traffic signals, intersection control beacons, delineators, etc.) shall conform to the FHWA Manual on Uniform Traffic Control Devices and the FHWA publication Standard Highway Signs, most current edition. These include but are not limited to begin/end construction signs, standard traffic control signs including clearly marked detours and barricades with yellow flashing caution lights. Hand painted plywood signs (or other materials) are not allowed or acceptable. Upon completion of road work, all signs and barricades shall be immediately removed and all normal traffic control devices and signs returned to their original condition. Signs and barricades shall not be left along sides of roadways.
1.13 CONTRACTOR PREPARED AS-BUILT BUILDING INFORMATION MODELING (BIM) AND DRAWINGS

a. Redlined As-Built Drawings: Copies of the drawings will be the responsibility of the Contractor. The as-built drawings shall be a record of the construction as installed and completed by the Contractor. They shall include all the information shown on the contract set of drawings and a record of all deviations, modifications, or changes from those drawings which were incorporated in the work; all additional work not appearing on the contract drawings; and all changes which are made after final inspection of the contract work. In the event the Contractor accomplishes additional work which changes the as-built conditions of the facility after submission of the as-built drawings, the Contractor shall furnish revised and/or additional drawings as required to depict as-built conditions. The requirements for these additional drawings will be the same as for the as-built drawings included in the original submittal.

The Contractor shall have on his staff, personnel to mark up a set of paper copy construction drawings to show the as-built conditions. These as-built marked copies shall be kept current and available on the job site at all times. All changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction shall be accurately and neatly recorded, as the events occur, by means of details and notes. The Contractor shall call attention to entries by redlining areas affected. The red line as-built will be jointly inspected for accuracy and completeness by the Contracting Officer's representative and a responsible representative of the Contractor prior to submittal of each request for payment. The Contracting Officer's approval of the current status of the as-built drawings shall be a prerequisite to the Contracting Officer's approval of request for progress payment and request for final payment under the contract. The drawings shall show the following information, but not be limited thereto:

(1) The location and description of any utility lines or other installations of any kind or description known to exist within the construction area. The location includes dimensions to permanent features.

(2) The location and dimensions of any changes within the building or structures.

(3) Correct grade or alignment of roads, structures or utilities if any changes were made from contract plans.

(4) Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.

(5) All changes or modifications which result from the final inspection.

(6) Options: Where contract drawings or specifications allow options, only the option selected for construction shall be shown on the as-built drawings.

(7) Extensions of Design: Although Fire suppression and fire alarm systems shall be added to the BIM model and subject to all of the
submission requirements below (including native file submission on CD-ROM), shop Drawings such as structural fabrication and erection drawings and fire alarm systems that will require extensive redrafting effort in order to create an electronic set will not be required to be incorporated into the electronic set. They will be included as an Appendix to the paper copy set and scanned into .PDF format for inclusion on the same CD-ROM as the other electronically submitted set of drawings.

The Contractor shall participate in monthly review meetings with the Contracting Officer's Representative to show the progress made the preceding month and make all required changes. Prior to final construction inspection, the Contractor shall submit one copy of the red lined as-built drawings to the Contracting Officer's Representative for review and approval. The as-built drawings shall be certified as to their correctness by the signature of an authorized representative of the Contractor.

b. AS-BUILT BIM AND DRAWINGS: During construction, the BIMs (in their native format) shall be updated with the contractor provided extensions of design and changes made during construction. Upon Government approval of the Contractor's redlined copy of the as-built drawings, the revisions indicated on the approved paper set of red-lined construction drawings shall be finalized into the BIMs in addition to 2D AutoCAD drawings. Revise/redraft BIMs and AutoCAD drawings for each solicitation drawing and/or amendment drawing to reflect all changes made during construction as indicated by the approved paper red lined notations on the construction drawings. The information contained with the BIMs and AutoCAD drawings must be consistent.

Revisions/redrafting shall match the font styles, sizes, and formats; line weights/thicknesses and styles/types; and all other drafting elements used on the solicitation drawing/amendments. BIMs and AutoCAD drawings shall be updated per the red-lined construction drawings.

Although the contractor is allowed to independently update the model and drawings in lieu of exporting the drawing files from the BIM, the as-built model shall include all necessary intelligence to produce the as-built construction drawings (including but not limited to accurate plans, elevations, building/wall sections and schedules). Contractor shall utilize the original native BIM applications to generate the as-built models. All submitted BIM Models and associated Facility Data shall be fully compatible with the originally furnished model and its corresponding version (e.g., Autodesk Revit 2016). Reference files ARE permitted for BIM models to ensure manageable file sizes.

BIM submittals and content shall conform to the following criteria:

U.S. AIR FORCE BUILDING INFORMATION MODELING MINIMUM REQUIREMENTS VERSION 2.1. Available at:

The following BIM reviews and BIM and drawing submittals are required:

(1) Progress As-Built Building Information Model (BIM) and Drawings: Periodic quality control meetings or construction progress review meetings shall occur, at a minimum, prior to construction of extension of design elements and draft final model submission 60 days prior to construction completion. Submittal requirements include: 3-D interactive visualization from the Model in Navisworks, Adobe 3D PDF 7.0 (or later), Google Earth KMZ or equivalent format; Contractor-certified written report confirming that consistency checks have been completed, and shall include contract change
tracking information; and progress updated BIM model(s). At the review meetings, perform a review of the development of the Model components and Facility Data via a 3-D interactive visualization demonstration from the Model to the user, USACE, and BCE personnel using data format of choice. The redlined drawings shall be available at the review meeting for identification of the changes to clearly demonstrate that the as-built changes have been made in the model. Updated drawing files shall be available for review at progress review meeting as well to illustrate conformance with final as-built requirements.

(2) Final As-Built BIM: Submit two (2) sets of electronic copies (CD-ROM/DVD) of the final Model(s) files reflecting as-built conditions for Government Approval. Submittal shall be provided to the Contracting Officer's Representative not later than ten (10) calendar days after project completion date. Final 3-D visualization submittal in Navisworks shall be provided on the CD-ROM/DVD as part of this submittal.

(3) As-Built Drawings: The contractor shall provide 1 hard copy of as-built construction drawings on Mylar on an ANSI D sheet size and 2 CD ROMs in AutoCAD and PDF. Submittals are to be to the Contracting Officer's Representative not later than ten (10) calendar days after project completion date.

The Contractor shall coordinate with the Eglin AFB 96 CEG drafting section, through the COR, for the version of AutoCAD to provide. All elements shall be incorporated into each as-built drawing file; the use of reference files shall not be permitted for DWG sheet files. Scaled drawings shall provide a bar scale and shall be in Imperial units and not metric. The as-built DWG files shall have the Design model physical features such as floor plans and civil site plans in Model Space. Sheet features such as title blocks, notes, north arrows and scale bar will be in the Layout View (Paper Space). In addition, the Contractor shall include the assigned building number issued by Eglin AFB in the title block and AF FTFA number beneath the word "AS-BUILT" on each sheet.

AutoCAD drawings shall have correct geometry. Segmented lines and arcs shall be made continuous and free of self-overlapping sections, thus decreasing the file size and increasing efficiency within the AutoCAD platform. All AutoCAD data shall be free of topological errors such as slivers, undershoots, overshoots dangles, overlaps, intersections, etc. Area features such as building footprints, parking lots, roadways, and airfield pavements shall be true polyline polygons. Adjacent polygons shall not have gaps or overlaps.

AutoCAD drawings shall be checked for correct spatial projection to one of the following: North American Datum 1983 Florida State Plane North FIPS 0903 Feet (AutoCAD Code FL83-NF) or Universal Transverse Mercator 1984, Zone 16 North (AutoCAD Code UTM84-16N).

Drawings submitted for approval as-builts shall have all changes incorporated into the final drawings. Drawings shall be free of revision clouds, hand-written notes, scanned in change orders, etc. Each sheet shall be annotated in bold letters near the title block with the date the as-builts were accepted (i.e. AS-BUILT DRAWING 12 APR 2012).

The Contractor shall also furnish a revised index of drawings to match the actual design drawings. The drawing title blocks shall be in a uniform format to match the requirements as presented in the solicitation drawings.
A copy of the final contract specifications shall be provided, in PDF format, on final as-built CDs.

c. Payment: Reference Section 01 32 01.00 10 for as-built cost loading requirements. As-built requirements shall include all requirements of this Appendix, to include all drawing files, BIM Models, and Facility Data.

1.14 REGISTRATION OF PRIVATELY OWNED VEHICLES

All vehicles owned, leased, or operated on the reservation shall be registered at the Area Engineer Office. Evidence of required insurance must be presented at the time of registration. The Contractor, all subcontractors, and their employees shall remove Base decal from the vehicles upon termination of contract or employment and return to the Area Engineer office.

1.15 CONTRACTOR'S AREA USE PLAN

The Contractor shall submit an Area Use Plan to the Contracting Officer's Representative, for approval, within ten (10) days after receipt of Notice to Proceed. The Area Use Plan shall show the following:

a) Location of Contractor's sheds and trailers.
b) Location of all Contractor storage areas.
c) Location of Contractor staging areas.
d) Temporary utility tie-ins.
e) Location of Contractor security fencing.
f) Location of project sign.
g) Required telephone service and locations.

1.16 AIR FORCE PROJECT SIGN

The Contractor shall furnish and install a project sign at the location designated by the Contracting Officer within 30 days after notice to proceed. The sign shall be constructed with a face sheet of 1/2-inch thick, grade A-C, exterior plywood mounted on a substantial framework of treated wood, sized and detailed as shown on Figure "Erection Details", bound herein. Lettering, color, and paint shall conform to the details shown in the "Construction Sign", bound herein. The sign shall receive one coat of primer paint followed by 2 coats of gloss exterior enamel. Lettering shall be with gloss exterior enamel. The HQ USAF Engineering and Services Directorate Emblem and Special Forces patch and insignia shall be provided by the Contractor, and shall be acquired through the Federal Industries (ENCOR), the Fort Leavenworth sign shop, or commercial sources. The Contractor shall coordinate emblem acquisition with the Base Civil Engineer. The Contractor shall coordinate the final project sign layout with the Contracting Officer's Representative. The Contractor shall maintain the sign in a "like new" condition throughout the life of the project, repainting and replacing members as necessary to accomplish this requirement. Upon completion of the work under this contract, the project sign shall be removed from the job site and shall remain the property of the Contractor. No direct payment will be made for the sign nor for...
maintenance of the sign.

1.17 COLOR BOARDS FOR AIR FORCE PROJECTS

a. The Contractor shall submit sets of color boards and finish samples as indicated in Sections 01 10 10 and 01 10 12. This sample submittal package shall include all visible exterior and interior materials and finishes which are a part of the building structure or built-in items to be provided by the contract. Provide the samples on 8-1/2- X 11-inch board modules with a maximum spread of 25-1/2 X 33 inches for foldouts. Label the modules with the project titles and design them to fit in a standard loose-leaf, three-post binder. The modules shall support and anchor all samples. Anchor large or heavy samples with mechanical fasteners. Organize the submittals in a logical manner to allow a fast review. Write descriptions and explanations clearly. Drawings and photographs must be clear and concise. Organize samples by scheme with a separate scheme for each room or for groups of rooms with the same scheme. Coordinate the schemes by room names and numbers shown on the architectural floor plans and room finish and color schedule. Include floor plans and schedules in modules. Indicate true pattern color and texture for interior material and finish samples. Carpet samples should be large enough to indicate a complete pattern or design, but not less than 3 by 5 inches. Include color/finish pattern and texture for exterior materials and finishes. Provide at least a 12 inch square sample where either interior or exterior special finishes such as architectural concrete or prefinished textured metal panels, are required. Submittal of the color samples shall not relieve the Contractor of the responsibility to submit the samples required by the Technical Provisions.

b. The Contractor shall obtain approval of the total construction color boards before he starts any finish work involving any item included on the submission.

1.18 SHOP DRAWINGS

The Contractor's Designer of Record shall review and approve all shop drawings submitted by suppliers and vendors prior to submission to the Contracting Officer's Representative. Five (5) copies of the shop drawings shall be submitted to the Contracting Officer's Representative for information only or for approval as indicated in each specification section following the Designer of Record review. If in reviewing the shop drawing for information, the Government discovers a discrepancy or problem, comments will be sent to the Contractor. The Government will not review all shop drawings. The Contractor shall send the Government his comments/response to the shop drawing.

1.19 SCHEDULE OF AVAILABLE UTILITIES

Existing utilities are available in the project area. The Contractor is responsible for providing all temporary utilities until permanent utility connections are made. The Contractor is responsible for providing all connections to existing utilities and metering.

Once utility connections are made, the amount of each utility service consumed shall be charged to or paid for by the Contractor at prevailing rates charged to the Government, as indicated herein or, where the utility is produced by the Government, at reasonable rates determined by the Contracting Officer. The Contractor, at its expense and in a workmanlike manner satisfactory to the Contracting Officer, shall install and maintain
all necessary temporary connections and distribution lines, and all meters
required to measure the amount of each utility used for the purpose of
determining charges. Before final acceptance of the work by the
Government, the Contractor shall remove all the temporary connections,
distribution lines, meters, and associated paraphernalia. The current
utility rates are as follows:

- Electric: $0.091 per KWh
- Natural Gas: $11.85 per Dekatherms
- Sewer: $2.42 per kilo gallons

1.20 CONTRACTOR SITE ACCESS

All contractor employees that require main base Eglin AFB access will be
required to obtain an access badge. See Access Badge Procedure below. See
also Base Access Requirements forms following this section.

All vehicles operated on main base Eglin AFB are subject to inspection.
Evidence of required insurance and state registration must be presented.

Access Badge Procedures are as follows:

All contractors and their employees that require main Eglin AFB access will
be required to obtain a picture ID from the Base Pass and ID Office, and
wear the ID at all times. Eglin has implemented a requirement for
background check for all contractors and their employees to obtain Base
passes.

Contractors will be required to submit list of personnel, SSN, days and
hours of access and employer to Eglin Corps of Engineers Resident Office
(Fax number (850) 882-3600), 7 (Seven) calendar days before pass is
required.

At the same time, contractor will submit background check information - OMB
Form I-9 and Eglin affidavit - to Base Security at East Gate (Valparaiso/
Niceville gate). All paperwork turned into the east gate needs to be
placed in an envelope/folder with the company name, point of contact/number
and contract number.

The OMB Form I-9 may be mailed to;
96 SECURITY FORCES
BUILDING 272
ATTN- PASS AND REGISTRATION
EGLIN AIR FORCE BASE, FL 32542

Individuals must submit social security number or work permit number and
have photo identification to receive badge.

Note: This process will take a full seven days and cannot be expedited in
any manner.

1.21 CONSTRUCTION PERMITS

A local permitting procedure is in effect at Eglin AFB for any work which
may disrupt aircraft or vehicular traffic flow, base utility services,
routine activities of the installation or which may involve subsurface
excavation. Contractor must plan and detail any work of this nature
sufficiently in advance of the proposed work. An AF Form 103, Base Civil
Engineering Work Clearance Request, must be submitted at least 10 (ten)
working days in advance of the proposed performance date to the Contracting Officer. Work will not begin until approval has been granted. Forms will be made available to the Contractor at the preconstruction conference. This includes soil borings.

1.22 SAFETY MARKINGS ON CRANE BOOMS

All cranes shall have a red strobe light and two flags attached to the end of the boom. The flags shall be 18-inches square and international orange in color. The strobe does not need to be flashing during daylight hours or when the boom is lowered to the ground at night. The strobe shall be flashing when operating during weather in which visibility is reduced or when operating at night. The strobe shall remain flashing if the boom remains elevated at night.

1.23 REQUIREMENTS FOR TEMPORARY CRANES

All cranes used by the Contractor for construction purposes will require written acceptance for their use by the Contracting Officer's representative. All requests shall be made seven (7) days in advance of the crane's arrival on the job site and shall include such information as latitude and longitude of the crane location, total operating height, mode of transportation and delivery to the project site, period of use and methods of conforming to all safety and airfield operations procedures. Cranes operating at night shall require a red blinking light at the highest point on the crane boom which conforms to Federal Aviation Administration (FAA) requirements and the SPECIAL CONTRACT REQUIREMENT CLAUSE: AIRFIELD SAFETY PRECAUTIONS. FAA Form 7460-1 shall be completed by the Contractor and filed with the FAA. A copy of Form 7460-1 shall also be submitted to the Contracting Officer's representative. When not in operation, crane booms shall be in the lowered position. Contractor is responsible for obtaining all necessary FAA Permits for erection of temporary structures.

Address to submit FAA Form 7460-1 is:

Federal Aviation Administration
Southern Regional Office
Air Traffic Division, ASO-530
P.O. Box 20636
Atlanta, GA 30320

Address of the Southern Region Office is:

Southern Region Office
Air Traffic Division, ASO-530
1710 Columbia Avenue
College Park, GA 30337
Tel. 404-305-5585

1.24 AIRFIELD SAFETY PRECAUTIONS

a. Definitions. As used in this clause--

(2) "Landing Areas" means--

(i) The primary surfaces comprising the surface of the runway, runway shoulders, and lateral safety zones. The length of each primary surface is the same as the runway length. The width of each primary surface is 610 Meters (2000-ft), 305 Meters (1000 ft) on each side of the runway.
(ii) The "clear zone" beyond the ends of each runway, i.e.; the extension of the primary surface for a distance of 305 Meters (1000 ft) beyond each end of each runway;

(iii) All taxiways, plus the lateral clearance zones along each side for the length of the taxiways (the outer edge of each lateral clearance zone is laterally 76 Meters (250 ft) from the far or opposite edge of the taxiway, e.g., a 23 Meter (75-ft) wide taxiway would have a combined width of taxiway and lateral clearance zones of 130 Meters (425 ft); and

(iv) All aircraft parking aprons, plus the area 38 Meters (125 ft) in width extending beyond each edge all around the aprons.

(3) "Safety precautions areas" means those portions of approach--departure clearance zones and transitional zones where placement of objects incident to contract performance might result in vertical projections at or above the approach-departure clearance, or the transitional surface.

(i) The "approach-departure clearance surface" is an extension of the primary surface and the clear zone at each end of each runway, for a distance of 15.24 km (50,000 ft), first along an inclined (glide angle) and then along a horizontal plane, both flaring symmetrically about the runway centerline extended.

(a) The inclined plane (glide angle) begins in the clear zone 61 Meters (200 Ft) past the end of the runway (and primary surface) at the same elevation as the end of the runway. It continues upward at a slope of 50:1 (1 unit vertically for each 50 units horizontally) to an elevation of 152 Meters (500 ft) above the established airfield elevation; at that point the plane becomes horizontal, continuing at that same uniform elevation to a point 15.24 km (50,000 ft) longitudinally from the beginning of the inclined plane (glide angle) and ending there.

(b) The width of the surface at the beginning of the inclined plane (glide angle) is the same as the width of the clear zone; It then flares uniformly, reaching the maximum width of 4.9 km (16,000 ft) at the end.

(ii) The "approach-departure clearance zone" is the ground area under the approach-departure clearance surface.

(iii) The "transitional surface" is a sideways extension of all primary surfaces, clear zones, and approach-departure clearance surfaces along inclined planes.

(a) The inclined plane in each case begins at the edge of the surface.

(b) The slope of the inclined plane is 7:1 (one unit vertically for each 7 unit horizontally), and it continues to the point of intersection with the--

1. Inner horizontal surface (which is the horizontal plane 46 Meters (150 ft) above the established airfield elevation); or

2. Outer horizontal surface (which is the horizontal plane 152 Meters (500 ft) above the established airfield elevation), whichever is applicable.

(iv) The "transitional zone" is the ground area under the transitional
surface. (It adjoins the primary surface, clear zone, and approach--departure clearance zone.)

b. General.

(4) The Contractor shall comply with the requirements of this clause while--

(i) Operating all ground equipment (mobile or stationary);

(ii) Placing all materials; and

(iii) Performing all work, upon and around all airfields.

(5) The requirements of this clause are in addition to any other safety requirements of this contract.

c. The Contractor shall--

(6) Report to the Contracting Officer's Representative before initiating any work;

(7) Notify the Contracting Officer's Representative of proposed changes to locations and operations;

(8) Not permit either its equipment or personnel to use any runway for purposes other than aircraft operation without permission of the Contracting Officer's Representative, unless the runway is--

(i) Closed by order of the Contracting Officer's Representative; and

(ii) Marked as provided in paragraph (d)(2) of this clause;

(9) Keep all paved surfaces, such as runways, taxiways, and hardstands, clean at all times and, specifically, free from small stones which might damage aircraft propellers or jet aircraft;

(10) Operate mobile equipment according to the safety provisions of this clause, while actually performing work on the airfield. At all other times, the Contractor shall remove all mobile equipment to locations--

(i) Approved by the Contracting Officer's Representative;

(ii) At a distance of at least 228 Meters (750 ft) from the runway centerline, plus any additional distance; and

(iii) Necessary to ensure compliance with the other provisions of this clause; and

(11) Not open a trench unless material is on hand and ready for placing in the trench. As soon as practicable after material has been placed and work approved, the Contractor shall backfill and compact trenches as required by the contract. Meanwhile, all hazardous conditions shall be marked and lighted in accordance with the other provisions of this clause.

d. Landing areas.

The Contractor shall--

(12) Place nothing upon the landing areas without the authorization of the
Contracting Officer's Representative;

(13) Outline those landing areas hazardous to aircraft, using (unless otherwise authorized by the Contracting Officer's Representative) red flags by day, and electric, battery-operated low-intensity red flasher lights by night;

(14) Obtain, at an airfield where flying is controlled, additional permission from the control tower operator every time before entering any landing area, unless the landing area is marked as hazardous in accordance with paragraph (d)(2) of this clause;

(15) Identify all vehicles it operates in landing areas by means of a flag on a staff attached to, and flying above, the vehicle. The flag shall be 0.9 meters (3 ft) square, and consist of a checkered pattern of international orange and white squares of 0.3 Meters (1 ft) on each side (except that the flag may vary up to ten percent from each of these dimensions);

(16) Mark all other equipment and materials in the landing areas, using the same marking devices as in paragraph (d)(2) of this clause; and

(17) Perform work so as to leave that portion of the landing area which is available to aircraft free from hazards, holes, piles of material, and projecting shoulders that might damage an airplane tire.

e. Safety precaution areas.

The Contractor shall--

(18) Place nothing upon the safety precaution areas without authorization of the Contracting Officer's Representative;

(19) Mark all equipment and materials in safety precaution areas, using (unless otherwise authorized by the Contracting Officer's Representative) red flags by day, and electric, battery-operated, low-intensity red flasher lights by night; and

(20) Provide all objects placed in safety precaution areas with a red light or red lantern at night, if the objects project above the approach-departure clearance surface or above the transitional surface.

(21) While working on or adjacent to active Runways and Taxiways, the Contractor shall provide Road Sweepers to clean FOD from affected areas.

1.25 FOREIGN OBJECT DEBRIS (FOD) PROTECTIVE FENCE

The Contractor should be aware of the importance of restraining and policing loose materials in the vicinity of the airfield and runway takeoff/landing areas. The Contractor shall institute a Foreign Object Elimination (FOE) program during construction and post-construction in order to remove sources of foreign object damage (FOD) and to prevent FOD and injury to aircraft and equipment from blown material. The Contractor shall design and construct a FOD fence in such a manner as to meticulously contain debris, trash, materials and foreign objects from being blown onto the active areas of the airfield and flight lines.

a. The fence design shall be submitted to the Contracting Officer's Representative and the final installation approved by the Contracting
b. Approval by the Contracting Officer's Representative shall not relieve the Contractor of the responsibility of the proper function of the fence. The fence shall encompass the areas as shown on the drawings. No work shall commence until the FOD fence has been constructed, properly installed in place, and approved by the Contracting Officer's Representative.

c. Loose or light material shall not be stored or left in the construction areas, unless it is safely secured. Tools, materials, and equipment subject to displacement shall be adequately secured. Containers provided for storing or carrying rivets, bolts, drift pins, nails, and other fasteners shall be secured against accidental displacement. The Contractor shall provide sufficient personnel and equipment to insure these safety requirements are met. The Contractor shall inspect the construction areas daily during work operations for adequate housekeeping. The Contractor shall record unsatisfactory findings on a daily inspection report. Items left over from the work operations such as loose bolts, screws, nails, fasteners, soft drink and food cans, and other such debris shall be collected, removed from the areas and properly disposed of daily. The daily and final inspection reports shall be submitted to the Contracting Officer's Representative.

d. The Contractor shall be responsible for the upkeep, proper maintenance and condition of the fence during the entire contract period.

1.26 CONSTRUCTION MATERIALS

All construction materials shall remain in the designated staging area until ready for use. Storage of materials in areas other that the designated area will not be allowed.

1.27 EQUIPMENT LAYOUT DRAWINGS

The Contractor shall submit "layout drawings" in plan and necessary elevation, of all mechanical, electrical, heating, and ventilating equipment space(s) showing the proposed equipment, ductwork, piping, conduits, etc., with clearances, for approval of the Contracting Officer, whether or not such layout drawings are specified under the various technical sections of the specifications. In spaces having more than one type of equipment, the layout drawings shall indicate the composite arrangement of all types of equipment and all associated work with all clearances. The layouts of equipment and associated work shall provide adequate and acceptable clearances for entry, servicing, and maintenance. The submittal and approval of equipment layout drawings shall conform to the requirements as herein before specified for shop drawings. Should the Contractor propose to furnish any equipment or standard products requiring allocations of space, or electrical, mechanical, or piping connections thereto, or supports different from those shown or indicated on the plans or in the specifications, he shall prepare and submit full detail drawings to the Contracting Officer for approval showing all changes. The approved detailed drawings shall become a part of the contract and any changes in the construction resulting from revisions in the details and dimensions on the drawings which are required by the substitution of alternate equipment and/or products shall be made at the expense of the Contractor.
1.28 CERTIFICATES OF COMPLIANCE

Any certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in four copies. Each certificate shall be signed by an official authorized to certify on behalf of the manufacturing company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material, if, after tests are performed on selected samples, the material is found not to meet the specific requirements.

1.29 EQUIPMENT DATA

(a) Major Equipment. The Contractor shall be required to make a list of all installed equipment furnished under this contract. This list shall include but not be limited to each piece of equipment which has a serial number. This list shall include all information usually listed on manufacturer's name plate, so as to positively identify the piece of property. This list shall also include the cost of each piece of installed property (less installation costs) F.O.B. construction site. The above referenced list shall be furnished as soon as possible after equipment is purchased. The list shall be furnished as one (1) reproducible and three (3) copies and shall be furnished to Contracting Officer not later than thirty calendar days prior to completion of any segment of the contract work which has an incremental completion date. Listing will be on Government furnished MOB Form 897, available from the Contracting Officer.

(b) Other Equipment. The Contractor will be required to furnish a brochure, catalog cut, parts list, manufacturer's data sheet or other publication (including the manufacturer's name and address) which will show detailed parts data on all other equipment, such as hardware, plumbing and lighting fixtures, etc., subject to repair and maintenance procedures. The data shall be furnished in four (4) copies to the Contracting Officer not later than thirty calendar days prior to completion of any segment of the contract work which has an incremental completion date.

1.30 ADDITIONAL ENVIRONMENTAL REQUIREMENTS

Acceptable environmental conditions shall be established prior to installation of any temperature or humidity sensitive finishes, such as but not limited to drywall, paint, casework, carpet and tile, acoustical ceiling tile, etc. Acceptable environmental conditions shall be established at least 24 hours prior to the start of finish installation. Monitor, document, and maintain environmental conditions daily, or more frequently as needed, throughout the remainder of construction to ensure that there is no damage to installed work due to unacceptable temperature or humidity levels. Where requirements vary for different finishes the most stringent shall be maintained. Minimum standards shall be maintained to ensure that mold growth does not occur. Finishes damaged due to unacceptable temperature or humidity levels shall be replaced in their entirety at no additional cost to the Government.

1.31 ASBESTOS MATERIALS AND LEAD BASED PAINTS

The Contractor shall not use materials containing Asbestos or Lead Based...
Paints in the construction of this facility. Upon completion of the construction, the Contractor shall submit two (2) copies of a Certified Letter to the Contracting Officer's Representative (COR) stating that no lead based paints or materials containing asbestos were used in the construction of the new facilities. One copy of the letter will be filed with project documents in the Resident Engineer's Office. The COR will deliver the remaining copy to 96th CEG/CEV (Stephen Kauffman).

1.32 ASBESTOS - OCCUPATIONAL HEALTH AND ENVIRONMENT

THE CONTRACTOR IS WARNED THAT EXPOSURE TO AIRBORNE ASBESTOS HAS BEEN ASSOCIATED WITH FOUR DISEASES: LUNG CANCER, CERTAIN GASTROINTESTINAL CANCERS, PLEURAL OR PERITONEAL MESOTHELIOMA AND ASPBESTOSIS.

a) Studies indicate there are significantly increased health dangers to persons exposed to asbestos who smoke, and further, to family members and other persons who become indirectly exposed as a result of the worker bringing asbestos contaminated work clothing home to be laundered or handled. The Contractor is advised that friable and/or nonfriable asbestos containing material has been identified in area(s) where contract work is to be performed and exists on or within materials and equipment to be removed during this project. Friable asbestos containing materials means any material that contains more than 1 percent asbestos by weight and possesses the quality that it may be crumbled, pulverized or be reduced to powder by hand pressure. Nonfriable asbestos containing materials are materials in which asbestos materials are bound by a matrix material, saturant, impregnant or coating. Nonfriable asbestos containing materials do not release airborne asbestos fibers during routine handling and end use. However, excessive fiber concentrations may be produced during uncontrolled abrading, sanding, drilling, cutting, machining, removal, demolition or other similar activities of nonfriable asbestos containing materials.

b) Care shall be taken to avoid releasing or causing to be released asbestos fibers into the atmosphere where they may be inhaled or ingested. The Occupational Safety and Health Administration (OSHA) has set standards in 29 CFR 1926.58 for occupational exposure to airborne concentrations of asbestos fibers in the construction industry. These standards define permissible exposure limits, methods of compliance, personal protective equipment including clothing and respiratory protection, hygiene facilities and practices, establishment of regulated removal areas, employee information and training, exposure monitoring of airborne asbestos, signs and labels warning of asbestos hazards, housekeeping methods for fiber control and waste disposal, medical surveillance programs and record keeping of medical and exposure monitoring data. The Environmental Protection Agency (EPA) has established standards in 40 CFR 61.140-156 (SUBPART M) for the control of asbestos emissions to the environment and the handling and disposal of asbestos waste. These standards define EPA notification that such removal is to take place. The required work practices and procedures include wetting, containment, container labeling, and disposal of removed materials in an approved sanitary landfill.

c) When contract work activities are carried out in locations where the potential exists for exposure to airborne asbestos fibers as described in 1(b) or where asbestos waste will be generated, the Contractor shall ensure that all measures necessary to provide effective protection to persons from exposure to asbestos fibers and prevention of contamination to property, materials, supplies, equipment and the
internal and external environment are effectively instituted. As a minimum the Contractor shall comply with the provisions of OSHA (29 CFR 1926.58), EPA (40 CFR 61.140-156), DOT (49 CFR 172.101; and any state or local regulation applicable to safety and health, emission control and transportation and disposal requirements for asbestos.

d) In addition to complying with the above regulations, the Contractor shall perform all asbestos removal and disposal operations in accordance with the requirements as set forth in SECTION: 13280. If the Contractor or any subcontractor identifies or encounters any suspect asbestos material (asbestos content greater than 1 percent by weight) not otherwise identified by the scope of work in the first clause during pre-construction, construction or post construction work activities in locations where contract work is to be performed, the Contractor shall immediately notify the Contracting Officer or COTR verbally with the follow-up in writing within 24 hours.

1.33 ELECTRONIC MAIL SYSTEM

The Contractor shall provide and maintain for the life of this contract an electronic mail system which shall interface, connect to and be compatible with the existing electronic mail system in the Corps of Engineers Resident Office at Eglin AFB, FL. The Contractors electronic mail system shall transfer and receive correspondence between the Resident Office without loss or modification of formatting codes or special characters.

The Resident Office is currently utilizing Exchange/MS Outlook for Windows and is Internet accessible. The Corps Internet E-mail gateway accepts binary files in uuencoded format, with a limit of 6Mb per E-mail message. Internet messages may be sent to any Mobile District Corps of Engineers Employee using the form <First Name>.<Middle Initial>.<Last Name>@sam.usace.army.mil without the brackets surrounding the names.

During construction, all Requests For Information (RFIs) including field sketched drawings shall be transmitted to the Corps of Engineers Resident Office at Eglin AFB, FL. in an electronic format. The RFIs shall be saved into a "pdf" format using Adobe Acrobat software, latest version.

The Contractor's electronic mail system shall have the capability of sending and receiving text, graphic, and drawing files developed on the following software:

1) Microsoft Word, Version 2003 or newer
2) WordPerfect, Version 12.0
3) AutoCAD, Version 2008 or newer
4) Adobe Acrobat, Version 6.0 or newer

The Contractor shall bear the responsibility to ensure total hardware and software compatibility with the Government's system when transferring and receiving information.

Within 10 days after receipt of NTP, the Contractor shall submit for approval an electronic mail system plan which details the hardware, software, communication paths, processes and procedures for establishing and maintaining the Contractor's electronic mail system.

1.34 TESTING AND BALANCING FOR HVAC SYSTEMS

The Construction Contractor shall retain the services of an Independent
Firm for Testing and Balancing (TAB) HVAC Systems as specified in SECTION: TESTING, ADJUSTING, AND BALANCING. Firm shall be either a member of the Associated Air Balance Council (AABC) or certified by the National Environmental Balancing Bureau (NEBB). The TAB Firm shall be a subcontractor of the prime contractor, and shall report to and be paid by the prime contractor.

1.35 LAYOUT OF WORK

The Contractor shall lay out its work from Government-established base lines and bench marks indicated on the drawings, and shall be responsible for all measurements in connection with the layout. The Contractor shall furnish, at its own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the work. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the Contracting Officer. The Contractor shall also be responsible for maintaining and preserving all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through its negligence before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the replacement from any amounts due or to become due to the Contractor.

1.36 PAYMENT FOR MATERIALS DELIVERED OFFSITE

a. Pursuant to FAR Clause 52.232-5, "Payment Under Fixed-Price Construction Contracts," materials delivered to the Contractor at locations other than the site of the work may be taken into consideration in making payments if included in payment estimates and if all the conditions of the contract clauses are fulfilled. Payment for items delivered to locations other than the work site will be limited to (1) materials required by the technical provisions; or (2) materials that have been fabricated to the point where they are identifiable to an item of work required under this contract.

b. Such payment will be made only after receipt of paid or receipted invoices or invoices with canceled check showing title to the items in the prime contractor and including the value of materials and labor incorporated into the item. Petroleum products, including fuel, will be considered for payment as a material delivered offsite.

1.37 COORDINATION CONFERENCES

Weekly coordination conferences will be held by the Contracting Officer's Representative and the Contractor throughout the life of this contract. Coordination conferences will be held to discuss contract administration, Contractor quality control, phasing, scheduling, and other aspects relating to this construction. The Using Agency, Corps of Engineers and the Contractor will be represented at each of these meetings. Similar information concerning replacement personnel shall be forwarded to the Contracting Officer's Representative, should any replacement be required at any time during the life of this contract. Coordination conferences will be scheduled to occur on a weekly basis. The Contractor shall develop the Meeting Minutes for each Coordination conference. A copy of the meeting minutes shall be provided to the Corps and all attendees via e-mail no later than 48 hours after each meeting. The Contractor shall develop and maintain a list of action items that arise during construction or at each Coordination Conference. The Action Items list shall describe each Issue/Action Item and state what organization/person is tasked with its
resolution. Blanks, or cells, shall be provided for dates when the Issue/Action Item was first raised, the due date for its resolution, and the date of actual resolution.

1.38 PERMITS AND RESPONSIBILITIES

Environmental Permits - The Contractor will be responsible for obtaining all applicable permits/licenses related to the design and construction of this project.

The contractor will provide all as-built certifications, properly executed, as required by each individual permit.

Refer to the multiple Specification Section 01 10 10 DESIGN REQUIREMENTS for additional information.

1.39 MERCHANTABLE TIMBER

not used

1.40 CONSTRUCTION DEBRIS DISPOSALS

Cleared trees, limbs and other vegetation shall be disposed of at an approved disposal site off Government controlled lands. In lieu of disposal off site, cleared timber may be chipped and stockpiled on site as directed by COR for use by the Government.

All other construction debris shall be disposed of at an approved disposal site off Government controlled lands.

1.41 UNEXPLODED ORDNANCE

not used

1.42 HAZARDOUS MATERIALS AND WASTES MANAGEMENT

All hazardous materials and waste resulting from the construction of this project shall be managed in accordance with local, state, federal and Eglin AFB rules and regulations. All universal waste such as spent fluorescent lamps, batteries, mercury thermostats, smoke detectors, and mercury switches must be managed and handled in accordance with the above-mentioned directives. Hazardous materials and waste such as fuels and oils of all types, used tires, computer monitors, all electronic devices, aerosol spray cans (including empties), paints, adhesives, corrosives, nonflammable and non corrosive cleaners, hydraulic fluid, antifreeze, etc. must be managed in accordance with above-mentioned compliance agencies. The Contractor's Quality Control Manager shall contact COR and 96 CEG/CEV if handling procedures for hazardous waste and materials is unclear.

The use of fuel storage tanks on Base must be approved by the 96 CEG/CEV. Temporary gasoline storage will NOT be permitted on Base. Any tank, container, or equipment with an oil or fuel capacity of 55 gallons or more approved for use on Eglin AFB shall have a means of secondary containment, spill containment (spill kits), and/or spill procedures in place that prevents the flow of spilled oil or hazardous materials into navigable waters.

Contractor vehicle and heavy equipment maintenance (including oil changing, lubrication, and vehicle washing) is not authorized on base.
1.43 HAZARDOUS OR TOXIC MATERIAL SPILLS

Within ten (10) days of Notice To Proceed (NTP), the Contractor shall prepare a Spill Prevention Control and Countermeasures (SPCC) Plan in accordance with CFR 40 Part 112 to address spill prevention and countermeasures for tanks and heavy equipment used on Base.

Any fuel, oil, hydraulic fluid, chemical, or other hazardous or toxic material spill on Eglin AFB shall be reported to the Base Fire Department by phoning "911", or to 96 CEG/CEV through the Contracting Officer's Representative regardless of the amount.

1.44 RECYCLING OF HAZARDOUS OR TOXIC MATERIALS

All fluorescent, metal halide, mercury, or high pressure sodium lighting bulbs or tubes, fluorescent ballasts, smoke detectors, and mercury switches/thermostats identified for disposal shall be turned in to 96 CEG/CEV for recycling. The contractor shall call 96 CEG/CEV for a turn-in appointment (normally Tuesdays and Thursdays). Each type of the items listed above shall be separated and placed in containers capable of being closed properly. Fluorescent tubes shall not be taped together. If the original container is not available, the Contractor shall use a box as close as possible to the size of the original container. A stick-on label must be placed on each box describing the contents. The labels can be hand-written or computer generated. The Contractor shall refrain from breaking lamps, however, broken lamps should be collected as well.

1.45 PROTECTION OF ENVIRONMENTALLY SENSITIVE AREAS/SPECIES

The site contains several environmentally sensitive areas and protected species of wildlife. Prior to beginning construction, the contractor's project manager, superintendent, quality control and alternate quality control will attend a briefing by Eglin environmental personnel to assure identification and protection of environmentally sensitive areas and species.

1.46 BURIED PIPING AND UTILITIES

The Contractor shall provide a tracer wire on the top of all non-metallic piping buried 6-inches below finished grade or deeper. The tracer wire shall be magnetic detectable conductor, brightly colored plastic covering, imprinted with the type of service in large letters.

1.47 EXISTING ROADWAYS

The construction contractor shall limit construction loads as necessary to avoid damaging the existing roads. Prior to starting construction, the Contractor shall make a joint inspection of existing roads with Contracting Officer's Representative and document the condition of these roads in a report and a video tape. Video tape shall be provided to COR within 10 days of inspection. Damage to existing roads caused by contractor equipment during construction shall be repaired by the construction contractor at the conclusion of construction.

1.48 RADIO TRANSMISSIONS

To avoid conflict with transmission frequencies, the Contractor shall submit a written request for use of each radio device to be used at the job
site. The request shall contain: (1) a list of all radios to be used with serial number, (2) frequencies to be used, (3) power output, and (4) a copy of the FCC license for each device. The Contracting Officer's Representative reserves the right to order the Contractor not to use radios in times of sensitive base operations. The Contractor shall provide to the Contracting Officer's Representative a point of contact to be notified when all radio transmissions must cease due to sensitive base operations and when radio operations can resume. Radios shall not be used until the Contractor receives written approval from the Contracting Officer's Representative.

1.49 ENDANGERED SPECIES

The construction site, as well as the surrounding area, contains species currently considered endangered. These include, but are not limited to Red Cockaded Woodpeckers. The contractor's project manager, superintendent, quality control manager and back-up to the Q/C manager will attend a briefing at the Jackson Guard to learn to identify these endangered species. Point of Contact is Mr. Rodney Felix, (850)883-1153.

1.50 TESTING AND INSPECTING

The following statement replaces paragraphs found in the technical specifications for all buildings and aspects of the project calling for the Government or Owner to engage and pay for Testing and Inspecting:

Contractor will engage and pay for qualified independent testing and inspecting agencies to perform field tests and inspections and prepare reports as required in specification sections that require such tests. The Contracting Officer or their Representative shall not be responsible for engaging the services.

1.51 BRAND NAMES OR EQUAL PRODUCTS

The Contractor may provide alternate products equal to those specifically referenced by brand name in the specifications. The alternate products shall fully meet the salient characteristics of the brand name products as described in the specifications to be considered equal. The Contractor shall submit the alternate products showing the salient characteristics for Government Approval after award in accordance with Section 01 33 00 Submittal Procedures.

1.52 RED ZONE MEETINGS

The contractor shall have a series of pre-final construction Red Zone Meetings (See Appendix III) to discuss, define and achieve consensus on the construction and financial status of a MILCON project. The ultimate goal is to build a schedule of events necessary to achieve project completion and financial closeout in keeping with Air Force MILCON Execution Goals. These goals are to complete projects within original budget, complete projects within original schedule, physical completion within 90 days of BOD and financial closeout within 180 days of BOD.

a. Red Zone Meetings shall be started seventy-five (75) days prior to the expected completion of the construction, or when the project reaches 80% completion.

b. The Red Zone process initiates the Enterprise Business Process (EBP), which the Corps of Engineers utilizes for the closeout of MILCON
projects (USACE MILCON Project Closeout, Enterprise Business Process, October 2007, Final Version.). Appendix 8 from the USACE document is included in Appendix III to identify roles and responsibilities at the Red Zone Meeting.

c. Completion Milestones. The red zone meeting establishes milestone estimated completion dates and OPRs for all the actions necessary to complete the project. Appendix 9 USACE Initial Red Zone Meeting Checklist of the USACE MILCON Project Closeout, Enterprise Business Process, October 2007, is included in Appendix III. It indicates all remaining activities including the Action Officer, the date due, the status, the actual completion date and any comments. A summary of key elements of this data is provided in Appendix GGG for annotation.

1.53 SITE SECURITY

The site is remote, and as such will require the contractor to provide security personnel whenever work is not in process to assure no vandalism occurs to work in place, as well as contractor/government property on the site.

The Contractor shall provide a 6-ft high chain length fence surrounding the site limits to secure the site during construction. The Contractor shall provide knox boxes for Base Fire Department access in the event of an emergency.

1.54 SUBMISSION OF FINAL DD FORM 1354 - TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

Using the blank DD Form 1354 provided at the end of this section, the Contractor shall submit an Interim DD Form 1354 with the Final Design to the Contracting Officer’s Representative prior to final approval of design. Using this Interim DD Form 1354, the Contractor shall submit the Final DD Form 1354 for the project no later than fourteen (14) days prior to the Beneficial Occupancy Date (BOD). Category Code numbers found on the DD Form 1354 Checklist provided at the end of this section shall be used in completing the Final DD Form 1354. Additional Category Codes can be found in the publication entitled "Air Force Real Property Category Code Descriptions."

1.55 RATES OF WAGES

Wage rates are included at the end of this section.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

-- End of Section --
AIR FORCE SIGN ISOMETRIC ERECTION DETAILS

26 ga. Gal. Metal Flashing On Top Sign

1/2" Grade AC Exterior Plywood Fastened To 2" x 4" With No. 10 x 2" Wood Screws 1'-0" O.C.

2" x 6" Struct. Nail To Brace with 3-16 Nails

2" x 4" Molding Surround

1/2" Countersunk Bolts With Washers

2" x 6" Brace

4" x 4" Post

Grade

30 D

45 D

2'-6" MIN.
### Figure 1. Construction Sign Example

6.5. Paint the sign with one coat of primer paint followed by two coats of gloss exterior-type enamel paint. The color must be either Standard Blue 15090 or Standard Brown 10100 as specified in Federal Standard (FED-STD) 595B, *Colors*, Volume 1. Lettering is to be as shown in Figure 1 in white gloss, exterior-type enamel.

<table>
<thead>
<tr>
<th>Space</th>
<th>Height</th>
<th>Line</th>
<th>Description</th>
<th>Letter Height</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>102 mm (4 in)</td>
<td>1</td>
<td>U.S. AIR FORCE PROJECT</td>
<td>38 mm (1.5 in)</td>
<td>5 mm (0.1875 in)</td>
</tr>
<tr>
<td>B</td>
<td>51 mm (2 in)</td>
<td>2</td>
<td>IN PARTNERSHIP WITH</td>
<td>38 mm (1.5 in)</td>
<td>5 mm (0.1875 in)</td>
</tr>
<tr>
<td>C</td>
<td>51 mm (2 in)</td>
<td>3</td>
<td>U.S. ARMY CORPS OF ENGINEERS</td>
<td>38 mm (1.5 in)</td>
<td>5 mm (0.1875 in)</td>
</tr>
<tr>
<td>D</td>
<td>127 mm (5 in)</td>
<td>4</td>
<td>PROJECT NAME</td>
<td>102 mm (4 in)</td>
<td>13 mm (0.5 in)</td>
</tr>
<tr>
<td>E</td>
<td>76 mm (3 in)</td>
<td>5</td>
<td>PROJECT NAME CONT’D (IF REQUIRED)</td>
<td>102 mm (4 in)</td>
<td>13 mm (0.5 in)</td>
</tr>
<tr>
<td>F</td>
<td>127 mm (5 in)</td>
<td>6</td>
<td>GENERAL CONTRACTOR/A-E</td>
<td>38 mm (1.5 in)</td>
<td>5 mm (0.1875 in)</td>
</tr>
<tr>
<td>G</td>
<td>25 mm (1 in)</td>
<td>7</td>
<td>GENERAL CONTRACTOR/A-E</td>
<td>38 mm (1.5 in)</td>
<td>5 mm (0.1875 in)</td>
</tr>
</tbody>
</table>
Each contractor’s safety record is to be posted on Corps managed or supervised construction projects and mounted with the construction project identification sign.

The graphic format, color, size and typefaces used on the sign are to be reproduced exactly as specified below. The title with First Aid logo in the top section of the sign and the performance record captions are standard for all signs of the type. Legend Groups 2 and 3 below identify the project and the contractor and are to be placed on the sign as shown.

Safety record numbers are mounted on individual metal plates and are screw-mounted to the background to allow for daily revisions to posted safety performance record.

Legend Group 1: Standard two-line title
“Safety is a Job requirement” with (8 oz.)
Safety Green First Aid logo.
Color: 17.5” Helvetica Regular
Typeface: Black

Legend Group 2: One to two-line project title legend describes the work being done under this contract and name of host project.
Color: Blank
Typeface: 1.5” Helvetica Regular
Maximum line length: 42”

Legend Group 3: One to two line identification: name of prime contractor and city, state address.
Color: Blank
Typeface: 1.5” Helvetica Regular
Maximum line length: 42”

Legend Group 4: Standard safety record captions as shown.
Color: Black
Typeface: 17.5” Helvetica Regular

Replaceable numbers are to be mounted on white .060 aluminum plates and screw-mounted to background.
Color: Black
Typeface: 3” Helvetica Regular
Plate size: 2.5” x .5”

All typography is flush left and rag right.
Upper and lower case with initial capitals only as shown. Letter- and word-spacing to follow Corps standards.
APPLIED INSTRUCTION FACILITY
EOD COURSE

GENERAL CONTRACTOR
COMPANY, INC

ARCHITECT-ENGINEER
JOHN DOE

MATERIAL & BUILDING INFO:
SUBSTRATE: .015 WHITE SMOOTH PVC LAMINATED PLYWOOD
CONSTRUCTION: SIGN WILL BE DIGITALLY PRINTED
& LAMINATED USING PMS 478 BROWN
SIZE: 4' X 8'
COPY: SINGLE SIDED
MEMORANDUM FOR:  96 SFS/S-5B  
FROM: COMPANY/UNIT NAME  
SUBJECT: Request for Badge/Pass  

1. The following individuals require access to _________ (Eglin/Duke/7 SFG/6 RTB/NAVEOD are examples) to perform official duties at building _______. (Can not be base wide). Their duties will include (Give brief description of what their duties will be). All work will begin on (date) _________ and will be accomplished by (expiration date) ______________. The contract number (if applicable) is ___________________.  

2. The individuals listed have been briefed that while on the installation they must comply with all local laws and policies. The failure to comply will result in loss of base access. Each individual understands that they must go to the Security Forces Pass and Registration office to receive their contractor identification badge/pass. They further understand they must have a valid drivers license/Identification card, proof of current registration and insurance while driving on the installation.  

3. When first arriving to the installation the following individuals will need no escort before being allowed access to the installation.  

4. I understand it is the unit/company responsibility to collect the badges of terminated employees and to collect the badges at the conclusion of the work that was to be accomplished. Further, I understand that we are responsible to turn the badges/passes in to the Security Forces Pass and Registration office as soon as all work is complete.  

<table>
<thead>
<tr>
<th>Name of Individual</th>
<th>Days/hrs of access</th>
<th>SSN/Date of Birth /Drivers License #/State</th>
</tr>
</thead>
<tbody>
<tr>
<td>*John Q Doe Jr</td>
<td>24/7</td>
<td>999-99-1111/05 May 83/1235897 (AL)</td>
</tr>
<tr>
<td>*Mary T Lincoln</td>
<td>M-F: 0600-2100</td>
<td>999-99-2222/05 May 83/1234567 (FL)</td>
</tr>
</tbody>
</table>

5. The contractor sponsor of the following individual is: The government sponsor of the following individual(s) is:  

- Full name  
- Title  
- Unit/Company  
- Duty Phone  

Contractor Sponsor Signature  

- Government Sponsor Signature

**Authority:**  10 U.S.C.8013, Secretary of the Air Force  

**Purpose:** Used by the Security Forces for issuing ID media. Some organizations may routinely keep copies of the above documentation in order to maintain control over persons authorized entry into certain areas. Accountability documents are used to insure proper control over the various forms utilized in these functions.  

**Routine Use:** In addition to those disclosures generally permitted under 5 U.S.C. 552(b) of the Privacy Act, these records or information contained therein may specifically be disclosed outside the DoD as a routine use pursuant to 5 U.S.C.552a(b)(3) as follows:  

NOTICE: Under the Privacy Act of 1974, you must safeguard personnel information retrieved through this system. Disclosure of information is governed by Title 5, United States Code. Section 552a Public Law 93-579, DoDD 5400.11, DoDR 5400.11-R and the applicable service directives.
FOR OFFICIAL USE ONLY

EGLIN AIR FORCE BASE ACCESS AFFIDAVIT

PRIVACY ACT STATEMENT

AUTHORITY: Section 3101, Title 44, United States Code, AFI 33-332, 5 USC 552A.

PURPOSE: Used for requesting personal information to assist security personnel in developing records to document contractor employee suitability for access to Eglin Air Force Base, Florida to work under Air Force contracts. The SSN and Date of Birth (DOB) are necessary to identify the person and records. This information may be used to determine suitability of persons desiring access to Eglin Air Force Base as well as for other lawful purposes including law enforcement and litigation.

ROUTINE USES: All contractors, subcontractors, unit’s or sponsoring activities who have employees not authorized a Command Access Card or security clearance and requires access to Eglin Air Force Base in performance of their official duties, and/or whose contract expires in less than one year.

DISCLOSURE: Disclosure of requested information is voluntary. Failure to provide information could result in access privileges being refused or withdrawn. The Privacy Act Statement will apply throughout the duration of the Air Force contract while serving in the capacity of prime contractor or subcontractor/supplier employee.

COMPANY

<table>
<thead>
<tr>
<th>NAME</th>
<th>PHONE</th>
</tr>
</thead>
</table>

WORK SITE LOCATION TYPE OF WORK (Employee)

<table>
<thead>
<tr>
<th>DAYS OF WEEK (Check on that Apply)</th>
<th>HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MONDAY</td>
<td>TUESDAY</td>
</tr>
<tr>
<td>FRIDAY</td>
<td>SATURDAY</td>
</tr>
</tbody>
</table>

CONTRACTOR

<table>
<thead>
<tr>
<th>NAME (Last, First, Middle (Add Suffix Sr., Jr. after last name))</th>
<th>SSN</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTHER NAMES ALSO USED (If none, write &quot;NONE&quot;)</td>
<td>HOME PHONE</td>
</tr>
<tr>
<td>DATE OF BIRTH</td>
<td>DRIVER LICENSE NUMBER</td>
</tr>
<tr>
<td>BIRTHPLACE (City/State/Country)</td>
<td>COUNTRY OF CITIZENSHIP</td>
</tr>
<tr>
<td>RESIDENT ALIEN NUMBER OR IMMIGRATION DOCUMENT NUMBER AND DESCRIPTION</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STREET ADDRESS (No P.O. Boxes)</th>
<th>CITY</th>
<th>STATE</th>
<th>ZIP CODE</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>MALE</th>
<th>FEMALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RACE</td>
<td>HAIR COLOR</td>
</tr>
</tbody>
</table>

PHYSICAL BODY CHANGES OR TATTOOS

THE INFORMATION ON THIS FORM IS BEING COLLECTED IN ACCORDANCE WITH FEDERAL LAW PERMITTING THE INSTALLATION COMMANDER TO LIMIT ACCESS TO THE INSTALLATION FOR SECURITY REASONS (50 U.S.C. 797 AND DoD INSTRUCTION 5200.8). THIS DATA WILL BE USED TO SCREEN INDIVIDUALS WHO HAVE OR ARE SEEKING ACCESS TO EGLIN AIR FORCE BASE, FLORIDA. FAILURE TO PROVIDE TRUTHFUL, COMPLETE AND ACCURATE RESPONSES MAY BE USED AS A BASIS TO DENY ENTRY TO EGLIN AIR FORCE BASE AND IS ALSO PUNISHABLE AS A CRIMINAL OFFENSE.

EGLIN AFB FORM 90, 201307XX
FOR OFFICIAL USE ONLY
PLEASE ANSWER EACH OF THE FOLLOWING QUESTIONS BY CHECKING THE CORRECT ANSWER. THE INFORMATION YOU PROVIDE WILL BE VERIFIED THROUGH STATE AND FEDERAL CRIMINAL HISTORY RECORD CHECKS.

<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAN U.S. CITIZENSHIP, IMMIGRATION STATUS, OR SOCIAL SECURITY ACCOUNT NUMBER BE VERIFIED?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAVE YOU EVER BEEN BARRED FROM ENTRY/ACCESS TO ANY FEDERAL/MILITARY INSTALLATION OR FACILITY?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARE YOU WANTED BY FEDERAL OR CIVIL LAW ENFORCEMENT AUTHORITIES, REGARDLESS OF OFFICE/VIOLATION (i.e., an &quot;order to arrest&quot; has been issued by a judge)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAVE YOU BEEN CONVICTED OF ANY OFFENSE THAT INVOLVED VIOLENCE IN THE WORKPLACE?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAVE YOU BEEN CONVICTED OF ANY VIOLENT CRIMINAL OFFENSE THAT RESULTED IN DEATH?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAVE YOU BEEN CONVICTED OF ANY OFFENSE THAT INVOLVED USE OF A WEAPON?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAVE YOU BEEN INCARCERATED FOR 12 MONTHS OR LONGER, REGARDLESS OF OFFENSE/VIOLATION, UNLESS RELEASED ON PROOF OF INNOCENCE?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAVE YOU EVER BEEN CONVICTED OF ESPIONAGE, SABOTAGE, TREASON, OR TERRORISM OR MURDER?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOES YOUR NAME APPEAR ON ANY FEDERAL AGENCY'S &quot;WATCH LIST&quot; OR &quot;HIT LIST&quot; FOR CRIMINAL BEHAVIOR OR TERRORIST ACTIVITY?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAVE YOU BEEN PREVIOUSLY DENIED ACCESS TO ANY DOD INSTALLATIONS?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAVE YOU BEEN CONVICTED OF FIREARMS OR EXPLOSIVES VIOLATION?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAVE YOU BEEN CONVICTED OF SEXUAL ASSAULT/ROBBERY, RAPE, CHILD MOLESTATION, DRUG POSSESSION WITH INTENT TO SELL, DRUG DISTRIBUTION, OR TRAFFICKING IN HUMANS?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARE YOU A REGISTERED SEX OFFENDER?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARE YOU AN UNDOCUMENTED, NON-US., CITIZEN (FOREIGN NATIONAL)?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE TO APPLICANT: ATTESTATION

I UNDERSTAND THAT BY SIGNING THIS APPLICATION, THE INFORMATION I HAVE PROVIDED ON THIS APPLICATION IS TRUE, COMPLETE, AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND IS PROVIDED IN GOOD FAITH. I UNDERSTAND THAT A KNOWING AND WILLFUL FALSE STATEMENT ON THIS APPLICATION CAN BE PUNISHED BY BARMENT FROM THE INSTALLATION, A FINE, IMPRISONMENT OR BOTH. (18 U.S.C, SECTION 1001).

FURTHER, I UNDERSTAND THAN UNDER THE AUTHORITY OF 50 U.S.C. SECTION 797 AND DoDI 5200.8, THE INSTALLATION COMMANDER HAS IMPOSED A CONTINUING OBLIGATION FOR ME TO DISCLOSE TO EGLIN AIR FORCE BASE, WITHIN 24 HOURS, IF I AM CONVICTED OR FOUND NOT GUILTY BY REASON OF INSANITY OF ANY OF THE ABOVE CRIMINAL OFFENSES THAT OCCURS WHILE I HAVE UNESCORTED ACCESS AUTHORITY WITHIN EGLIN AIR FORCE BASE.

APPLICANT NAME (print legibly)  
APPLICANT SIGNATURE  DATE  
COMPANY NAME  
COMPANY REPRESENTATIVE NAME  
COMPANY REPRESENTATIVE SIGNATURE
This page was intentionally left blank for duplex printing.
# Transfer and Acceptance of DoD Real Property

The public reporting burden for this collection of information is estimated to average 30 minutes per response. Including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Washington Headquarters Services, Executive Services Directorate, Information Management Division, 4850 Mark Center Drive, Alexandria, VA 22350-3100 (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

**PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE ABOVE ORGANIZATION.**

<table>
<thead>
<tr>
<th>1. FROM (Organization Name)</th>
<th>2. DATE PREPARED (YYYYMMDD)</th>
<th>3. PROJECT/JOB NUMBER</th>
<th>4. SERIAL NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. TO (Organization - Installation Code and Name)</td>
<td>6. RPSSID/SITENAME/INSTCODE/INSTNAME</td>
<td>7. CONTRACT NUMBER(S)</td>
<td>7a. PLACED-IN-SERVICE DATE (YYYYMMDD)</td>
</tr>
<tr>
<td>a. METHOD (X all that apply)</td>
<td>b. WHEN/EVENT (X one)</td>
<td>c. TYPE (X one)</td>
<td>DRAFT</td>
</tr>
<tr>
<td>ACQUISITION BY CONSTRUCTION</td>
<td>TOTAL ASSET PLACED-IN-SERVICE</td>
<td>PARTIAL ASSET PLACED-IN-SERVICE</td>
<td>INVENTORY ADJUSTMENT</td>
</tr>
<tr>
<td>TRANSFER BETWEEN SERVICES</td>
<td>CAPITAL IMPROVEMENT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 24. STATEMENT OF COMPLETION

The facilities listed hereon are in accordance with maps, drawings, and specifications and change orders approved by the authorized representative of the using agency except for the deficiencies listed on the reverse side.

a. TRANSFERRED BY (Typed Name and Signature)  
b. DATE SIGNED (YYYYMMDD)

c. TITLE (Area Engr./Base Engr./DPW/Construction Agent)

### 25a. ACCEPTED BY (Typed Name and Signature)

b. DATE SIGNED (YYYYMMDD)

c. TITLE (DPW/RPAO)

### 26. PROPERTY VOUCHER NUMBER

DD FORM 1354, APR 2013

PREVIOUS EDITION IS OBSOLETE.
27. CONSTRUCTION DEFICIENCIES (Attach blank sheet for continuations)

28. PROJECT REMARKS (Attach blank sheet for continuations)

INSTRUCTIONS

GENERAL. This form has been designed and issued for use in connection with the transfer of military real property between the military departments and to or from other government agencies. It supersedes ENG Forms 290 and 290B (formerly used by the Army and Air Force) and NAVDOCKS Form 2317 (formerly used by the Navy).

Existing instructions issued by the military departments relative to the preparation of DD Form 1354 are applicable to this revised form to the extent that the various items and columns on the superseded forms have been retained. The military departments may promulgate additional instructions, as appropriate.

For detailed instructions on how to fill out this form, please refer to Unified Facilities Criteria (UFC) 1-300-08, dated 16 April 2008 or later.

SPECIFIC DATA ITEMS.

1. From. Name of the transferring agency.

2. Date Prepared. Date of actual preparation. Enter all dates in YYYYMMDD format (Example: March 31, 2010 = 20100331).

3. Project/Job Number. Project number on a DD Form 1391 or Individual Job Order Number.

4. Serial Number. Sequential serial number assigned by the preparing organization (e.g., 2010-0001).

5. To. Name and address of the receiving installation, activity, and Service of the Real Property Accountable Officer (RPAO).

6. RPSUID/SITENAME/INSTCODE/INSTNAME. Site Unique Identifier and name or installation code and name where the constructed facility is located.

7. Contract Number(s). Contract number(s) for this project.

7a. Placed-In-Service Date. RPA Placed In Service Date. This is the date the asset is actually placed-in-service.

8. Transaction Details.
   a. Method of Transaction. Mark (X) as many boxes as apply.
   b. When/Event. When or event causing preparation of DD Form 1354. X only one box.
   c. Type. Draft, interim, or final DD Form 1354. X only one box.

9. Item Number. Use a separate item number for each facility, no item number for additional usages.

10a. Facility Number. Assigned in accordance with the Installation/Base Master Numbering Plan.

10b. RPUID. Identified in Real Property Inventory.


12. Catcode Description. The category code name which describes the facility usage.

13. Type. Type of construction: P for Permanent; S for Semi-permanent; T for Temporary.


15. Area: UM 1. Area unit of measure; use the unit of measure associated with the category code selected in 11.

16. Total Quantity UM 1. The total area for the measure identified in Item 14. Use negative numbers for demolition.

17. Other: UM 2. Unit of Measure 2 is the capacity or other measurement unit (e.g., LF, MB, EA, etc.).

18. Total Quantity UM 2. The total capacity/other for the measure identified in Item 17.

19. Cost. Cost for each facility; for capital improvements to existing facilities, show amount of increase only. If there is no increase for the capital improvement, enter N/A.

20. Fund Source. Enter the Fund Source Code for this item.

21. Funding Organization. Enter the code for the organization responsible for acquiring this facility.

22. Interest Code. Enter the code that reflects government interest or ownership in the facility.

23. Item Remarks. Remarks pertaining only to the item number identified in Item 9; show cost sharing.

24. Statement of Completion. Typed name, signature, title, and date of signature by the responsible transferring individual or agent.

25. Accepted By. Typed name, signature, title, and date of signature by the RPAO or accepting official.

26. Property Voucher Number. Next sequential number assigned by the RPAO in voucher register.

27. Construction Deficiencies. List construction deficiencies in project during contractor turnover inspection.

The Contractor is required, prior to the Final Inspection, to submit a completed copy of the following Construction Data Worksheet (CDS) along with an As-Built copy of the building floorplan(s). The CDS is used by the Air Force to inventory and capitalize new work. The Construction Representative will review the CDS, ensure that it is complete, and forward it to the Real Estate Office within 15 working days of the Final Inspection. This checklist includes only the basic general construction category codes. More detailed category code listing information is available through the Real Property Office, 884-6860.

I. TITLE OF PROJECT:

______________________________________________________________________________

PROJECT No. ______________________ Work Order No. ______________________
Drawing No. ______________________ Contract No. ______________________
Facility No. ______________________ Completion Date ________________

II. GENERAL DATA: (for construction to existing facilities, only provide data for the new addition).

A. Outside Dimensions:
Main Buildings _______________________ Wings _____________________
Offsets _______________________ Total SF _____________________

B. Number of Floors: ____________________

C. Construction Material:
Foundation _______________________ Floors _____________________
Outside Walls _______________________ Roof _____________________

III. UTILITIES/RELATED FACILITIES - Addition

<table>
<thead>
<tr>
<th>Cat Code</th>
<th>Nomenclature</th>
<th>UM</th>
<th>Amount</th>
<th>Cost</th>
<th>Descript</th>
</tr>
</thead>
<tbody>
<tr>
<td>132-133</td>
<td>Pad, Equip</td>
<td>EA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>132-134</td>
<td>Ant Support Structure</td>
<td>EA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>135-583</td>
<td>Tel Duct Facility</td>
<td>LF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>135-586</td>
<td>Tel Pole Facility</td>
<td>LF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>812-223</td>
<td>Prim Dist Line OH</td>
<td>LF</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>812-224</td>
<td>See Dist Line OH</td>
<td>LF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>812-225</td>
<td>Prim Dist Line UG</td>
<td>LF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>812-226</td>
<td>Sec Dist Line UG</td>
<td>LF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>812-926</td>
<td>Exterior Area Lighting</td>
<td>EA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Street or Parking area Lights)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>812-928</td>
<td>Traffic Lights</td>
<td>EA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>831-157</td>
<td>Industrial Waste Fuel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>831-169</td>
<td>Sewage Septic Tank</td>
<td>KG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Facility It Supports)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>832-266</td>
<td>Sanitary Sewer Main</td>
<td>LF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>832-267</td>
<td>Sanitary Sewer Pump Station</td>
<td>SF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>841-166</td>
<td>Water Well</td>
<td>KG</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>842-245</td>
<td>Water Distribution Main</td>
<td>LF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>842-246</td>
<td>Water Hydrants</td>
<td>EA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>843-314</td>
<td>Fire Protection Water Main</td>
<td>LF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cat Code</td>
<td>Nomenclature</td>
<td>UM</td>
<td>Amount</td>
<td>Cost</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>----------------------------------------------</td>
<td>----</td>
<td>--------</td>
<td>------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>843-315</td>
<td>Fire Hydrants</td>
<td>EA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>844-368</td>
<td>Water Supply Non-Potable KG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>851-143</td>
<td>Curbs &amp; Gutters LF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>851-145</td>
<td>Driveway (type material - concrete, asphalt, other) (Trans. betw Road &amp; Parking Lot)</td>
<td>SY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>851-147</td>
<td>Road (type material - concrete, asphalt, other)</td>
<td>SY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>852-261</td>
<td>Vehicle Parking (Ops) SY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>852-262</td>
<td>Vehicle Parking (Non Org) SY (Govt. Vehicle Specs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>871-183</td>
<td>Storm Drain Disposal LF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>872-245</td>
<td>Fence Boundary LF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>872-247</td>
<td>Fence Security LF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>872-248</td>
<td>Fence Interior LF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>852-289</td>
<td>Sidewalk (type material - concrete, asphalt, other)</td>
<td>SY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>890-187</td>
<td>Utility Vault SF (4 or more transformers)</td>
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<td>890-134</td>
<td>Compressor Air Plt HP</td>
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<td>890-154</td>
<td>Load &amp; Unload G-Crane EA</td>
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<td>890-171</td>
<td>Misc. Storage Tank BL</td>
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<td>891-181</td>
<td>Utility Line Duct LF</td>
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<td>Cathodic Protection System EA</td>
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<td>880-211</td>
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<td>880-212</td>
<td>Open Head Deluge System SF</td>
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<td>880-221</td>
<td>Auto Fire Detection System SF</td>
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<tr>
<td>880-223</td>
<td>Manual Fire Alarm System (Ext) BX</td>
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<tr>
<td>880-232</td>
<td>Foam Fire System</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>880-233</td>
<td>Other Fire System (includes Wet Chemical Systems in range hoods)</td>
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### IV. SYSTEMS - Addition

#### A. FIRE PROTECTION:

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<th>Amount</th>
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<td>880-212</td>
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<td>Manual Fire Alarm System (Int) EA</td>
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<td>Foam Fire System</td>
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<td>880-233</td>
<td>Other Fire System (includes Wet Chemical Systems in range hoods)</td>
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#### B. SECURITY SYSTEM:

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#### C. ENERGY MONITORING AND CONTROL SYSTEM:

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<td></td>
<td>Generator</td>
<td>KW</td>
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<td></td>
<td>Storage Tank for Heating</td>
<td>GA</td>
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<tr>
<td></td>
<td>Or Generator Fuel (Type Fuel)</td>
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<tr>
<td></td>
<td>Storage Tank for Heating</td>
<td>GA</td>
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<tr>
<td>821-113</td>
<td>Htg Fir Cen Pit</td>
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<td>821-115</td>
<td>Heating Plt 750/3500 MB</td>
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<td>Heating Plt over 3500 MB</td>
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<td>Storage Tank for Heating</td>
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<td>890-121</td>
<td>A/C Pit 5 to 25 TN</td>
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<td>826-122</td>
<td>A/C Pit 25 to 100 TN</td>
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<td>826-123</td>
<td>A/C Pit Over 100 TN</td>
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<td>890-125</td>
<td>A/C Pit less than 5 TN</td>
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<td>890-126</td>
<td>A/C Window Units</td>
<td>TN</td>
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### VI. DEMOLITION COSTS:

$________

### VII. NARRATIVE

(Provide a brief narrative of what was accomplished, including items removed - A/C Units, Fire Suppression Systems, Roads, Sidewalks, etc.)

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

**TOTAL COST OF PROJECT**

$________

I certify that the information provided is complete and accurate to the best of my knowledge.

___________________________________  _____________________________________
CONTRACTOR                                           CONTRACTING OFFICER'S REPRESENTATIVE

__________________________________  _____________________________________
DATE                                               DATE
General Decision Number: FL170262 02/03/2017  FL262
Superseded General Decision Number: FL20160262
State: Florida
Construction Type: Building
County: Okaloosa County in Florida.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.20 for calendar year 2017 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.20 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2017. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number     Publication Date
0              01/06/2017
1              02/03/2017
* ELEV0124-002 01/01/2017

Rates          Fringes
ELEVATOR MECHANIC.............$ 39.04           31.585

FOOTNOTE:
   A. Employer contributions 8% of regular hourly rate to vacation pay credit for employee who has worked in business more than 5 years; Employer contributions 6% of regular hourly rate to vacation pay credit for employee who has worked in business less than 5 years.

Paid Holidays: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; The Friday after Thanksgiving Day; and Christmas Day.

ENGI0487-021 07/01/2016

Rates          Fringes
OPERATOR: Crane
All Cranes 160 Ton Capacity and Over.............$ 33.05 9.20
All Cranes Over 15 Ton
| OPERATOR: Forklift | $23.25 | 9.20 |
| OPERATOR: Mechanic | $32.05 | 9.20 |
| OPERATOR: Oiler | $23.50 | 9.20 |

IRON0402-001 10/01/2015

<table>
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<th>Rates</th>
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<td>IRONWORKER, ORNAMENTAL</td>
<td>$22.34</td>
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PLUM0234-012 09/01/2016

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<td>PIPEFITTER (Includes HVAC Unit Installation)</td>
<td>$28.39</td>
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SUFL2014-026 08/16/2016

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<td>CARPENTER, Includes Form Work</td>
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<td>CEMENT MASON/CONCRETE FINISHER</td>
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<td>ELECTRICIAN</td>
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<td>INSULATOR: Mechanical (Duct, Pipe and Mechanical System Insulation)</td>
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<td>IRONWORKER, REINFORCING</td>
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<td>IRONWORKER, STRUCTURAL</td>
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<td>LABORER: Common or General, Including Cement Mason Tending</td>
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<td>LABORER: Pipelayer</td>
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<td>OPERATOR: Backhoe/Excavator/Trackhoe</td>
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<td>OPERATOR: Bulldozer</td>
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<td>OPERATOR: Grader/Blade</td>
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<td>OPERATOR: Loader</td>
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<td>OPERATOR: Roller</td>
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<td>PAINTER: Brush, Roller and Spray</td>
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<td>Classification</td>
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<td>ROOFER</td>
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<td>SHEET METAL WORKER, Includes HVAC Duct Installation</td>
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<td>TILE SETTER</td>
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<td>TRUCK DRIVER: Dump Truck</td>
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<tr>
<td>TRUCK DRIVER: Lowboy Truck</td>
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**WELDERS** - Receive rate prescribed for craft performing operation to which welding is incidental.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at [www.dol.gov/whd/govcontracts](http://www.dol.gov/whd/govcontracts).

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

**Union Rate Identifiers**

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or
"UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.
WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.
END OF GENERAL DECISION
SECTION 01 10 10
DESIGN REQUIREMENTS FOR
FIRE STATION

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<td>COMMUNICATIONS AND SECURITY SYSTEM</td>
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<td>15</td>
<td>CATHODIC PROTECTION</td>
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SECTION 01 10 10
DESIGN REQUIREMENTS FOR
FIRE STATION

1.0 GENERAL

This Request for Proposal (RFP) provides for the design and construction of the Combined HQ Structural / ARFF Fire Station at Eglin Air Force Base (EAFB) in Okaloosa County, Florida. See paragraph 2.1 for a description of the facility.

1.1 BID OPTIONS INCLUDE THE FOLLOWING

Option 1: Landscaping
Option 2: Purchase and Install the CID Package.
Option 3: Purchase and Install AV Equipment.

1.2 Design Submittal Requirements

See Section 01 10 12 DESIGN AFTER AWARD.

1.3 Standards, Documents, and Criteria

The design requirements within Section 01 10 10 represent the minimum quality and quantity acceptable for the proposals and project submittals. The standards, documents, and criteria referenced within this RFP, although not all attached within this RFP document, are modified to the extent indicated within this section. The Offeror shall comply with the most current editions at the time of Proposal of each reference, code, or standard. Each Offeror shall be responsible for obtaining any documents not attached as part of this RFP but referenced as criteria for the project. Requirements of this section may delete, revise, add to, or substitute for criteria contained in the referenced documents and this section shall be deemed the controlling authority of any changes to the other referenced documents and criteria.

1.3.1 Design Standards

Equipment, hardware, and materials shall be standard manufactured items unless otherwise specified. Replacement parts shall be standard and readily available through commercial means. Discontinued products will not be accepted unless approved by the Contracting Officer. The order of design criteria precedence described in Section 01 10 12 DESIGN AFTER AWARD shall govern the design and construction of this facility.

1.3.2 Codes

The design, materials, equipment, and installation shall be in accordance with the requirements of the listed codes and design manuals, with the requirements of this section, and with the listed specifications. The building will be of a noncombustible construction classification. Wood structural elements will not be acceptable.
1.3.3 Drawings

RFP drawings, provide information on the site layout and building design and shall be used in the design of the facility. All of the drawings are available in electronic file format (AutoCAD).

1.3.4 Field Information

The utility information provided in the drawings is the best information available. It is provided to assist the Offeror during the design of this project. The Offeror is responsible for field verifying all information given. The Offeror is also responsible for obtaining all information necessary to properly design and install all work. Gathering information during design shall be coordinated through the Contracting Officer. Any survey required to provide utility locations, manhole inverts, verification of existing features, etc., shall be the responsibility of the Contractor and shall tie into the project datum. The cost to re-stake any items shall be at the expense of the Contractor.

1.3.5 Design Details and Standards

The Offeror shall provide a design and construction package that uses the design details given or referenced in this RFP. Additional details shall be created by the Offeror as required, but shall conform to the requirements of this RFP and are subject to approval by Government.

1.3.6 Specifications

The Offeror shall provide a design and construction package which uses the specifications provided in Volume I of this RFP, and in accordance with Specifications Guidance. See Section 01 10 12 for additional information concerning allowable specifications. If any additional specifications are required, the Offeror shall identify the need in writing to the Contracting Officer and Government will provide the necessary specifications in electronic guide form. The Offeror shall write specifications for items not identified in the Government’s specification. The Offeror shall edit the guide specifications, but edits shall conform to the specific minimum standard requirements of this RFP and are subject to approval by the Government.

1.3.7 Sustainable Design Requirements

The Air Force Sustainable Design and Development Policy reinforces the importance of sustainable development concepts in the planning, design, construction, and operation of facilities and infrastructure. The goal is to reduce the environmental impact and ownership cost of facilities; improve energy efficiency and water conservation; and provide safe, healthy, and productive built environments. Current Air Force directive per ECB 2016-30 for new construction is that all vertical Projects larger than 5,000 SF and with construction cost greater than $3M, shall be designed / constructed to comply with the Federal sustainability requirements as detailed in UFC 1-200-02, High Performance and Sustainable Building Requirements. In addition, per the ECB, all vertical projects require third-party validation of the federal/UFC requirements either through the US Green Building Council (USGBC)
or Green Building Initiative (GBI) Guiding Principle Compliance (GPC) systems. LEED certification is no longer required.

In both vertical and horizontal projects, the most current version of the Air Force Sustainability Requirements Scoresheet shall be used to track and report project compliance at each submittal. This document shall be completed and maintained by the design team and Contractor as outlined in specification 01 33 29 as edited and submitted by the design team.

1.3.7.1 Sustainable Design Criteria

UFC 1-200-02 High Performance and Sustainable Building Requirements, dated 1 DEC 2016, consolidates the various federal mandates for energy & water use reduction, and sustainable design as well as incorporates portions of ASHRAE 189.1 as requirements and criteria.

The following is a summary list of Air Force and federal mandates for energy/water use reduction and sustainable design criteria that have application to the facility and site development for this project:

- E.O. 13423 Strengthening Federal Environmental, Energy & Transportation Management (Jan 2007)
- ETL 08-13 Sustainable Design & Development and Facility Energy Attributes in AF Construction Program (application per SDD Guidance memorandum)

2.0 DESCRIPTION OF WORK

2.1 Project Description

The Fire Station Facility shall have a gross total area of 27,841 GSF (2,586 GSM) including all net to gross percentages applied to account for common use spaces such as restrooms, building services and circulation (per AFMAN 32-1084). The project requires the construction of a new facility to facilitate the functions of the 96TH CES/CEF and 96th SFS/SS and their firefighting mission. The site requires the demolition of BLDG 1355, which has an approximated square footage of 16,000 Sf. and building 1383, which is currently unoccupied and less than 500 Sf. The demolition of these facilities shall be accomplished by others under a separate contract. The new facility will be a modern, efficient, and appropriately-sized facility that will
include telephone, data circuit and networking system components directly supporting the firefighting and security forces mission.

In support of the main facility a 700 GSF tire storage building shall be constructed within the project boundaries of the site.

The new facility shall consist of administration function, dispatch center, sleeping and dayrooms, equipment and vehicle storage and general building support spaces. The Project also includes underground utilities, flexible and rigid paving, parking, storm drainage, exterior site lighting, site improvements, landscaping, underground communications infrastructure to connect the new facility, separate tire storage building and all applicable AT/FP (Antiterrorism/Force Protection) measures.

3.0 GEOTECHNICAL AND FOUNDATIONS

3.1 EARTHWORK

Material shall be classified in accordance with ASTM D 2488 (visual/manual only) and/or ASTM D 2487 (laboratory), and compaction efforts shall be specified by ASTM standards referenced in the applicable UFGS Section. ASTM D1557 (Modified Proctor) shall be specified for all design and construction compaction testing; ASTM D698 (Standard Proctor) will not be allowed for determining the laboratory moisture-density relationships. Fill and backfill for buildings, utilities, and paved areas shall be placed in maximum eight (8) inch loose lifts when compacted with heavy rollers, and in maximum four (4) loose lifts when compacted with hand-operated equipment. Borrow material will be obtained off site and disposal of materials will be off site unless indicated otherwise by the Contracting Officer's Representative. All costs in connection with borrowed material and disposal of materials shall be at the Contractor's expense. All liability of any nature resulting from borrowed operations including transportation of and those resulting from disposal of material shall be the responsibility of the Contractor.

3.2 SOIL TREATMENT

Just prior to placing capillary water barrier below concrete slab-on-grade, and just prior to backfilling around concrete or masonry foundations for structures, soil treatment shall be applied to the prepared subgrade soils. All termiticide and pesticide applications shall be made by state licensed and certified pest control personnel and in strict accordance with manufacturer's label instructions. The Contractor shall formulate, treat, store and dispose of the pesticides in accordance with manufacturer's instructions, and both State and Federal regulations.

3.3 CAPILLARY WATER BARRIER

Slab-on-grade floors of all buildings shall be underlain by a minimum six (6) inch (loose thickness) aggregate capillary barrier and vapor barrier as required per Geotechnical Report or approved equivalent.

3.4 EXISTING SUBSURFACE INFORMATION

A Preliminary Geotechnical Study has not been performed for the facility.
Geotechnical borings of in-situ soils to the south and east of the New Fire Station have been provided in Appendix B1. The soils data provided is "For Information Only." Contractor's use of data shall be solely at contractor's discretion to assist the Contractor with preparation of their bids.

The Contractor shall be responsible for verifying subsurface conditions on site.

3.5 GEOTECHNICAL EVALUATION REPORT

The Contractor's Geotechnical Engineer shall prepare a final geotechnical evaluation report, to be submitted along with the first foundation design submittal, as described in Section 01 10 12.

3.6 GEOTECHNICAL DESIGN

The Contractor shall be responsible for determination of actual soil conditions present at the site, and design to suit those conditions. It shall be the Contractor's responsibility to investigate the subsurface soil conditions, and ground water table beneath final structure locations, and complete the design for the facility using Contractor-developed data. The Contractor shall be responsible for obtaining Base Civil Engineering Work Clearance Requests using Air Force IMT Form 103.

The Contractor shall provide a minimum of three (3) borings per building footprint of the New Fire Station, one (1) boring for the Tire Storage Building, one (1) boring in each area of rigid pavement and one (1) boring per parking area to be added or altered, with the exact location and number as determined by the Contractor. In addition, the Contractor shall be responsible for obtaining any additional geotechnical data required for the storm water retention/infiltration pond design to include two (2) infiltrometer tests per pond, two (2) slug tests per pond, Hydrologic Soil Group Classification, aquifer depth of each bore, and seasonal high groundwater elevation at each bore. The depth of bores for storm water retention/infiltration ponds shall be at least minus thirty (-30) feet below existing grade or refusal in order to define the aquifer depth as discussed with the local permit issuing authority. All borings shall be sampled by a split spoon sampler in accordance with ASTM D-1586, with samples visually classified at two and one-half (2 1/2) foot intervals to a depth of ten (10) feet and at five (5) foot intervals thereafter in accordance with the Unified Soil Classification System (ASTM D-2487). The depth to water (if encountered) shall be recorded on the boring logs. Each boring shall be measured for depth before it is sealed to ensure freedom from obstructions that may interfere with effective sealing operations.

a. All borings shall be sealed by backfilling with concrete, grout, neat cement or a bentonite/cement mixture.

b. All backfill material shall be placed into the borehole from the bottom to the top by pressure grouting with the positive displacement method (tremie method).

c. Each borehole sealed shall be given time allowing the backfill material to settle and set in the borehole. If the backfill material settles two (2) feet or more below ground surface (BGS) then the Contractor shall
place more backfill material, as described above, in the borehole to
the top. If the backfill material is less than two (2) feet BGS, then
the Contractor shall backfill the borehole using properly compacted
native material.

d. A measurement of the borehole’s theoretical volume, the amount of grout
introduced into the borehole and the depth of the top of the grout or
cement backfill shall be included in the borehole log.

The Contractor shall obtain soil samples for testing as required for the
computation of bearing capacities, settlement calculations, lateral earth
pressure calculations, temporary and permanent dewatering designs, French
drain design, etc. A dated drilling log shall be provided for each boring
drilled. All borings shall be continuously sampled by a split spoon sampler
and standard penetration blow counts recorded. The approximate elevations
and locations of borings drilled shall be provided on each boring log.
Coordinates shall be in accordance with Eglin AFB Architectural Compatibility
Plan/Design Guide NAD83 Florida State Plane, North Zone, +/- one (1) foot
horizontal.

4.0  SITWORK

4.1 CODES AND REFERENCES

The Contractor shall use the latest edition on all codes and references.
Where there is a conflict between the RFP and building codes, the most
stringent shall apply.

<table>
<thead>
<tr>
<th>CODE</th>
<th>TITLE</th>
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<tbody>
<tr>
<td>AASHTO</td>
<td>A Policy on Geometric Design of Highways and Streets, AASHTO, 2009</td>
</tr>
<tr>
<td>ABA</td>
<td>Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines</td>
</tr>
<tr>
<td>AFM 32-1084</td>
<td>Civil Engineering Facility Requirements Draft 2011</td>
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<tr>
<td>ANSI 260.1</td>
<td>American Standard for Nursery Stock</td>
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<tr>
<td>EISA Section 438</td>
<td>Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects</td>
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<tr>
<td>FAA AC 150/5200-33B</td>
<td>Advisory Circular: Hazardous Wildlife Attractants on or near Airports</td>
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<tr>
<td>MUTCD</td>
<td>Manual on Uniform Traffic Control Devices</td>
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<tr>
<td>NFPA 24</td>
<td>Standards for Installation of Private Fire Mains and their Appurtenances</td>
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<tr>
<td>NPDES</td>
<td>National Pollutant Discharge Elimination System (NPDES) for Construction Activities, by State</td>
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<tr>
<td>Title 14 CFR</td>
<td>Code of Federal Regulations (CFR) Objects Affecting the Navigable Airspace</td>
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<tr>
<td>TM 5-822-2/AFM 88-7 Chapter 5</td>
<td>General Provisions and Geometric Design for Roads, Streets, Walks, and Open Storage Areas</td>
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<tr>
<td>UFC 3-120-01</td>
<td>Design: Sign Standards, with Change 2</td>
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<td>UFC 3-201-01</td>
<td>Civil Engineering, with Change 1</td>
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<tr>
<td>UFC 3-201-02</td>
<td>Landscape Architecture, with Change 1</td>
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</table>
4.2 GENERAL SITE DESCRIPTION

The new fire station and existing buildings 1355 and 1383 are approximately 2900 feet south of the west end of Runway 12-30, 200 feet south of Taxiway Bravo, bound on the west by the eastern spur of Taxiway Bravo and bound on the south by Wizard Way. Proposed parking areas are to the east and west of the new fire station. Wizard Way will be realigned and extended to provide access to the new fire station. Potential stormwater treatment sites are located to the northeast and west of the proposed fire station. The limits of demolition and construction for the work area shall be determined by the Contractor to meet the project construction requirements. For the new construction work area, the Contractor will be provided the area bordered by taxiway Bravo southeast parking spur to the west, Wizard way to the south, Runway 12-30 drainage ditch to the west and Taxiway Bravo to the north. The new building shall not be constructed within the clear zone extending 1500 feet from the Centerline of Runway 12-30 and the clear zone extending 200 feet from Centerline of Taxiway Bravo. The vertical height of the building shall not penetrate the transitional surface (7H:1V) per UFC 3-260-01 beginning 1000 feet from the centerline of Runway 12-30. Parking, access drives, and concrete aprons adequate for the largest design vehicle are all required at the proposed site. Drawings defining the general location of the existing and proposed facilities are included as an appendix. Also included in the appendix are the As-Built drawings of building 1355 for contractor reference.

4.3 GENERAL DESIGN REQUIREMENTS
The site work design required for this project shall include, but may not necessarily be limited to the items listed within this section.

4.3.1 Demolition and Removal

The project site requires demolition of existing buildings 1355 and 1383 and appurtenances, existing utilities, existing pavements, and existing trees. All demolition of site work shown on the plans are approximate. Buildings 1355 and 1383 shall be demolished by others under a separate contract. The Contractor shall verify all existing conditions prior to initiating required remaining demolition work. The limits of demolition and construction for the work area shall be determined by the Contractor to meet the project construction requirements.

All utilities within the footprint of existing buildings 1355 and 1383 shall be removed in their entirety by others. Utilities outside of the building footprint shall be cut and capped at the nearest valve, tee, structure, or edge of base bid pavement demolition. All utilities not in paved areas shall be removed to the nearest valve, tee, or structure. Utility capping methods shall be in accordance with manufacturer’s recommendations for the specific pipe material in service. All above grade utility features within the demolition limits shall be removed in their entirety.

The existing asphalt pavement to be demolished is estimated at no more than 4 inches thick, and the existing concrete pavement to be demolished is estimated at no more than 8 inches thick. Pavement demolition shall include complete removal of all pavement sections and the underlying aggregate base courses. The Contractor shall establish sod in areas where existing pavement is to be removed, following removal of the compacted base and subbase and placement of engineered soil to allow for percolation in those areas. The existing drainage features to be demolished, including the trench drains, culverts, and concrete outfall, shall be removed, backfilled, and regraded to promote positive drainage to the proposed stormwater detention area(s).

Activities involving painting or paint removal shall be performed in accordance with FDEP, EPA, OSHA, and HUD requirements (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) and particulate matter emissions and heavy metal paint debris disposal. Only personnel trained in heavy paint handling and disposal shall perform these duties. The generation of airborne heavy metal debris shall be minimized. Paint removal and disposal of hazardous paint debris shall be in accordance with SW Management Plan 19-14 and the Resource Conservation and Recovery Act (RCRA).

The survey information provided in this report presents existing conditions and locations of existing structures and utilities at the time the survey was performed. Utilities not shown on the plan may be present. The Contractor shall field verify and provide surveying as necessary to locate the utility items prior to initiating demolition work. Limits of demolition shall be as shown on the project drawings found in the Appendix. Any utility line found to be under the Facility footprint shall be relocated a minimum of ten (10) feet outside the building's footprint, unless indicated otherwise. Existing utilities that interfere with this project shall be relocated. The Contractor may utilize the utilities during construction operations; however, Contractor shall provide a means to connect to the utilities. Connections shall be removed upon completion of construction.
4.3.2 Waste Disposal

All waste shall be disposed off of Government owned lands in State approved landfills per all local, state, federal requirements.

4.4 CIVIL DESIGN REQUIREMENTS

4.4.1 General

A conceptual project site plan has been provided for the proposed fire station and related improvements based upon Eglin AFB GIS data prior to field survey. Contractor shall adjust features as required based upon actual field survey included in Appendix 6. Contractor shall provide a complete set of construction plans and specifications signed and sealed by a registered civil engineer. Contractor shall be responsible for determining the finished floor elevation, and final location of, but not limited to, site grading and drainage, fire/emergency access drives, service and delivery access drives, sidewalks, parking, and dumpster pads.

4.4.2 Existing Topographical Conditions

The Government has provided a three-dimensional (3-D) digital topographical and utility survey for the facility. The field investigation was performed by Wantman Group, Inc. Results of the survey performed by the government are provided in the RTA drawings.

Contractor shall bring any discrepancies which may be found in the Government furnished survey to the immediate attention to the Government for clarification.

4.4.3 Force Protection

The Contractor shall incorporate Force Protection per criteria based on a low occupancy classification in UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings.

4.4.4 Exterior Signage

Exterior signage shall be provided. Signs shall indicate emergency vehicles and be approved by the Contracting Officer’s Representative. Signs shall abide by Base Architectural Compatibility Plan/Design Guide.

4.4.5 Site Amenities

4.4.5.1 Refuse Dumpsters & Screen Walls

Contractor shall be responsible for the final location of trash dumpster. A minimum standoff shall be maintained between the dumpster and the facility as required UFC 4-010-01. The design of the trash dumpster pavement structure shall be accomplished by the Contractor’s Geotechnical Engineer and shall be in compliance with Base standards, and UFC 3-250-04FA. Rigid pavement shall be provided in the design to accommodate base specific vehicles. The design life of pavement shall be for twenty (20) years.
4.4.5.2 Retaining Wall

Retaining walls are not anticipated for this project.

4.4.5.3 Screen Walls

A screen wall enclosure shall be provided by the Contractor. The screen walls shall visually match the Base Architectural Compatibility Plan/Design Guide and be constructed of materials to match the new facility exterior walls. See architectural section for further requirements.

4.4.5.4 Fencing

Airfield security fence is not required.

4.4.6 Sidewalks

Pedestrian sidewalks shall be provided for the facility. A sidewalk shall connect the parking lot to the facility entrance. Sidewalk shall be provided around the facility and to the dumpster and utility yards. Sidewalk shall be provided for access to exterior mechanical, electrical, communication, and other service rooms. At least one ADA access route shall be provided from accessible parking to the facility entrance. Minimum sidewalk width of five (5) feet shall be provided. Sidewalks shall be concrete and adhere to the Base Architectural Compatibility Plan.

4.4.7 Handicapped Access

Ramps shall be provided for handicapped access, as necessary due to grades. The site and facility access for the physically disabled shall be as required by ADA.

4.4.8 Vehicular Circulation

Two-way ingress/egress drives shall be provided to the site. Access drives shall be located on existing and extended paved roads. Design shall provide turn around areas for vehicles denied access.

4.4.9 Parking Lots

The parking lot shall have a minimum of 24 foot wide drive aisles for two-way traffic and accommodate dumpster and emergency vehicle ingress/egress.

4.4.10 Parking Spaces

Twenty-four (24) privately owned vehicle (POV) parking spaces shall be provided. Three (3) government owned vehicle (GOV) parking spaces shall be provided. Two (2) handicap vehicle (HC) parking spaces shall be provided. No fuel efficient vehicle (FEV) parking spaces shall be provided. No van-pool (VP) parking spaces shall be provided. Minimum general parking spaces shall be nine (9) feet wide by eighteen (18) feet in length. Handicap parking spaces shall be provided per ADA requirements.

Handicapped spaces shall be signed and marked per Base and ADA standards.
4.4.11 Pavement Design

The design for the parking lots and access roadway pavements shall be accomplished by the Contractor’s Geotechnical Engineer and shall be in compliance with Base standards, State DOT standards, UFC 3-250-01 and UFC 3-250-04. The pavement designs shall account for light and heavy duty flexible and rigid pavements.

The design of light duty flexible and rigid pavement shall accommodate standard size car and pickup trucks for POV & GOV vehicles. The general location of the light duty pavement areas have been identified in the conceptual geometric site plan found in Appendix 2.

The design of heavy duty flexible pavement shall accommodate UPS/Fed Ex style delivery truck and 80,000 lb Ti-3000 ARFF vehicles. The general location of the heavy duty pavement areas have been identified in the conceptual geometric site plan found in Appendix 2.

The design of heavy duty rigid pavement shall be provided for the fire/emergency & service access drive pavement structure and shall be accomplished by the Contractor’s Geotechnical Engineer in accordance with Base standards, State DOT standards, UFC 3-250-01, UFC 3-250-04, and NFPA 101. The pavement design shall accommodate UPS/Fed Ex style delivery trucks and the 80,000 lb Ti-3000 ARFF vehicles. The drives have been identified in the conceptual geometric site plan found in Appendix 2.

The design life of all pavements shall be for twenty (20) years.

4.4.12 Fire/Emergency Access Drive:

The geometric layout design of the fire/emergency access drive with direct access to the emergency vehicle bays and flight line along with re-aligned Wizard Way road shall accommodate a TI-3000 ARFF and UPS/Fed Ex style delivery trucks. Design shall be in accordance with UFC 3-600-01 and NFPA 1 and meet the following characteristics for a TI-3000 ARFF:

- Length: 35.8 feet
- Width: 9.6 feet
- Turning Radius: 40 feet

4.4.13 Service Access Drive

Omitted.

4.4.14 Pavement Markings

Pavement markings shall comply with the most current version of the MUTCD.

4.4.15 Curbing

Curbing shall be provided for roadways, driveways and the east parking lot. Curbing shall comply with Base standards and with ADA. Curbing and Wheel stops are not permitted for the west parking lot. Curbing design shall be in
accordance with UFC 3-201-01 and adhere to the Base Architectural Compatibility Plan.

4.4.16 Termite Control

Soil treatment for subterranean termite control shall be provided as necessary.

4.4.17 Signage

Comply with UFC 3-120-01, Air Force Sign Standard, and USAF symbol guidelines regarding signage for all new construction and renovation projects. The following types of signs shall be provided:

- Traffic Regulatory and Directional Signs, which control traffic flow and direct vehicles to specific gates, ID check lanes or the Visitor Center
- Entry Control Procedures Signs, which explain current ID check procedures for drivers, current FPCON status should not be displayed
- Variable Message Signs, which give information on local events or distinguished visitors. These signs should be located inside the installation at least 200 feet beyond the ID check area.

4.5 GRADING

4.5.1 Permits

Erosion and sediment control BMP’s shall be in place and approved by the Contracting Officer’s Representative prior to initiating any work. Dewatering projects that discharge to surface waters or storm water systems are required to operate under the coverage of NPDES and/or similar permits. The Contractor shall obtain the necessary permit(s) for any groundwater discharge off site and shall operate in compliance with the permit.

4.5.2 Around Buildings

Per UFC 3-101-1, Section 4.2, Set finished ground floor elevations with respect to the finished grades. Place the finished floor no less than eight (8) inches above the finished grade for slab-on-grade construction. Allow eighteen (18) inches clear space above finished grade for light frame construction. The finished grade is defined as the final grade elevation adjacent to the exterior including any planting beds. Integrate steps and ramps as needed to achieve the required elevation. In addition, slope at five (5) percent away from the building for the first ten (10) feet.

4.5.3 Finish Grade Contours and Spot Elevations

Finish grade contours at one (1) foot intervals and spot elevations shall be provided by the Contractor to construct all site development features to elevations within the above grading criteria and tolerances as specified in the guide specifications. Spot elevations on the drawings should be sufficient so that interpolation between contours is not required for structures, grading or paved areas; some examples are: corners of paved
areas, low points, high points, flow lines of swells or ditches, changes in
degree of slope and grading at corners of the facility to ensure positive
drainage away from the facility. The use of cut or fill symbols in lieu of
finish grade contours is not permitted.

4.5.4 Fire/ Emergency Access Drive and Re-Aligned Circulation Roads

Contractor shall design final grades for access drives and roads in
accordance with UFC 3-201-01, UFC 3-600-01, AASHTO and NFPA 1. Grades will
need to accommodate UPS/Fed Ex style delivery trucks and a TI-3000 ARFF.

4.5.5 Parking Lots

Grades for parking lots shall be in accordance with UFC 3-210-02, POV Site
Circulation and Parking and shall be the responsibility of the Contractor.

5.0 UTILITIES

5.1 CODES AND REFERENCES

Refer to Section 4.1 for codes and references.

5.2 GENERAL UTILITY DESIGN REQUIREMENTS

The utility design required for this project shall include, but may not be
limited to the items listed within this section and as shown in the project
drawings of the Appendix.

5.2.1 Demolition and Removal

The survey information provided in this report presents existing conditions
and locations of existing structures and utilities at the time the survey was
performed. Utilities not shown on the plan may be present. The Contractor
shall field verify and provide surveying as necessary to locate the utility
items prior to initiating demolition work. Limits of demolition shall be as
shown on the project drawings found in the appendix. Any utility line found
to be under the Facility footprint shall be relocated a minimum of ten (10)
feet outside the building’s footprint unless indicated otherwise. Existing
utilities that interfere with this project shall be relocated. The Contractor
may utilize the utilities during construction operations.

5.2.2 Demolition Permitting

The Contractor shall be responsible for obtaining a Base digging permit (AF
Form 103) prior to beginning demolition of any utility or excavation on site.

5.2.3 Utility Layout

The Contractor shall design and size all new utility systems in accordance
with all governing regulations and in coordination with base engineering so
that they are fully functional with existing systems. All utilities shall be
installed underground. New underground utility lines, including appurtenant
structures such as valve boxes, manholes, vaults, etc., shall not be located
under pavement, road shoulders, or drainage ditches to the maximum extent practicable. With the exception of main storm drain culverts, placing utilities and culverts under existing roads shall be by jack and bore unless otherwise approved by the Contracting Officer's Representative.

Sanitary sewer design and construction shall be in strict compliance with the Florida Department of Environmental Protection (FDEP) and be approved by American State Utility Service (ASUS). Base point of contact for the sanitary sewer system is Joseph Margio, PE.

Storm water design and construction shall comply with the Florida Department of Environmental Protection (FDEP). Base point of contact for the storm sewer system is Joseph Margio, PE.

Water supply system design and construction shall be C900/C905 PVC or ductile iron and shall comply with Florida Department of Environmental Protection Standards and be approved by American State Utility Service (ASUS). Base point of contact for the water system is Joseph Margio, PE.

Gas and electrical design and construction shall be in strict compliance with Okaloosa Gas and in compliance with the Florida Department of Environmental Protection (FDEP). Base Point of Contact for the gas system is Mark Clark.

The Contractor shall obtain all required permits for utilities. Any anticipated utility outages shall be coordinated with the Contracting Officer’s Representative at least fourteen (14) days in advance. Any utility or equipment that needs to be relocated to construct the facility shall be accomplished in such a manner as to minimize the impact on the existing facilities.

No physical connections shall exist between sewer and water supply systems. Unless otherwise required by the Mobile District Design Manual or the local codes/ regulations:

- Sewer and water lines shall be at least ten (10) feet apart horizontally, except where the bottom of the water pipe is at least twelve (12) inches above the top of the sewer; the horizontal spacing may be a minimum of six (6) feet.
- Where conditions require a sewer to cross above a water line, the sewer pipe shall be concrete encased for ten (10) feet each side of the crossing
- The cover for pipes will be at least three (3) feet deep where possible to protect the pipe from superimposed live loads of ordinary traffic. Depth may be greater if required by local codes and agencies and/or for water & fire mains.

5.2.4 Utility Connections

All utility connections shall be coordinated with appropriate base or utility personnel through the Contracting Officer's Representative.

5.2.5 Device Location
Backflow prevention valves, post indicator valves, transformers, electric switches, telephone/cable boxes, manholes, etc., shall be placed in discrete locations near the service entry point. New utility lines shall not be located within five (5) feet of the footprint of any known future facility.

5.2.6 Marking of Utility Lines

Every linear foot of underground metallic piping shall be identified with plastic marking tape specifying the type of pipe buried under it. Every linear foot of underground non-metallic piping shall be identified with metallic tape manufactured specifically for warning and identification of underground utilities. The metallic tape shall be detectable by electronic detection instruments and shall indicate the type of pipe buried under it.

The tape shall be buried twelve (12) inches above the pipe.

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<td>Red</td>
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<tr>
<td>Orange</td>
<td>Telephone, telegraph, television and communications</td>
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<td>Blue</td>
<td>Water systems</td>
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<td>Green</td>
<td>Sewer systems</td>
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<tr>
<td>Yellow</td>
<td>Gas or other dangerous materials</td>
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</tbody>
</table>

5.2.7 Metering

Provide an Elster combination kW-Hr and kW demand meter, meter shall include Wireless transceiver hardware. The meter and wireless transceiver hardware shall be compatible with Sensus Flexnet system which is currently being utilized by Eglin AFB. Provide a 13 point terminal meter can with voltage and current test switches. See appendix I2 for Meter details. Meter all utilities (gas, water, and electric, as applicable) to each facility. For Government owned utilities, install meters that are wireless data transmission capable as well as have a continuous manual reading option. All meters will be capable of at least hourly data logging and transmission and provide consumption data for gas, water, and electricity. All meters shall be able to communicate with the base utility monitoring control service. Gas and electric meters will also provide demand readings based on consumption over a maximum of any fifteen (15) minute period. Configure all meters to transmit at least daily even if no receiver for the data is currently available at the time of project acceptance. For privatized utilities, coordinate with the privatization utilities for the proper meter base and meter installation.

5.2.8 Road Crossings

Roads and driveways shall not be crossed by open cut unless approved by the Contracting Officer’s Representative. If the open cut method is performed, one lane of the street shall remain open to traffic at all times. Contractor shall provide steel matting sufficient to carry traffic loading over the excavated area. Utility structures shall be designed to accommodate the traffic loadings for the area in which the structures are placed. Requests for lane closures for open cuts shall be made in writing prior to commencement of work within a number of calendar days to be determined by Base.
5.2.9 Excavations

All excavations, trenches, open manholes, etc., shall be properly shored, braced, barricaded or guarded. The Contractor shall provide barricades and maintain warning lights or other illumination from sunset to sunup at all excavations that are adjacent to pedestrian or vehicle thoroughfares or as directed by the Contracting Officer's Representative.

5.2.10 Safety

Contractor personnel shall not enter manholes, tunnels, tanks, or confined spaces until such entry complies with the requirements of OSHA. Government personnel will not enter manholes, tunnels, tanks, or confined spaces until a confined space entry permit has been obtained from a government representative.

5.2.11 GIS Data

Contractor shall furnish GIS data per Eglin Air Force Base Architectural Compatibility Plan/Design Guide as part of the as-built deliverables required in this RFP.

5.3 PERMITS

Permits required for this project shall include, but may not be limited to the items listed within this section. Any permit work done by the Contractor shall be at no additional cost to the Government. The Contractor shall thoroughly investigate the requirements for permitting of air quality, potable water, wastewater, stormwater discharge, NPDES, water distribution, Florida NPDES, local construction for disruptions of vehicular traffic and base utility systems, irrigation well construction and consumption use, and other permits during design. The Contractor shall determine permit requirements as part of the design process and shall submit permit draft applications as part of the submittal process. The Contractor shall provide and submit Specification 01 57 20.00 10, Environmental Protection (edited as required) and list all permits that are to be obtained by the Contractor. The permits shall be listed by title, permit number, permitting agency, effective date and expiration date. The Contractor shall be responsible for submitting all applications and paying for all associated fees for environmental permits for the project. All permits shall be delivered through the COR to the BCE who will forward them to the appropriate government organizations. All environmental permit applications and construction completion certificates shall be prepared by an engineer registered in the State of Florida. All environmental permit applications and accompanying drawings and calculations shall be furnished using English units. The approved permit application must be provided to the COR prior to starting construction on any of these activities. At the Contractor's expense, the Contractor shall complete all necessary work (as-built surveys, bacteriological tests, application forms, etc.) for all certifications of completions for permitted activities. Certifications of completions shall be performed by a Florida License Professional Engineer as required for each permit certification. The Contractor shall submit the construction
completion certificates on all permits from local, state and federal agencies within 30 days of completion of the permitted activity. The construction completion certificates shall be provided to the COR.

5.3.1 Stormwater Management Permit

Water Quantity and Water Quality permits shall meet the Florida Department of Environmental Protection (FDEP) and the requirements of EISA Section 438. The Florida Department of Environmental Protection (FDEP) is responsible for storm water management and storm drainage system review and permitting. All fees for review and permitting shall be paid by the Contractor. Storm water permitting requirements shall meet chapter 62-330, Environmental Resource permitting (ERP). The POC for military facilities for the FDEP is Tanya McHale.

5.3.2 Sanitary Sewer Permit

A Sanitary Sewer Permit from the Florida Department of Environmental Protection (FDEP) is not required. Contractor shall coordinate sanitary sewer design and permitting with base personnel and with American States Utility Services (ASUS), the private company responsible for base sanitary sewer.

5.3.3 National Pollutant Discharge Elimination Systems (NPDES) Permit

The Eglin AFB and the Florida Department of Environmental Protection (FDEP) is responsible for review of NPDES permitting. All fees for review and permitting shall be paid by the Contractor.

The Contractor shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP) to be in compliance with the permit. The (SWPPP) shall be prepared in accordance with 62-621, Generic permits from the State of Florida Department of Environmental Protection (FDEP) and meet the intent of the latest version of the National Pollutant Discharge Elimination Systems Permit (NPDES). The plan shall be submitted to the Contracting Officer’s Representative to be reviewed by the Base Civil Engineering Squadron. The Contractor shall implement, maintain, and update the SWPPP, as required, throughout the project until a Notice of Termination for permit coverage is submitted upon final stabilization of the project site. The Contractor shall maintain a copy of the SWPPP on-site at all times during construction and shall make the plan and all supporting documents and reports available for inspection upon request by the Government and/or Regulatory Agency.

Upon completion and acceptance of the SWPPP by the Contracting Officer’s Representative, the Contractor shall complete and submit a Notice of Intent (NOI) to the Contracting Officer’s Representative to be reviewed by the Base Civil Engineering Squadron. Once approved and with signatures obtained, the Contractor shall submit the NOI to the State of Florida Department of Environmental Protection (FDEP) NPDES Storm Water Notices Center to obtain permit coverage. The Contractor shall include with the NOI the appropriate processing fee payable to the State of Florida Department of Environmental Protection (FDEP)
No site work will commence until the NOI has been submitted and accepted by the State. A copy of the NOI and a brief description of the project shall be posted at the construction site in a prominent place for public viewing. Upon satisfactory completion of final stabilization of the project site and acceptance by the Government, the Contractor shall submit a Notice of Termination of permit coverage to the State of Florida Department of Environmental Protection (FDEP) NPDES Storm Water Notices Center for the project.

5.3.4 Air Quality Permit

Air Quality Permit is not required.

5.3.5 Above Ground Storage Tanks (AGST)

Above ground Storage Tank Permit is required by the Florida Department of Environmental Protection of Waste Management. The contractor shall obtain all required permits associated with an AGST. All fees for review and permitting shall be paid by the contractor.

5.3.6 Water Permit

Water Permit is not required by the Florida Department of Environmental Protection (FDEP). Contractor shall coordinate domestic water design and permitting with base personnel and with American States Utility Services (ASUS), the private company responsible for base domestic water.

5.3.7 Clean Water Act

State Waters do not exist on site. Waters of the United States do not exist on site.

5.4 STORM DRAINAGE SYSTEM AND STORMWATER MANAGEMENT

5.4.1 Design

The Contractor shall design and construct the new storm water sewer system and storm water management facility to the USACE Mobile District Drainage Design Manual, the Florida Department of Environmental Protection (FDEP) and EISA 438 standards. These systems shall be designed and constructed to, but may not necessarily be limited to, the items listed within this section.

The storm drainage system piping shall be designed for the anticipated traffic loadings.

The roof drainage system shall drain to the underground storm drainage system. Profiles shall be required for the underground storm drainage system(s).

The Facility shall be designed so that the finished floor elevation (FFE) is a minimum of five (5) feet above the one hundred (100) year flood elevation. The one hundred year flood elevation shall be determined by the Contractor using the most current maps as published by the Federal Emergency Management
Agency (FEMA). If the Fire Station site is not located in the flood plain or a flood elevation is not established for the Fire Station site, the contractor shall investigate and evaluate any adjacent flood plain elevations that may impact the Fire Station Site and design accordingly.

5.4.2 Layout

The drainage system layout shall be designed to best meet the drainage requirements of the facility. All low points in grade have an inlet as to avoid ponding water. The system shall take into consideration topography, ultimate development of drainage area, possible future extension, outfall locations, and coordination with existing drainage systems and other existing or future underground utilities.

5.4.3 Street Drainage

Street drainage shall be accomplished by the use of curb and gutter and curb inlets. Curb gaps will be considered in areas where roadside ditches are used. The center one-third of the street should not convey runoff during the passing of the design storm. Inverted crown sections for the streets shall not be used without prior approval. Curb inlets should not be located in the radius of street intersections, at curb returns, or where pedestrian traffic is most likely to occur.

5.4.4 Stormwater Manholes

Storm water manholes shall be provided at junctions of gravity pipes and at each change in pipe direction, size or slope. Manholes shall be located in areas that are readily accessible for operation and maintenance purposes. Manhole covers shall be level with pavement or two (2) inches above grade in grassy areas, and shall be cast iron and have the word “STORM” marked on them.

Manhole structure, frames and covers shall meet anticipated vehicle loadings. Contractor shall provide detail to Contracting Officer’s Representative for approval.

5.4.5 Underground Systems

Profiles of pipes shall show all existing and new underground utility crossings and pertinent surface features.

5.4.6 Sizing of Inlets

The design of inlets shall in accordance with “Procedure for Design of Storm Drainage Systems for Other than Airfields” and Florida DOT Standards, whichever is more stringent.

5.4.7 Sizing of Pipes

New underground storm drainage pipes shall be sized using the “Procedure for Design of Storm Drainage Systems for Other than Airfields.” The Contractor shall verify that pipes are properly sized for all piping materials included.
in the project specifications taking into account the coefficient of friction (n) that varies with material type. Separate backwater computations should be performed for each pipe material to ensure that pipe sizes are compatible with material options. Variations in pipe sizes required by such computations shall be indicated on the plans.

5.5 WASTEWATER

5.5.1 General

The Contractor shall design and construct a new gravity and force main wastewater removal system for the facility. The wastewater system shall be designed and constructed to, but may not be limited to, the items listed within this section and as indicated elsewhere in this RFP.

The Contractor shall construct the wastewater system within the tolerances of American States Utility Services (ASUS) standards and shall obtain all required permits for construction. Building laterals shall be a minimum six (6) inches and have cleanouts provided at five (5) feet from the building.

5.5.2 Wastewater Collection and Conveyance System

The Contractor shall comply with American States Utility Services (ASUS) standards, shall be compatible with the wastewater to be conveyed and the materials specified shall withstand the effects of the wastewater and not deteriorate as a result of pollutants in the wastewater.

5.5.3 Wastewater Piping

Sanitary sewer line material shall meet American States Utility Services ASUS standards. Sanitary Sewer lines shall be tested for leakage by low pressure air testing, infiltration tests or exfiltration tests.

5.5.4 Sanitary Sewer Manholes

Sanitary Sewer Manholes shall be provided at junctions of gravity sewers and at each change in pipe direction, size or slope. Manholes should not normally be located in the roadways or parking lots, but in areas that are readily accessible for operation and maintenance purposes. Precast manhole steps shall be provided where the depth of a manhole exceeds four (4) feet.

A steel ladder shall be provided where the depth of a manhole exceeds twelve (12) feet. Manhole covers shall be level with pavement or two (2) inches above grade in grassy areas and shall be cast iron and have the word "SEWER" marked on them. Manhole covers shall match those currently in use at Eglin AFB in all essential details. Manhole structure, frames and covers shall meet anticipated vehicle loadings. Contractor shall provide detail to Contracting Officer’s Representative for approval.

5.5.5 Connections to Manholes and Lift Stations
Flexible manhole pipe connectors shall be used at all connections to new or existing manholes and/or lift stations. The connectors shall meet ASTM C-923 requirements.

5.5.6 Lift Stations

Existing building 1355 is served by a lift station and small diameter force main. The existing lift station and force main shall be demolished during construction. It is anticipated that the new fire station will require a lift station and small diameter force main. The lift station and force main shall be designed in accordance with American States Utility Services (ASUS) standards and preferences.

5.6 WATER

5.6.1 General

Contractor shall design and construct a new water supply and fire protection systems. These systems shall be designed and constructed to, but may not necessarily be limited to, the items listed within this section and as found elsewhere in this RFP.

The Contractor shall provide water service lines, water distribution lines (as required) and connection to the existing water mains. The water utility facilities shall be designed and constructed in accordance with the Florida Department of Environmental Protection (FDEP) and American States Utility Services (ASUS) standards and as indicated on the project drawings found in the Appendix.

The Contractor shall coordinate construction connections and water meter installations with the Florida Department of Environmental Protection (FDEP) and American States Utility Services (ASUS) standards. The Contractor is responsible for all necessary connections, permits, and fees required for connecting to the water system.

5.6.2 Meters

Potable domestic water service lines shall be equipped with suitable meters. See plumbing section for water metering requirements. Metering of fire service and fire suppression water lines is not required.

5.6.3 Valves

Curb stops or valves shall be installed near the point of connection to the main and on both the inlet and outlet sides of the water meter and backflow preventer. Valve connections shall be as required for the piping in which they are installed. Flanges shall not be buried.

5.6.4 Backflow Preventer
Provide a backflow preventer on fire protection and domestic water service lines. See the Mechanical portion of this specification for all backflow prevention device requirements.

5.6.5 Disinfection

The entire water piping system shall be disinfected using the Continuous Feed Method as outlined in Standard for Disinfecting Water Main, AWWA C651 (Latest Edition). Disposal of disinfection and/or rinse water shall be the Contractor’s responsibility and shall be at no additional cost to the Government. Disposal shall be in full compliance with all local, state, and federal regulations.

5.7 FIRE PROTECTION WATER

5.7.1 General

The site fire protection system shall be designed in accordance with UFC 3-600-01. The Contractor shall connect the fire protection water to the water distribution system at the site. A fire flow test shall be performed by the Contractor on the nearest fire hydrant to the project site. The Contractor shall provide adequate water flow and pressure for the interior and exterior demand.

5.7.2 Fire Flow Test Results

See the Appendix G1 for preliminary fire flow test results.

The Contractor shall perform a fire flow test to confirm existing flow and pressure to support their fire suppression system prior to the start of design. As necessary, re-tests may be required. The worst case data shall be used for design, unless the retest indicates that one of the other results appears improbable. Water flow tests shall be conducted in accordance with NFPA 291. The residual pressure for the fire flow test should drop no less than 25 to 30 percent of the static pressure. Fire flow testing shall be witnessed by Government representative authorized and approved by the COR. The Contractor shall flow an adequate number of hydrants to minimize hydraulic inefficiencies during the flow. Raw data and results of the fire flow testing shall be included in the design analysis report with calculations to support fire water line sizing. Fire flow results shall be indicated graphically. As soon as the test is completed, a flow report shall be provided to the COR.

From this Fire flow test data and the specific fire protection system water and pressure hydraulic requirements, the Contractor shall determine the need for additional water supply components such as fire pumps. The contractor shall submit calculations showing the headloss and residual pressure back to the water line supply connection and supported by the fire flow test results at the nearest location incorporating a schematic diagram of pressure and flow at the calculated location to support the design. The flow rate used for the calculations will be the sum of the domestic/industrial demand plus the sprinkler system(s) water demand and the hose stream demand. The residual pressure calculated at the base of the sprinkler riser, along with the...
calculated sprinkler system interior fire water demand, will be compared to the existing water system data in order to determine if the existing water supply system is adequate in both flow and pressure to support the facility fire suppression system. If the existing water supply system is not adequate based on the contractor's design, then adjustments need to be made as necessary to support the new facility's fire suppression sprinkler system, i.e., adding a fire pump to boost the resultant pressure up to an acceptable level.

The contractor will assume for bid purposes that water of sufficient quantity can be obtained from the area water mains without the need for additional water storage tanks. The contractor shall assume for bidding purposes that a fire pump will be required to deliver the necessary pressure at the base of the sprinkler and foam risers in order to support the project flow demand and pressure requirements.

5.7.2.1 Fire Pump

The requirement for a fire pump installation shall be determined by the fire protection engineer based on new contractor obtained fire flow test data from the project site and fire protection system design requirements for the project. If required, a complete fire pump installation shall be provided for the facility. The fire pump and related equipment shall be designed, and installed in accordance with UFC 3-600-01, NFPA 13, NFPA 20, and ETL 02-15. The fire pump shall be of the electric motor driven type. An electric motor driven jockey pump shall be tied into the fire protection water piping system in accordance with NFPA 20 to keep the required system pressure constant. Fire pump system water supply shall come from the existing area water mains. Fire pump design analysis and drawings shall be submitted as part of the design requirements.

5.7.3 Fire Hydrants

New hydrants shall be served by the base domestic water distribution system. The Contractor shall provide fire hydrants to meet the hose stream demand and shall be located as required by UFC 3-600-01. Fire hydrants shall be added to meet the requirement that a fire hydrant is within 150 feet of each fire department connection and all parts of the building are within 300 feet of a fire hydrant. Fire hydrants shall be installed adjacent to paved area, accessible to fire department apparatus. Fire hydrants shall be compatible with existing equipment in use at the Base. Fire hydrants shall be manufactured in accordance with AWWA C502 and be compatible with existing equipment in use at Eglin AFB. Contractor shall provide an isolation valve and box for the fire hydrant and provide thrust blocks at tee’s and hydrant bend. Fire hydrants located in areas of vehicular traffic shall be protected by bollards.

5.7.4 Fire Department Connection

A fire department connection shall be designed per UFC 3-600-01. A fire department connection shall be installed a minimum of one hundred-fifty feet (150) feet from a fire hydrant and be located on the building wall. A post indicator valve shall be installed on all sprinklered buildings a minimum of forty (40) feet from the building. If a yard-type FDC is used, contractor
shall provide valve box at the base of the FDC to house the check valve and ball drip.

5.7.5 Site Specific Requirements for Fire Protection Water

The Contractor shall connect the fire protection water to the existing water distribution system at the site. Based on preliminary calculations and historical hydrant flow test data (see below), the existing lines cannot deliver water of sufficient quantity and pressure to the fire suppression system without the need for a fire pump. However, this shall be verified by the Contractor.

FIRE FLOW TEST DATA
(From Hydrant @BLDG# 1355)

| Static Pressure: | 41 psig |
| Residual Pressure: | 34 psig |
| Flow: | 1879 gpm |

The Contractor shall be responsible for conducting a new hydrant flow test in accordance with NFPA 291 prior to the first interim design submission. The flow test shall be conducted under the direct on-site supervision by the Contractor’s Fire Protection Engineer of Record.

6.0 LANDSCAPE AND IRRIGATION

6.1 CODES AND REFERENCES

Refer to Section 4.1 for all codes and references.

6.2 GENERAL LANDSCAPE AND IRRIGATION DESIGN REQUIREMENTS

The landscape and irrigation design required for this project shall include, but may not necessarily be limited to the items listed within this section and as found elsewhere within this RFP.

6.3 LANDSCAPE FEATURES

All graded areas excluding landscaped planting beds shall be seeded or sodded. In areas of demolition, a minimum of four (4) inches of topsoil shall be provided and graded prior to sod and or seed placement. Including landscaped areas sod shall be placed a minimum of four (4) feet surrounding the building, excluding landscaped beds, on the retention pond side slopes and bottom, and along the sidewalks. All other areas will seeded and mulched. In the event that the selected Base is in an arid climate, xeriscaping elements shall be utilized per the installation standards.

See the Acceptable Plant List and Base Architectural Compatibility guide found in the appendix for additional information.

6.3.1 Sod/Seed
The Contractor shall water new seed and sod daily for thirty (30) days after beneficial occupancy. Shrubs, ground cover and sod shall require a one (1) year warranty. Turf and plant bed preparation shall include eradication of unwanted vegetation with Roundup and the use of a pre-emergent granular herbicide.

Provide for a soil test that includes pH, potassium, phosphorus, calcium, magnesium, nematode count, and soil amendment recommendations (N-P-K). Fertilizer and other soil amendments shall be applied as recommended in the soil test to provide healthy sod. The area within the limits of construction shall present a neat and finished appearance. The Contractor shall provide temporary winter grass cover in areas where sod is delayed because of the season. Artificial turf shall not be permitted.

6.3.2 Xeriscaping

The Contractor shall utilize local materials such as decomposed granite, rock mulch from the local quarry, natural desert recovery etc. to stabilize disturbed areas. The Base Architectural Compatibility Plan/Design Guide shall be followed.

6.3.3 Anti-Terrorism/Force Protection

All landscape designs shall comply with DOD AT/FP Design and Construction Standards UFC 4-010-01.

6.4 LANDSCAPE PLANTINGS

6.4.1 Existing Vegetation

Contractor shall maintain as much of the existing vegetation as possible. Vegetation to stay shall be protected during construction.

6.4.2 Weed Control

Roll type polypropylene weed control fabric shall be provided that is woven and needle punched. Weed fabric shall be ninety-nine (99) percent opaque with a minimum weight of five (5) ounces per square yard and minimum thickness of twenty (20) milliliters.

6.4.3 New Vegetation

Quality plant material shall be as specified by the American Standard for Nursery Stock, ANSI 260.1. Thorny vegetation, poisonous vegetation, and vegetation with berries shall not be permitted.

6.5 IRRIGATION SYSTEM

Permanent irrigation is not required for the site.

A temporary underground irrigation system to include all piping, spray heads, rotors, and electrical equipment for programmable automatic timer control with multiple watering zones, meters and installation for a complete and usable system shall be provided. A backflow preventer shall be provided for connection to the domestic water system. The temporary system shall be
removed within one year of the system installation. The underground appurtenances will remain in place after the one (1) year period, but the system will be made inoperable by the Contractor by removal and de-energizing of any electrical equipment.

7.0 ARCHITECTURAL

7.1 CODES AND REFERENCES

The facility shall comply with the following: Where there is a conflict between the RFP and building codes, the more stringent shall apply. The most current directive(s) or regulation(s) shall apply. Dates are provided where available and are listed to provide a starting point to determine the most “current” date for each directive, regulation, and guideline. Note: Guidelines are recommendations.

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7.2 GENERAL

The project is for the construction of a new Headquarter Fire Station facility to locate the functions of the 96 TH Civil Engineering Group’s (CEG) firefighting personnel and their firefighting mission. It is also to house the Emergency Call Center (ECC) and its associated infrastructure. The facility shall be a newly constructed (27,841) SF (1)-story building. In addition to the main facility, a (700) SF tire storage building shall be constructed within the project boundaries of the site.

The facility shall be designed based on geotechnical data evaluated at each site. The structure shall meet UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings structure, windows, Building entrance layout, exterior doors and roof. New facility's location on the Base shall be compatible with Architectural Compatibility Plan/Design Guide for Eglin Air Force Base and its companion document Air Force Corporate Facilities Standards.

The Fire Station Facility shall house mainly administrative spaces along with a large briefing room, training area, dorm rooms, associated living spaces, building support spaces and an emergency call center.

7.2.1 Life Safety

This facility shall be designed to meet or exceed the minimum construction and life safety standards as required by UFC 3-600-1 Fire Protection for Facilities and NFPA 101 Life Safety Code, latest editions. Occupancy separations shall be per the International Building Code. The floor plans provided in the RFP shall be adjusted as needed to accommodate code compliance.

7.2.2 Fire Safety

The minimum allowable construction type, per UFC 3-600-1 Fire Protection for Facilities shall be Type II, non-combustible. However, the actual construction type for this facility shall be determined and proposed by the Offerors based on a full code analysis. The interior of the facilities shall be fully sprinklered.

7.2.3 Antiterrorism / Force Protection

This facility and site shall be designed to incorporate minimum construction standards in accordance with UFC 4-010-01, DOD Minimum Antiterrorism Standards for Buildings, including structure, windows, entrance layout, exterior doors and roof.

7.2.4 Acoustical Design

Due to the location of the facility adjacent to the flight line, special care should be given to insure adequate noise reduction within the facility. Special attention should be given to Dorm Rooms, Conference Rooms, and Training Rooms. All restrooms shall incorporate sound attenuation blankets in the perimeter walls. Mechanical noise shall be minimized and absorptive finish materials shall be used to reduce ambient noise levels and reverberations throughout the facility.
7.3 EXTERIOR CONSTRUCTION

7.3.1 Exterior Walls

The wall system for the facility shall utilize the following:
Typical wall construction shall consist of integral colored, 4-inch split-faced CMU wainscot to 4’-0” AFF, with insulated metal wall panels above. The wainscot shall have an airspace with rigid insulation applied over a fluid applied vapor barrier on 8-inch CMU block back-up wall. The insulated metal panels shall have an integral vapor/air barrier system and shall be applied directly to the 8-inch CMU block back-up wall system. Interior finish of cavity wall construction shall be of a quality suitable for exposed construction (smooth and paintable). Expansion joints shall be provided at walls and roof to separate Apparatus Bays from adjacent areas and as necessary to accommodate construction tolerances.

a. CMU Veneer walls are to maintain a minimum 1-1/2 inch air space behind block. Contractor shall clean all mortar droppings from cavity and provide weep holes. The wall assembly shall include an air/vapor barrier that meets or exceeds the requirements as outlined in ASHAE 189.1 - 2009 and UFC 3-101-01 for building air leakage rates and it shall be tested accordingly.

b. Precast concrete may be used for minor architectural elements such as splash blocks, window sills, wainscot cap, window surrounds, and parapet coping. Precast architectural concrete, if proposed, shall be fabricated with integrally colored concrete; color shall be in compliance with base architectural standards. All exterior finished architectural concrete shall be sealed against water penetration using a clear, non-sheen, impregnating sealer.

c. Tire Storage building walls shall be of the typical wall system to match the main fire facility. However, its interior wall surfaces shall be exposed CMU block walls.

d. Masonry: Masonry units of each type shall be manufactured in a single run. Masonry units and mortar shall be manufactured using integral water repellent as an efflorescence barrier. All exterior finished masonry shall also be sealed against water using an impregnating sealer. Lath and control/expansion joints shall be non-metallic due to corrosive atmosphere. Exposed interior concrete masonry is only permitted in support/supply areas, mechanical and other building utility rooms and shall be sealed. Other interior masonry walls must be furred-out and finished with gypsum board or metal liner panels. Mechanical room interior walls shall be constructed with full height reinforced masonry units constructed to the underside of the structural deck, with all cells filled solid with grout.

e. Metal Wall Panels: Insulated metal wall panels shall be colored in accordance with base standards and shall meet the minimum “R-values” as outlined in ASHRAE 189.1
f. Wall Sealants: Contractor shall comply with: Sealants: A professional Guide from the Sealant, Waterproofing, and Restoration Institute (SWRI). All sealants shall conform to ASTM C 920. Provide backer rod and tooled sealant joints. Provide primer unless not recommended. Contractor shall provide joint sealants in conformance with UFGS 07 92 00 Joint Sealants. Contractor shall use materials and installation in conformance with the requirement for a minimum 5-year warranty. Contractor shall provide exterior and interior sealants as well as acoustical sealants and sealants for exterior gypsum sheathing. Also, provide sealant colors in exposed applications that blend aesthetically with surrounding materials.

g. Flashing: Contractor shall provide thru-wall flashing at head, jambs, sills, all masonry openings, and all building sill lines. In masonry assemblies, extend flashing to face of masonry. Flashing shall be solid material (copper or stainless steel only - do not use membrane type flashing) with end dams. Asphalt coated reinforced copper is acceptable. Provide details of all flashings in the construction documents. As a minimum, provide on-site mock-ups to include masonry wall and corner condition, window with head, jamb and sill flashing, thru-wall flashing conditions, and roof edge detail. The mock-up may be part of the final construction when approved by the Government.

Design and construct the building envelope with a continuous air barrier to control leakage into, or out of, the conditioned space. Identify all air barrier components of each envelope assembly on construction documents and detail joints, interconnections, and penetrations of the air barrier system. Demonstrate performance of the continuous air. Offeror shall conduct thermography and building air barrier leakage testing to verify building air barrier system and envelope are constructed properly in accordance with UFC 3-101-01 Architecture, UFGS 07 08 27.00 10, ASTM 779, ASTM 1827, and ECB 2009-29.

7.3.2 Roof

The roof of the facility shall be standing seam metal roof (SSMR) on a 4:12 pitch with R-20 Minimum rigid insulation and shall meet all uplift criteria as outlined in the various sections of this RFP. Because this facility is located near the flight line, it shall comply with the 7:1 Transitional Surface requirement per UFC 3-260-01 Airfield and Heliport Planning and Design. The SSMR shall have minimum 24 gauge steel panels. Roof shall have concealed fasteners. Install 40 mil dry thickness fluid applied air and moisture barrier on 5/8” thick Dens-Glass sheathing secured to steel deck, beneath grid insulation. All roof penetrations, curbs, gutters and flashing will be of material provided by roofing manufacturer. The manufacturer supplying the system shall be responsible for its design, fabrication, erection, and quality control. The manufacturer shall have its representative inspect the installation of the SSMR system at appropriate intervals during construction and shall furnish a warranty assuring the structural integrity and water tightness of the system for a period of twenty (20) years against damage by wind regardless of cause up to the design wind load. A twenty (20) year color fastness warranty shall be provided. Contractor shall comply with Eglin Standards Architectural Compatibility Plan regarding non-structural metal roofing colors. The roof shall be factory finished. Gutters and
downspouts shall be surface mounted outboard of exterior walls and connected to underground storm drainage systems.

All exposed roof penetrations, equipment, and sheet metal including flashing and gutters shall be shop painted or fabricated from sheet metal to match the metal roof color. No exposed fasteners are allowed; provide cleats for attachment of all roof flashing materials. Provide a slip sheet if required by roof manufacturer. SSMR roof anchors and any other penetrations shall extend from the metal deck up through the gypsum board sheathing and be sealed all around the penetration of the air/moisture barrier using the same liquid-applied air/moisture barrier compound so as to insure air-tightness and integrity of the air/moisture barrier. Any ventilation of the roof under the SSMR should occur only in the interstitial space between the SSMR and rigid insulation, and vented at the ridge. Penetrations shall occur in the center of the roof sheet and not at seam locations; do not cut panel ribs for pipe penetrations. Stacks, where possible, shall be combined into common vents in the attic space prior to extending through roof. Provide structurally supported and attached curbs for roof mounted equipment. Mount all roof equipment on galvanized steel or aluminum roof curbs at a minimum 8” above adjacent roof surfaces. Finish to match roof color on sloped roofs.

Hold a pre-roofing conference with subcontractors and the government. Provide a roof quality assurance plan to include design review and on-site quality control during construction. The contractor shall comply with the latest version of UFC 3-110-03 and base specifications on its criteria. The design shall provide for a factor of safety of two (2) times the calculated wind uplift pressure.

The contractor shall hire an independent roofing consultant to review and approve shop drawings prior to submission of design and construction submittals. This individual or his representative shall also inspect the roof installation at a regular basis for conformance with the Contract Documents and Approved Shop Drawings. The inspector shall issue reports with copies to the Contracting Officer’s Representative. The roofing consultant and/or his representative will be certified by the roofing manufacturer and/or the Roof Consultant Institute. The roofing consultant may be a representative of the Roof Manufacturer.

Specifications for standing seam metal roofs will specifically require the following:

a. All laps shall be in the direction of flow. Roofs with a dimension in slope direction of 60 feet or less, shall be constructed without a joint. Any sealant used shall match the roof material and will only be used in compression and where shown by the SSMR manufacturer.

b. All roof mounted components shall be painted to match metal roof color. Paint shall be polyvinylidene fluoride equal to Kynar 500 products or approved equal.

c. Roof shall be designed in conformance with International Building Code and include an importance factor and land profile as determined by the International Building Code.
d. The roof shall also be warranted by both the General Contractor and the Roof Installer for five (5) years against leaks. The warranty shall cover all costs including labor and materials to make additional repairs at no cost to the Government.

7.3.3 Exterior Doors

The doors to the exterior main entry and common support areas shall utilize a factory finished exterior storefront system in a color that meets Eglin Air Force base design guidelines. Door frames not located under protective overhangs shall have drips.

All doors shall include a polyurethane core foamed-in-place or laminated to each outer panel. All hollow metal door and frame assemblies shall be constructed as required by ANSI/SDI-100 to meet or exceed an Extra heavy duty, grade III, model 2, seamless-hollow steel construction, and shall be constructed with flush end closures at the top and flush closures or recessed channels at the bottom. All door openings shall be a minimum of 3 feet 0 inches wide by 7 feet 0 inches high. Doors shall be a minimum sixteen (16) gauge face panel. Frames will be minimum fourteen (14) gauge. All exterior doors shall include aluminum thresholds and aluminum housed weather seals. Exterior doors shall be black anodized aluminum or stainless steel and shall receive a painted finish that complies with the Eglin Air Force Installation Design Guide. Exterior double-doors shall include a removable mullion to better control the infiltration of blown sand and soil with continuous perimeter seals. Proposed exterior doors shall be a manufacturer’s standard product that meets the minimum requirements of the UFGS specification for exterior doors and UFC 4-010-01 DoD Minimum Antiterrorism Force Protection Standard Buildings. **Apparatus bay overhead sectional doors shall be anodized aluminum, black factory pre-finished, Kynar coating with at least two rows of vision glass.**

7.3.4 Door Hardware

Exterior door hardware shall be provided for all doors. Hardware components and keying shall meet ABA and UFAS requirements for accessibility, and NFPA exiting requirements. All hardware shall be coordinated with Flight line Fire Station Facility and Base security representatives. All doors shall have mullion locks with rim panic detection exit device. Doors requiring panic hardware shall have flush mounted rim type panic exit devices. There shall be no vertical rod or mortise style hardware installed on any of the doors. All exterior personnel doors shall have the ability to accept access control.

7.3.5 Keying Requirements

Locks shall have key removable type of cores with construction keying capability. Lock cylinders for all lock sets shall be compatible with seven (7)-pin "BEST CoreMax" locking system. Locks and cores will be purchased and installed by the Contractor. The Contractor will install lockable "construction cores" to be used during construction. After the building has been accepted by the Base, the Base lock smith will remove the construction cores and then install the Best, or compatible, cores which have been provided under the construction project contract. All construction cores will be turned over to the USACE. The Base will receive two (2) keys and three (3)
blanks per lock. Provide a minimum of five (5) spare cores, Provide card readers (CR) and X09 combination locks where required for security access.

7.3.6 Exterior Windows

Exterior window frames shall be commercial grade. It shall be the responsibility of the Design Build Contractor to determine the appropriate use of storefront versus curtain wall exterior window and glazing systems. The system selected shall be based on compliance with determined structural requirements. Design of assemblies shall comply with AT/FP blast requirements, the IBC code for wind loading, including the ability to resist both large and small missile impact, and appropriate infiltration criteria.

Exterior storefront and window openings shall be glazed with double pane thermally broken insulating units. Glazing shall include insulated assemblies including 2 laminated glass assemblies separated by an air space. Note: two (2) layers of laminated glass assemblies are required to reduce interior noise levels. Provide tinted glass within the assembly of a shade and tint that is in compliance with Eglin Air Force Installation Design Guide and only allows one-way vision capabilities. Glazing and window assemblies shall meet the energy performance requirements as outlined in the most current editions of ASHRAE 189-1 and ASHRAE 90-1. Window colors shall be in compliance with the Eglin Air Force Installation Design Guide. Contractor shall submit color samples for approval. Design of assemblies, including glazing, shall comply with AT/FP blast requirements and with the IBC code for wind loading including the ability to resist both large and small missile impact appropriate infiltration criteria. For clear glass provide quality q4. When required to be safety glazed, provide laminated safety glass or tempered safety glass. Provide minimum seven (7) year warranty on insulated glazed assemblies against joint failure. The following requirements shall also apply:

7.3.6.1 General Description:

Exterior glazed window and door systems shall be reinforced commercial grade aluminum, thermally broken, with anodized or fluoropolymer (Kynar 500 or equal) finish and insulating laminated low-e glazing units with one-way viewing capabilities. Storefront systems shall comply with paragraph B-3 of Appendix B of UFC 4-010-01 (summarized below) and ASCE 7-10, and STRUCTURAL DESIGN REQUIREMENTS of this RFP. Provide aluminum sub-sills for moisture drainage on all windows. Windows which are less than (18) feet above the ground when measured from the bottom of the window, or are easily accessible by means of objects directly beneath the windows, shall be constructed from or covered with materials which will provide protection from forced entry. The protection provided to the windows should be, at a minimum, as strong as the strength of the contiguous walls.

Performance Requirements: Provide aluminum storefront systems that meet all
requirements of International Building Code and comply with the following specific performance requirements indicated.

1. Air Infiltration: Completed storefront systems shall have 0.02 CFM/FT² (0.37m³/h·m²) maximum allowable infiltration when tested in accordance with ASTM E 283 at differential static pressure of 6.24 psf (299 Pa).

2. Water Infiltration: No uncontrolled water when tested in accordance with ASTM E 331 at test pressure differential of: 12 PSF. Fastener Heads must be seated and sealed against sill flashing on any fasteners that penetrate through the sill flashing.

3. Wind Loads: Completed storefront system shall withstand the minimum wind pressure loads normal to wall plane indicated (actual calculated pressures may be higher):
   a. Positive Pressure: 70 psf  b) Negative Pressure: 70 psf

4. Deflection: Maximum allowable deflection in any member when tested in accordance with ASTM E 330 with allowable stress in accordance with AAMA Specifications for Aluminum Structures. For spans less than 13'-6": L/175 or 3/4" maximum. For spans greater than 13'-6" but less than 40'0": L/175 or L/240 + 1/4".

5. Thermal Movement: Provide for thermal movement caused by 180 degrees F. (82.2 degrees C.) surface temperature, without causing buckling stresses on glass, joint seal failure, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or detrimental effects.

6. Thermal Performance (minimum performance levels):
   a. Condensation Resistance Factor (CRF): A minimum of 60 when tested in accordance with AAMA 1503.1.
   b. Thermal Transmittance U-Factor: 0.40 BTU/HR/FT²/°F or less when tested in accordance with NFRC 102.

DoD Anti-Terrorism Performance Criteria (UFC 4-010-01): The glazed window and door systems shall meet the most current version of UFC 4-010-01 criteria. The following summarizes the AT/FP criteria for the glazed windows and doors systems based on the building being classified as Primary Gathering using Conventional Construction Stand-off Distance, Applicable Level of Protection of "Low", and an Applicable Explosive Weight of II, and as determined from UFC 4-010-01 Table B-1 for the application for this project.

1. Glazing: Glazing shall be laminated glass with polyvinyl-butyral interlayer (PVB) in single and insulating glass (on in-board pane) units.
The Applicable Level of Protection is "Low" and the Applicable Explosive Weight is II for the application of this project. Based on UFC 4-010-01 Tables B-2 and B-3, the minimum glass thickness shall be ¼ inch with minimum 0.030 inch thick PVB interlayer for conventional construction stand-off distance as defined in Table B-1 for Primary Gathering building (thicker PVB inner layer may be required for wind borne debris impact testing).

2. Frames: In accordance with ASTM F2248, provide window and door frames, mullions and sashes to restrict deflection of edges of the blast resistant glazing they support to 1/160 of the length of the supported edge at allowable stress levels under the equivalent 3-second design load. The equivalent 3-second duration design loading determined using ASTM F 2248 will be based on the applicable explosive weight at the actual standoff distance at which the window is sited, but not greater than the conventional construction standoff distance. In the case of a punched window, the supported edge length will be taken as equal to the span of the glass, regardless of any intermediate support connections. In the case of multi-panel glazing systems, the supported edge length to be considered will be taken as equal to the span of a single glass panel and the deflection will be calculated based on simple support conditions for that length.

3. Glazing Frame Bite: Refer to ASTM F 2248 for glazing frame bite requirements for structurally or non-structurally glazed windows or skylights. For structurally glazed applications, apply the structural silicone bead to both sides of the glass panel for single pane glazing but only to the inboard side for insulating glass units.

4. Connection Design: The design of connections of window and door frames to surrounding walls or roofs, of hardware and associated connections, of glazing stop connections, and of other elements in shear will be based upon allowable stress levels. The connection design load will be determined in accordance with ASTM F2248 based on the applicable explosive weight at the actual standoff distance at which the window is sited, but not greater than the conventional construction standoff distance. Additionally, the allowable fastener loads will be as recommended by the fastener manufacturer for the materials to which the window or door systems are being connected. Note: The actual connection design load is dictated by the glass type and thickness determined by ASTM E 1300. Therefore, in order to keep the connections loads reasonable, it is recommended to use a glass type and thickness that just exceeds the required glazing resistance. Connections must be capable of preventing the frame from being dislodged from the supporting structural element. This may be demonstrated by calculation as noted above or by testing. If testing is used, the type, number, arrangement, and orientation of the fasteners must be the same in the test as in the fielded application, including eccentricities between the glazing system.
frame and the line of action of the connections. The structural supporting material used in the test for fastener attachment will be representative of the fielded application. Any deviations in field application of the connections or the connected elements from the test must be demonstrated by calculation to provide equivalent support for the specific application.

5. Supporting Structural Elements: For window and door systems, surrounding wall elements and their connections to the rest of the structure may be designed using their nominal strengths. For systems using laminated glass glazing, the design load will be eight times the glazing resistance determined using ASTM E 1300 in conjunction with ASTM F 2248 based on the applicable explosive weight at the actual standoff distance at which the window is sited, but not greater than the conventional construction standoff distance. This design load will be distributed to the structural element only from the tributary area of the window. It is not necessary to account for reactions from the supporting structural elements in the design of the remainder of the structure, because the resulting dynamic loads are likely to be dissipated through multiple mechanisms.

6. Alternate Method of Analysis: As an alternative to the design approach described above, any or all of the glazing, framing members, connections, and supporting structural elements may be designed using dynamic analysis to prove the window system will provide performance equivalent to or better than the hazard rating associated with the applicable level of protection as indicated in UFC 4-010-01 Table 2-1. The design loading for a dynamic analysis will be the appropriate pressure and impulse from the applicable explosive weight at the actual standoff distance at which the window is sited, but not greater than the conventional construction standoff distance. The design loading will be applied over the areas tributary to the element being analyzed.

7. Testing: As an alternative to the provisions of this standard, window and door systems may be dynamically tested to demonstrate performance equivalent to or better than the hazard rating associated with the applicable level of protection as indicated in UFC 4-010-01 Table 2-1. Testing will include the entire window or skylight system, including connections, and will be in accordance with ASTM F 1642. If standoff distances greater than conventional construction standoff distances are provided, the standoff distances on which the analysis and testing are based will not exceed the conventional construction standoff distance.

Windborne Debris Large and Small Missile Impact: Glazed systems shall meet the requirements of the Large Missile Test per ASTM E 1996 and Small Missile Test per ASTM E 1886.

Air Infiltration: When tested in accordance with ASTM E 283, air infiltration shall not exceed 0.06 cubic feet per minute per square foot of fixed area at
a test pressure of 6.24 pounds per square foot (50 mile per hour wind).

Water Penetration: When tested in accordance with ASTM E 331, there shall be no water penetration at a pressure of 12 pounds per square foot of fixed area.

7.3.7 Glazing

Glazing units for all exterior windows and storefront systems shall meet UFC 4-010-01 DoD Minimum Antiterrorism Force Protection Standards for Buildings, and at a minimum shall be double-paned fixed, sealed, and shall have an outboard lite of 1/4-inch thick annealed laminated glass with a minimum 1/2-inch thick air space, and an inboard lite of a minimum 1/4-inch thick annealed laminated glass. The outboard lite shall be safety or tempered glazing where required by code.

7.4 INTERIOR CONSTRUCTION

7.4.1 Interior Walls

Interior walls shall be gypsum board on metal studs, gypsum board on corrosion-resistant furring channels attached to CMU, and CMU and sized according to wall height. Provide fire-rated walls where required. Interior walls requiring fire ratings that extend to the underside of the roof structure shall be designed and constructed in accordance with UL standards. Provide acoustically rated walls referencing standards for minimum Sound Transmission Class (STC) ratings. Provide blocking for wall mounted audiovisual equipment and flat panel displays, including but not limited to, Living Room, Department Training Room, Conference Room, and Dorm Rooms. Special STC ratings shall be considered for areas such as SCBA Compressor Room, Watch Desk, Training Rooms, Testing Areas, and living quarters. Typical STC-50 wall construction consists of 2 layers of 5/8 inch Type "X" gypsum board on each side of 3 5/8 inch metal studs at 16 inches O.C. with blanket insulation, to underside of structure or grout filled, sand filled, or solid 8" CMU.

7.4.2 General

All walls must have blocking to receive anchoring devices capable of sustaining forces anticipated as a result of attaching wall mounted apparatuses. Wood blocking is not allowed.

7.4.3 Interior Doors

Interior doors shall generally be solid core with steel frames. Door frames shall be hollow metal, welded type. Fire-rated doors and frames shall be rated according to the fire rating requirements of the walls in which they occur. All fire-rated doors shall be in accordance with the requirements of NFPA 101. Provide acoustical certified door and frame units with sound seals and hardware for acoustically rated walls. Interior doors to offices and dorms shall be solid core factory finished wood doors, premium grade, with stained hardwood veneer options as listed in the
UFGS guide specification for Wood Doors. Interior doors to Maintenance areas shall be factory finished hollow metal door assemblies with polyurethane core foamed-in-place or laminated to each outer panel. Doors shall be a minimum of 3 feet 0 inches wide by 7 feet 0 inches high. Interior doors to offices shall have sidelights and/or windows. The design team shall meet with building user groups to determine exact locations. The hollow metal door and frame assemblies shall be constructed as required by ANSI/SDI-100 to meet or exceed an extra heavy duty, grade III, model 2, seamless-hollow steel construction, and shall be constructed with flush and closures at the top and flush closures or recessed channels at the bottom.

Classified Area Access and secure area doors shall be provided with hardware appropriate for their function. This hardware includes acoustical seals, automatic door bottoms with thresholds, electronic access controls and electromechanical locks per federal specifications FF-L-2740A.

7.4.4 Door Hardware

Provide door hardware for all doors. Hardware components and keying shall meet ABA and UFAS requirements for accessibility, and NFPA requirements. All hardware shall be coordinated with the owner and Base security representatives. Doors requiring panic hardware shall have flush mounted rim type panic exit devices. There shall be no vertical rod or mortise style hardware installed on any of the doors.

Special Area Access and secure area doors shall be provided with hardware appropriate for their function. This hardware includes acoustical seals, automatic door bottoms with thresholds, electronic access controls and electromechanical locks per federal specifications FF-L-2740A.

7.4.5 Keying Requirements

Locks shall have key removable type of cores with construction keying capability. Lock cylinders for all lock sets shall be compatible with seven (7)-pin "BEST" Z Keyway Cormax locking system. Locks and cores will be purchased and installed by the Contractor. The Contractor shall provide and install lockable "construction cores" to be used during construction. Upon beneficial occupancy (BOD), the Base lock smith shall remove construction cores and install "Best," Coremax with 39Z keyway or compatible, cores which have been provided under the construction project contract. All construction cores will be turned over to the USACE. The Base will receive two (2) keys, three (3) blanks per lock, and a minimum of five (5) spare cores. Provide card readers (CR) and X09 combination locks where required for security access.

7.4.6 Cabinets

Materials and construction of wall and base cabinets and vanity counters shall be in accordance with Architectural Woodwork Institute (AWI) quality standards "AWI Custom Grade." Countertops shall be solid acrylic surface material with either full height tile or 4 inch back and end splashes to match. Cabinet fronts to be wood, shop finished with solid maple hardwood frame, non-beaded, inset cabinet construction. Sides, back, and shelves of maple, veneer-faced plywood to match door and drawer fronts. Drawers to be
full-extension, soft-close, drawer slides, and dovetail drawer box (natural finish). Back, sides, and front dadoed to receive drawer bottom plastic laminate. Base cabinets adjacent to the stove shall be open built-in shelving with commercial grade kitchen steel counter tops.

7.4.7 Toilet Rooms

ABA compliant toilets shall be provided in the facility unless otherwise directed. All fixtures shall be in accordance with the International Plumbing Code, 2012 edition. Grab bars must sustain a pulling force of three hundred fifty (350) pounds exerted in any direction. Restrooms for the sole use of able-bodied firefighters are not required to be ABA compliant.

7.4.8 Toilet Accessories

Toilet accessories shall be furnished as indicated below. Diaper changing stations shall be polyethylene or polypropylene interior and stainless steel front. All other toilet accessories shall be stainless steel commercial grade quality products. Coordinate toilet accessories with the facilities janitorial services before purchasing.

a. Each toilet stall shall have a multi-roll (double) toilet tissue dispenser, Boberick B-2888 or approved equal and coat hook on door. Each handicapped accessible stall shall have a double roll toilet tissue holder, coat hook on door, and wall-mounted grab bars. All women's toilet stalls shall have sanitary napkin disposal units.

b. Lavatories shall be set in the countertop. Soap dispensers in countertops shall be recessed type.

c. At countertop sinks, a mirror extending the "full width" of the countertop shall be provided ("full width" may be shortened approximately one (1) inch on both ends to accommodate side fasteners). Provide stainless steel frame around mirrors. Two (2) semi-recessed handicapped accessible paper towel dispenser/disposal units shall be furnished adjacent to the main lavatory areas. Provide a surface mounted paper towel dispenser adjacent to all countertop sinks.

d. Provide accessible diaper changing station in general public men’s and women’s restrooms.

7.4.8.1 Toilet Partitions and Urinal Screens

Partitions, doors and screens shall be HDPE (High Density Polyethylene) with stainless-steel fittings and hardware. Toilet partitions shall be floor mounted and overhead braced type. Eighteen (18) inch deep urinal screens shall be wall mounted.

7.4.9 Janitor Closets
Equip Janitor Closets with a twenty-four (24) inch by twenty-four (24) inch floor mounted service sink, shelving, and storage space for a portable mop bucket. Provide mop hanger on wall above sink suitable for four (4) mops.

7.4.10 Showers

Showers shall have a shower curtain rod, shower curtain, and a towel pin. Provide pre-fabricated shower pans and ceramic tile on cementitious board or masonry wall. Shower and drying areas shall have moisture resistant painted gypsum board ceilings. MR/Green Board should not be used as a tile backer board. Grab bars must sustain a pulling force of three hundred-fifty (350) pounds exerted in any direction. Reference Tile Council of North America (TCA) standard details for proper installation.

7.4.11 Lockers

Provided in FF&E. See Appendix F1.

7.4.12 Finishes

In general, finishes containing pre- and post-consumer recycled materials should be specified when possible in accordance with Guiding Principles for sustainable federal buildings guideline requirements.

7.4.13 Floors

At all wet locations provide flooring with a COF (Coefficient of Friction) of 0.6 or greater.

- Resilient Tile: 20 mil wear layer thickness, overall thickness of 3mm, luxury vinyl tile (LVT), static dissipative, standard colors. Resilient rubber cove base, four (4) inches high. Use low-VOC adhesive in compliance with Sustainability guidelines.

- Carpet Tile: Commercial-grade carpet that meets or exceeds the CRI "Green Label Plus Program" requirements for air quality shall be utilized. Resilient rubber base, four (4) inches high, straight at carpeted areas. Carpet and backing must comply with UFC 3-120-10, Interior Design, to Air Force ETL 07-4 Air Force Carpet Standard, and to Air Force Interior Design Guides, Chapter 7, Carpet Selection Handbook. Use low-VOC adhesive in compliance with Sustainability Guidelines. All carpeting must be recyclable and have open cell backing that wicks and dissipates moisture up to 10 lbs./sy.

- Porcelain or Ceramic Tile: Through body color porcelain ceramic tile shall conform to ANSI A137.1 heavy grade only. All floor tile must be matt finish slip resistant with COF of 0.6 or better. Floor tile patterns shall be appropriate to size and shape of rooms. Tile pattern in neutral color scheme shall be utilized for floors. Urethane grout color is to coordinate with the tile color and have inherent sealer. Use low-VOC adhesive and sealant in compliance with LEED credits.
Fuel Resinous Flooring: Finish Aparatus Bay floor with 3 Coat Fuel Resistant Resinous Flooring System unless otherwise directed by Contracting Officer.

Sealed Concrete: Finishes for storage areas shall be clear sealed concrete floor finish.

Integrated Walk-Off Mat: Integrated walk-off mats shall be provided as required by sustainability guidelines.

Raised Floor System: The raised flooring system in the ECC area shall be a Rigid Access Flooring system with minimum twelve (12) inch high pedestals with floor finish covered metal panels. Exposed metal shall not be allowed at wearing surfaces of access floor systems except at metal grilles and registers. Finish flooring shall be an appropriately rated anti-static material.

7.4.14 Walls

Paint: The Contractor shall use "Green Seal Paints & Coatings" with zero VOCs as manufactured by Benjamin Moore, Devoe, Sherwin Williams, or equal, for all interior finished surfaces. Use level two (2) finish on gypsum board walls in areas listed in Room Data Sheets to receive water resistant tile backer board. Use level four (4) finish on lightly textured gypsum board walls in areas listed in Room Criteria Data Sheets to receive eggshell paint. Use level five (5) finish on lightly textured gypsum board walls in areas listed in Room Data Sheets to receive semi-gloss or gloss paint. Use semi-gloss paint at all wet locations (break rooms, kitchens, showers, toilet rooms, janitor closets). Use eggshell paint on all other gypsum board wall surfaces.

Porcelain or Ceramic Tile: Wall tile is to be used in all wet areas such as behind drinking fountains and in restrooms wet walls (next to sinks and toilets). A light neutral field color is to be used. Patterns and bands may be created with the accent tile through the use of texture and color variations. Reference SID Color Boards (Appendix 13) for approved color scheme. Urethane Grout color shall coordinate with the selected color scheme.

Wood Trim and Paneling: Not used.

7.4.15 Ceilings

Acoustical Tile: Type III and size two (2) feet by two (2) feet base standard, two (2) feet by four (4) feet is acceptable where aesthetics are not important, fissured tegular edge; Minimum attenuation class (CAC) of 35 in accordance with ASTM E1414/E1414M; Minimum light reflectance of .70 in accordance with ASTM E1477; Minimum noise reduction coefficient (NRC) of .65 in accordance with ASTM C423. Provide units that are humidity resistant throughout facility, especially in kitchen areas, locker areas, and areas adjacent to showers. Steel suspension system shall be intermediate-duty, white factory finished with minimum one and one-half (1-1/2) inch high web, fifteen-sixteenth (15/16) inch wide flange.
Gypsum Board: Moisture resistant type at shower and shower drying areas. Use level four (4) finish on lightly textured gypsum board ceilings in areas listed in Room Data Sheets to receive eggshell paint. Use level five (5) finish on lightly textured gypsum board ceilings in areas listed in Room Data Sheets to receive semi-gloss or gloss paint. Use semi-gloss paint at all wet locations (break rooms, kitchens, showers, toilet rooms). Use eggshell paint on all other gypsum board ceiling surfaces.

Exposed to Structure: Shall be assigned for all rooms unless ceiling type is specified. Exposed structure shall be painted white.

7.4.16 Modules

The rooms of the Fire Station have been grouped into modules based on similar functions and adjacency requirements. These modules can be arranged in multiple DPs (Dynamic Prototypes) to provide the most efficient use of both horizontal and vertical space to fit specific sites. The design for the facility that results from arranging the DPs must be an economical, sustainable, and durable solution that meets the Base and Command design standards and the functional/space/size requirements indicated. Preferred plans have been provided to the site-specific RFP Developer as part of this RFP Template. Any adjacency variations from the preferred plans shall require approval from the Base and Command User representatives.

a. Modules to be considered for this facility include:
b. Apparatus Bays, 10 vehicles/trailers.
c. Apparatus Support.
d. Dayroom and Kitchen, 16 personnel.
e. Administrative, 13 personnel.
f. Training, 24 personnel.
g. Logistics.
h. Infrastructure and Site Support.
i. Fitness.
j. Dorm, 12 rooms (9 single dorms and 3 attached to office spaces)
k. Responder restroom.
l. Admin. Restroom.
m. Laundry.
n. Lobby/vestibule.
o. Break room.
p. Hoteling.
q. Emergency Call Center, 8 personnel

7.4.16.1 Circulation

The circulation of the facility is not a module, but shall be determined by the arrangement of modules, and is required to conform to NFPA Life Safety Code egress requirements. Vestibules are included as circulation and shall be required at each regularly used entrance. Wherever vestibules are placed, a walk-off mat at least ten (10) feet in length and at least the width of the entry doors shall be required, in order to conform to Sustainability standards. For durability purposes, corridors shall receive porcelain tile beyond the entry walk-off mat.

7.4.16.2 Apparatus Bays, Apparatus Support and Agent Storage Modules
Firefighting apparatus housed at the Fire Station is of two types: Aircraft Rescue/Fire Fighting (ARFF) vehicles used for aircraft fires, and Structural Vehicles used to fight building fires and respond to other base emergencies. The apparatus bays must be immediately accessible to residential areas to reduce emergency response times. Proper ventilation is required to keep vehicle exhaust out of office and residential areas. Equipment storage and maintenance areas are required immediately adjacent to vehicle apparatus bays.

Special requirements for apparatus support areas include:

- An open wall of 14’ - 15’ long is required in each apparatus bay room to hang ladders
- Climate-controlled storage for PPE with direct access from dorm room area
- Protective Clothing Laundry room will provide disinfection sinks, stainless steel counter, and large size laundry machines
- SCBA maintenance and compressor room must have double-door exterior access and contains (this area is located off site and is not part of this project)
  - Compressor systems 3’-2” wide x 1’-11” long x 5’-6” tall
  - Storage bank 2’-6” wide x 3’-9” long x 5’-4” tall
  - Filter unit 2’-8” wide x 3’-9” long x 5’-5” tall
  - 25-bottle storage rack 4’-5” wide x 2’-0” long x 3’-5” tall
- Agent Storage this area is co-located in separate tire storage building directly adjacent to ARFF vehicles
  - Protect from freezing / ultraviolet (UV) light / overheating
  - Exterior access through double doors
  - Forklift access to deliver 55-gallon drums of agent
  - Consider whether forklift is electric or gas to ensure proper ventilation to store room
  - 100 percent containment system for spills
  - Although the material is not hazardous, it cannot be disposed of in septic sewer

7.4.16.3 Day Room and Residential Modules

Residential areas include a day room, living room, and sleeping quarters for fire fighters, who are normally on site for a 72-hour shift. The day room includes cooking and dining facilities, together with a vending area and outdoor patio space. The facility also includes a fitness center and bathroom/lockers. Specific project requirements include:

a. The kitchen shall be outfitted with commercial grade kitchen equipment.

b. There shall be easy access to a building entrance for the delivery of supplies.

c. Separate living areas shall be provided to accommodate both noisy and quiet activities and family visits.

d. Access to an outdoor patio is an important requirement.

e. The laundry room shall be on an exterior wall to vent outside.
f. Dorm rooms shall have:

1. PA system speakers required in dorm rooms;
2. All sleeping rooms to have STC rating of 52;
3. The Shift Supervisor shall have a private bedroom
4. The two (2) Assistant chiefs shall share a private bedroom and bathroom.
5. The fire chief shall have both a private bedroom and bathroom.

7.4.16.4 Administrative and Training Modules

The facility shall provide classroom-style training space for 24 students. Provide a computer training area adjacent to the training room. The computer training room shall accommodate computer testing carrels along with lockable training storage.

Administrative areas shall include an office and living quarters for the Fire Chief, which shall be adjacent to the main lobby. Provide an ADA-accessible toilet directly adjacent to the lobby to accommodate visitors who may be disabled. Incorporate a shared lead fire fighter's planning area (Deputy Chief) adjacent to other administrative areas.

7.4.16.5 Logistics Module

The logistics module includes storage and a desk for a logistics officer.

7.4.16.6 Reserve Module

If the base serves a reserve unit allocations should be made for staff, supervisors, and storage.

7.4.16.7 Dispatch Area Module

The dispatch room is an alternate dispatch function for use in case of emergencies. It should house dispatch consoles and include a private toilet, coffee bar / kitchenette, and separate IT (server) room. A view of the flight line is not required.

7.4.16.8 Additional Building Support Areas Module

Additional support areas for the facility include mechanical, electrical, and data / communications rooms to house building systems.

7.5 SPECIFICATIONS

The Contractor shall edit and submit the following UFGS (as a minimum):
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<th>Description</th>
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<td>07 05 23</td>
<td>Pressure Testing an air barrier system for Air Tightness</td>
</tr>
<tr>
<td>07 11 13</td>
<td>Bituminous Damp proofing</td>
</tr>
<tr>
<td>07 21 16</td>
<td>Mineral Fiber Blanket Insulation</td>
</tr>
<tr>
<td>07 22 00</td>
<td>Roof and Deck Insulation</td>
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<td>07 27 10.00 10</td>
<td>Building Air Barrier System</td>
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<td>Non-Structural Metal Roofing</td>
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<tr>
<td>07 60 00</td>
<td>Flashing and Sheet Metal</td>
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<td>07 84 00</td>
<td>Fire stopping</td>
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<tr>
<td>07 92 00</td>
<td>Joint Sealants</td>
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<td>08 11 13</td>
<td>Steel Doors and Frames</td>
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<td>08 11 16</td>
<td>Aluminum Doors and Frames</td>
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<tr>
<td>08 14 00</td>
<td>Wood Doors</td>
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<td>Overhead Coiling Doors</td>
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<td>Sound Control Door Assemblies</td>
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<td>08 36 13</td>
<td>Sectional Overhead Doors</td>
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<td>08 44 00</td>
<td>Glazed Curtain Wall</td>
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<td>08 51 13</td>
<td>Aluminum Windows</td>
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<td>08 56 53</td>
<td>Blast Resistant Tempered Glass Windows</td>
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<td>Door Hardware</td>
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<td>Glazing</td>
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<td>Metal Wall Louvers</td>
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<td>Color Schedule</td>
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<tr>
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<td>Metal Support Assemblies</td>
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<td>Gypsum Board</td>
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<td>Ceramic Tile, Quarry Tile, and Paver Tile</td>
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<td>Acoustical Ceilings</td>
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<td>09 65 00</td>
<td>Resilient Flooring</td>
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<td>Resilient Athletic Flooring</td>
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<td>09 67 23</td>
<td>Fuel Resistant Resinous Flooring</td>
</tr>
<tr>
<td>09 68 00</td>
<td>Carpet</td>
</tr>
<tr>
<td>09 90 00</td>
<td>Paints and Coatings</td>
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<td>10 10 00</td>
<td>Visual Communications Specialties</td>
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<td>10 14 01</td>
<td>Exterior Signage</td>
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<tr>
<td>10 14 02</td>
<td>Interior Signage</td>
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<td>10 21 13</td>
<td>Toilet Partitions</td>
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<td>10 22 13</td>
<td>Wire Mesh Partitions</td>
</tr>
<tr>
<td>10 21 13</td>
<td>Toilet Partitions</td>
</tr>
<tr>
<td>10 28 13</td>
<td>Toilet Accessories</td>
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<tr>
<td>10 44 16</td>
<td>Fire Extinguishers</td>
</tr>
<tr>
<td>10 51 13</td>
<td>Metal Lockers</td>
</tr>
<tr>
<td>12 24 13</td>
<td>Roller Window Shades</td>
</tr>
<tr>
<td>12 36 00</td>
<td>Countertops</td>
</tr>
<tr>
<td>12 48 13.13</td>
<td>Entrance Floor Mats</td>
</tr>
</tbody>
</table>
7.6 HARDWARE GROUPS

All hardware shall be coordinated with Fire Station and Base Security representatives.

a. Hardware sets: The Contractor shall provide door hardware sets for each condition as necessary for interior and exterior doors.

b. Hardware shall be chrome brushed aluminum or stainless steel for ease in maintenance.

8.0 INTERIOR DESIGN

8.1 CODES AND REFERENCES

The facility shall comply with the following: Where there is a conflict between the RFP and building codes, the more stringent, and of those, the most current directive(s) or regulation(s) shall apply. Dates are provided where available and are listed to provide a starting point to determine the most “current” date for each directive, regulation, and guideline. Note: Guidelines are recommendations.

<table>
<thead>
<tr>
<th>CODE</th>
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<tr>
<td>ABA</td>
<td>Americans with Disabilities and Architectural Barriers Act Accessibility Guidelines</td>
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<tr>
<td>AFMAN 32-1084</td>
<td>Space Allocations for new and existing facilities</td>
</tr>
<tr>
<td>MIL-HDBK-1190</td>
<td>Facility Planning and Design Guide</td>
</tr>
<tr>
<td>UFC 3-120-01</td>
<td>Air Force Sign Standards</td>
</tr>
<tr>
<td>UFC 3-120-10</td>
<td>Interior Design, 15 June 2006 including Change 1</td>
</tr>
</tbody>
</table>
8.2 GENERAL DESCRIPTION

The Structural Interior Design (SID) and Furniture, Fixtures and Equipment (FF&E) are defined and described in paragraphs 8.3 and 8.4 of this section. The SID and FF&E shall conform to the requirements of Mobile District Design Manual and shall be provided as part of the design. The SID provided is a conceptual design and shall be a reference and guide to follow for finish selections to be determined during the design of the facility. The drawings provide furniture types, standards and placement for the facility. Furniture order data sheets have been provided (Appendix F1) to indicate numbers and sizes of workstations required, as well as to determine the adequacy of each workspace.

8.3 SID

The SID for this project shall project a transitional image through the use and placement of building related finishes, materials, colors, textures and patterns. The SID finishes shall be high quality, durable and cost effective to maintain over the life of this facility and shall incorporate sustainable materials. Appearance retention is of high importance. Materials and finishes shall support the health, safety and welfare of the occupants and support sustainable design practices. The color, texture, and pattern selections provided in the SID Color Boards (Appendix F2) for the finishes of the building provide an aesthetically pleasing, comfortable, easily maintainable and functional environment for the occupants. Interior finish materials including, but not limited to, ceramic or porcelain tile, carpeting, wall covering, and acoustical ceiling tile shall be approved by the Eglin AFB Architect. When possible, finishes shall contain recycled content. Specify and use low-emitting materials such as paint, adhesives and sealants.

8.4 Descriptive Narrative

The descriptive narrative and finish schedule shall describe the basic level of finishes within the new facility. Final finish selections will be specified by the Eglin AFB Architect.

8.5 Building Standard Finishes

The overall interior color scheme for the new facility shall be a range of warm neutrals used on the walls. Accent colors shall be used throughout the building to (1) add interest to the basic neutral walls, (2) define functional areas, and (3) enhance general path way finding and the interior architecture. Accents shall be incorporated through a variety of products such as paint, wood trim, and panels. The use of wood shall be limited to those areas with a higher hierarchy of finishes, such as conference rooms, executive level office, and key feature locations. Tile grout shall be urethanes and with inherent sealer and conform to requirements specified in ANSI A118.3. Wood shall have a scratch-resistant finish. Primary window treatments shall be provided for all windows based on the window schedule to be provided by the follow-on D-B Contractor and shall be vertical blinds to reduce heat gain and glare. Blinds shall be manually operated with pull cord or chain.
See listing below of general finishes provided per areas within the facility:

<table>
<thead>
<tr>
<th>Building Spaces</th>
<th>Floors</th>
<th>Walls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparatus Bay</td>
<td>Sealed Concrete</td>
<td>Painted CMU</td>
</tr>
<tr>
<td>PPE Gear Storage</td>
<td>Sealed Concrete</td>
<td>Painted CMU</td>
</tr>
<tr>
<td>Logistics</td>
<td>Sealed Concrete</td>
<td>Painted CMU</td>
</tr>
<tr>
<td>HazMat/CBRN</td>
<td>Sealed Concrete</td>
<td>Painted CMU</td>
</tr>
<tr>
<td>Equipment/EMS</td>
<td>Sealed Concrete</td>
<td>Painted CMU</td>
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<td></td>
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</tr>
<tr>
<td>Day Room</td>
<td>Carpet tile</td>
<td>Painted GWB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen/Dining</td>
<td>Resilient Tile/</td>
<td>Painted GWB</td>
</tr>
<tr>
<td></td>
<td>Porcelain Tile</td>
<td>with Ceramic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tile and</td>
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<tr>
<td></td>
<td></td>
<td>Stainless Steel</td>
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<tr>
<td></td>
<td></td>
<td>Backsplash</td>
</tr>
<tr>
<td>Residential Areas/Dorm Rooms</td>
<td>Carpet Tile</td>
<td>Painted GWB</td>
</tr>
<tr>
<td>Locker Rooms including Toilet &amp; Shower Areas</td>
<td>Porcelain Tile</td>
<td>Ceramic Wall Tile, Full Height;</td>
</tr>
<tr>
<td>Lavatory Areas &amp; Partitions</td>
<td>Porcelain Tile</td>
<td>Solid Surface Slabs</td>
</tr>
<tr>
<td>Laundry Room</td>
<td>Resilient Tile</td>
<td>Painted GWB</td>
</tr>
<tr>
<td>Fitness Room</td>
<td>Rubber Multi-</td>
<td>Painted GWB;</td>
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<tr>
<td></td>
<td>function Sports</td>
<td>assume two</td>
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<td></td>
<td>Flooring</td>
<td>colors; (1)</td>
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<td></td>
<td></td>
<td>Full Ht. &amp;</td>
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<tr>
<td></td>
<td></td>
<td>Lngth. Mirror Wall</td>
</tr>
<tr>
<td>Vending Area</td>
<td>Resilient Tile</td>
<td>Painted GWB</td>
</tr>
<tr>
<td>Sauna / Therapy</td>
<td>Porcelain tile</td>
<td>Painted GWB</td>
</tr>
<tr>
<td>Hoteling Stations</td>
<td>Carpet Tile</td>
<td>Painted GWB</td>
</tr>
<tr>
<td>Patio</td>
<td>Concrete / Brick or Stone Paver</td>
<td>N/A</td>
</tr>
<tr>
<td>Training and Administrative Area including all Offices and Chief Conference Room</td>
<td>Carpet Tile; Field &amp; Border (24&quot; min.)</td>
<td>Painted GWB</td>
</tr>
<tr>
<td>Vestibule/ Lobby Area</td>
<td>Porcelain tile; walk off mat at vestibule</td>
<td>Painted GWB, Accent Wall - Vinyl Wall Covering</td>
</tr>
<tr>
<td>Public Toilet Rooms</td>
<td>Porcelain Tile</td>
<td>Ceramic Wall Tile; Full Height</td>
</tr>
</tbody>
</table>
The Apparatus Bay shall consist of a sealed concrete floor with a non-skid, low maintenance traffic coating. Walls for the Apparatus Bay shall consist of epoxy painted CMU.

The Flightline Fire Station functions call for a high level of durability for finishes. Logistics and EMS Storage shall have sealed concrete floors with painted CMU block walls. Paint shall be low-maintenance, industrial latex all wall surfaces. In wet areas, paint shall be epoxy on all wall surfaces. Fitness shall have low-maintenance rubber tile flooring material with rubber base. Sauna/Therapy, Lobby and lobby corridors spaces shall have porcelain tile with porcelain base. Laundry, Vending, and Corridors shall have resilient tile with rubber base. Wall finishes shall be low-maintenance industrial latex paint. Office spaces shall have carpet tile (field and border) LVT tile with rubber base in offices spaces when carpet tile is not a feasible solution. Wall finishes shall be painted gypsum wallboard and accent walls shall be vinyl wall covering.

Restrooms/Locker/Showers shall have ceramic wall tiles at full height and slip resistant through-body porcelain floor tile. Countertops shall be solid surface materials. Shower stalls shall be full height 1/4” thick solid surface panels with heavy duty fiberglass shower bases. Toilet partitions shall be ½” thick solid surface panels with concealed hinges.

8.6 Interior Signage

Interior way finding signage shall be designed and provided. Coordinate all interior signage with the facility user. All interior signage shall be from one manufacturer and that manufacturer shall have a current General Service
Administrative Signage Contract. All signs shall meet ABA requirements. Office identification signs shall have permanent room numbers and paper behind Lexan inserts to accommodate the flexibility required when personnel or room functions change. Building Service signs for all permanent spaces such as mechanical, electrical, communication and janitorial rooms shall have permanent room numbers and permanent corresponding room name messages. Directional signs shall comply with UFC 3-120-01. Where required, use international symbols in addition to messages. Provide emergency/fire evacuation plan signs located at key areas to ensure life safety. A minimum of four (4) evacuation plan signs shall be provided. All emergency/fire evacuation plan signs shall be approved by the Government before production and installation. Conference Room and Training Rooms shall have a sliding slot with "IN USE" message in addition to two (2) window insert panels for room number and name. The entrances into all connecting corridors shall provide directional signs and building identification signs. Each room throughout the facility, with the exception of Lobby and vestibule shall receive a room sign with a permanent room number. No signs shall be installed directly on the doors. All signage shall comply with UFC 3-120-01.

8.7 FF&E (FURNITURE, FIXTURES, & EQUIPMENT)

8.7.1 General

Revisions of the FF&E shall be included in the base bid and shall be the responsibility of the General Contractor. Upon award of the FF&E bid option, the Contractor shall include the cost to furnish and have the FF&E installed for a turn-key this project. The Contractor is required to use qualified personnel with prior experience in finalizing the design development phase of the FF&E. The principal Designer performing space planning, furniture selections and coordination of the fabric and wood finishes with the SID shall have prior experience and training in the design, layout and specifying of FF&E items including systems furniture. The Designer shall also be responsible for coordinating the work with the Government for audio-visual system design for the FF&E package. Reference specification 01 10 12 for procurement procedures and responsibilities of the General Contractor.

The FF&E shall include the following:

a. Accessories;
b. Chairs (all kinds);
c. Desks (all kinds);
d. Systems Furniture;
e. Tables (all kinds);
f. Files and Storage (all kinds);
g. Equipment (all kinds);
h. Bedding.

Reference Appendix F1 - FF&E for a complete list of items to be procured with Bid Option 2.

8.7.2 FF&E Design Requirements
8.7.2.1 Furniture, Fixtures and Equipment (FF&E) Interior Design Description

The FFE includes the design and specification of all movable furnishings for the all occupied and unoccupied areas as indicated in Section 01 10 10 DESIGN CRITERIA. Furnishings shall include but are not limited to accessories, seating, desks, tables, systems furniture, storage, and equipment and bedding. Any Government-furnished, Government-installed (GFGI) furnishings or equipment shall be identified in the FFE. For purposes of this RFP, the racks in PPE Storage are GFGI.

8.7.2.2 FFE Procurement Procedures

The FFE has been designed during the development of the RFP document and is provided as Appendix F1 - FFE. All furnishings shall be included as Bid Option 2 to the MILCON contract. Two lists identifying procurement packages are included in the FFE package. The first is a compiled list of all furnishings included in the FF&E. The other list includes one item that is (GFGI), racks for PPE Storage.

8.7.2.3 FFE Interior Design Requirements

8.7.2.3.1 Contractor Base Bid Requirements

The Contractor shall be responsible for the coordination of the entire FFE with the building systems for the duration of the construction of the facility. Contractor shall provide a final FFE package to the Civil Engineering Office upon approval of final design. The Contractor shall include in the Base Bid any management and coordination fees which apply towards the coordination and installation of existing assets that will be relocated from the existing facility. Contractor shall ensure the completion of installation for all furnishings prior to the demolition of the existing facility.

8.7.2.3.2 GFGI Furnishings procured through the contracting office shall be coordinated for installation by the Contractor to ensure proper connections to building systems and for repairs that may occur during the installation process.

8.7.2.3.3 Award of Bid Option 2 - FFE to be procured by the Contractor

The Contractor shall coordinate any finish selections to be finalized with the Eglin AFB Architect. Contractor shall include all costs associated with the procurement and coordination and all labor cost associated with receiving, staging, installation (including hardwire, voice and data connections if required), adjustments/leveling, trash removal/disposal, and touch-ups in the total price of the FFE. Contractor’s management effort for the Bid Option shall take into consideration the already-established management fee included in the Base Bid.

8.7.2.3.4 GFCI Furnishings: All Government Furnished Contractor Installed (GFCI) items are identified in THE SALVAGE LIST. Contractor shall coordinate installation with the Government and shall be provided a 2 day period, allowing for removal and transfer of equipment (i.e., compressors) to a new facility prior to commencement of existing facility demolition.
8.7.2.3.5 The FFE shall be formatted as indicated in Chapter 10 Interior Design of the Mobile District Design Manual.

8.7.2.3.6 All furnishings provided under Bid Option 2 shall be purchased with Open Market sources providing the best pricing available to the government. This may be accomplished through the use of GSA contract sources, but is not mandated.

8.7.2.3.7 All Contractor services involving FFE furnishings shall be completed within the specified construction contract completion date for the building.

8.7.2.3.7.1 The final cost for the FFE package shall be determined and provided to the CE Office during design phase of the Design Build project delivery process. The final cost estimate shall show pricing in accordance with the following line items:

a. Totals of all the FFE items specified in the FFE Package.

b. Freight costs if not included in the price of an item.

c. Installation cost of all FFE.

d. Local Sales tax, if applicable.

These items shall be identified as separate line items in the final cost summary.

8.7.3 Compliance Verification

Compliance with the FF&E Description and Requirements shall be determined by the Government review of the design, drawings, specifications, and construction submittals.

8.7.4 FF&E Installation Requirements

The Contractor is responsible for the coordination and management of the FF&E installation as awarded and according to the requirements set forth in the 01 10 12 specification. All movable furnishings specified for the project are to be purchased and installed as required by this RFP. The Contractor shall be responsible for all scheduling and coordination with other trades.

8.7.5 Storage of BPA/APICA Contract (GFGI) FF&E

The Contractor shall provide a proposed schedule coordinating the installation of furnishings to be procured by the base contracting office (furnishings defined as GFGI shall be procured by the base contracting office; reference FF&E Appendix F1). In the event the facility is not completed and the installation of the GFGI furniture is delayed, the Contractor shall provide, at their own cost, conditioned storage at a location approved by the Base CE Office on site for the above-mentioned furnishings. Arrangements shall be set in place for the storage to be controlled and maintained by the Government. The Contractor shall retain the storage space until installation of all furniture is complete.
9.0 STRUCTURAL DESIGN

9.1 Codes and References

The facility shall comply with the following: Where there is a conflict between the RFP and building codes, the more stringent, and of those, the most current directive(s) or regulation(s) shall apply. Dates are provided where available and are listed to provide a starting point to determine the most “current” date for each directive, regulation, and guideline. Note: Guidelines are recommendations.

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<tr>
<th>CODE</th>
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<tr>
<td>ACI 301</td>
<td>American Concrete Institute “Specifications for Structural Concrete”</td>
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<tr>
<td>ACI 318-14/318R</td>
<td>American Concrete Institute “Building Code Requirements for Reinforced Concrete and Commentary”</td>
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<td>ACI 530/530.1</td>
<td>American Concrete Institute “Building Code Requirements”</td>
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<td>American Iron and Steel Institute “2012 North American Specification for the Design of Cold-Formed Steel Structural Members”</td>
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<td>ASCE 7</td>
<td>American Society of Civil Engineers “Minimum Design Loads for Buildings and Other Structures” 2010</td>
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<td>TMS 402-13/ACI 530-13/ASCE 5-13, TMS 602-13/ACI 530.1-13/ASCE 6-13,</td>
<td>Building Code Requirements and Specification for Masonry Structures</td>
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<td>ASTM Codes and Standards</td>
<td>American Society of Testing and Materials</td>
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<td>AWS D1.1-00</td>
<td>American Welding Society “Structural Welding Code – Steel”</td>
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<td>UFC 3-301-01</td>
<td>Unified Facilities Criteria Structural Engineering, 1 June 2013 With Change 3, 12 September 2016</td>
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<tr>
<td>UFC 4-010-01</td>
<td>Unified Facilities Criteria “DoD Minimum Antiterrorism Standards for Buildings, 9 February 2012 with Change 1, 1 October 2013</td>
</tr>
</tbody>
</table>

9.2 SPECIAL INSPECTIONS AND STRUCTURAL OBSERVATIONS

The contractor shall employ an independent third party to perform the special inspections as required by UFC 3-301-01, IBC 2015, ASCE 7, and UFGS Specification Section 01 45 35. Special Inspections are minimum Quality Assurance requirements that are in addition to the Quality Control requirements that are defined in Sections 01 45 00.00 10 QUALITY CONTROL and 01 45 00.00 20 QUALITY CONTROL. The requirements for Special Inspections, the Special Inspector, and related testing as noted in UFGS Specification Section 01 45 35 shall be used where required by UFC 3-301-01 and UFC 4-023-03.
Perform Special Inspections in accordance with the Statement of Special Inspections, Schedule of Special Inspections, and Chapter 17 of ICC IBC. The Statement of Special Inspections and Schedule of Special Inspections shall be supplied with the design drawings to the Contracting Officer for review. The Statement of Special Inspections and Schedule of Special Inspections are to be prepared by the Contractor’s Designer of Record (DOR). Special Inspections are to be performed by an independent third party and are intended to ensure that the work of the prime contractor is in accordance with the Contract Documents and applicable building codes. Special Inspections do not take the place of the three phases of control inspections performed by the Contractor's QC Manager or any testing and inspections required by other sections of the specifications.

In addition to the Special Inspection and testing specified requirements, the Contractor’s Designer of Record (DOR) must perform any required "structural observations" as required by UFC 3-301-01, IBC 2015, ASCE 7, and UFGS Specification Section 1 01 45 35 during construction when required by UFC 3-301-01. All observed deficiencies shall be immediately reported to the Contracting Officer. The registered design professionals performing these observations shall be a representative of the Contractor’s Designer of Record’s (DOR) for the building being constructed.

All costs for the Special Inspections and Structural Observation shall be by the Contractor. (When editing Specification Section 01 45 35 for submittal, in addition to Contractor providing for the Special Inspection, Contractor shall edit the specification to state to employ the DOR to perform any required structural observation, not the Government.)

9.3 GENERAL DESIGN REQUIREMENTS

The Structural Engineer shall be responsible for the design of the complete structural building system. A complete structural system for the building shall include foundations, walls, roof framing, roof diaphragms, lateral load stability, framing and connection of any architectural features, and the support of mechanical and electrical equipment. In addition, the Structural Engineer shall be responsible for the design of all lesser related structures such as utility vaults, pits, retaining walls, etc., although they may be shown on other disciplines' drawings. Structural design of the building shall be compatible with the architectural design. Structural design shall be in accordance with the criteria, requirements, and guidance provided in IBC, as modified by UFC 1-200-01, and the following requirements:

a. Wood shall not be used for any structural members. Plywood shall not be used for wall sheathing, structural roof sheathing, or floor decking.

b. Where dissimilar metals are in contact, or where aluminum is in contact with concrete, mortar, masonry, wet or pressure-treated wood or absorptive materials subject to wetting, the surfaces shall be protected with a coat of bituminous paint or asphalt varnish.

c. Variations from level or from slopes specified for roof decks, floors, ceilings, beam soffits, lintels, sills, horizontal grooves, or other conspicuous lines shall be as follows:
1. For overall length of line or surface of ten (10) feet or less, plus one-eighth (1/8) inch; up to twenty (20) feet, plus one-fourth (1/4) inch; up to forty (40) feet, plus three-eighths (3/8) inch.

d. Where raised or depressed floors are provided, structural slab elevations shall be adjusted so that all finished floor levels are the same and thus level.

e. A minimum safety factor of one and one-half (1-1/2) shall be provided against uplift, overturning, sliding, and buoyancy if load combinations referenced in IBC section 1605 are not used. A minimum safety factor of two (2) shall be provided for retaining/foundation walls if load combinations referenced in IBC 1605 are not used.

This project shall consider the principles of sustainable design under the guidance of UFC 1-200-02 and Air Force Sustainability Guidelines.

9.4 DESIGN LOADS

9.4.1 Load Requirements

Structural designs shall be in accordance with IBC, ASCE 7, UFC 1-200-01, UFC 3-310-01, and the applicable industry codes or specifications for the particular material involved. In the event of conflict, the most stringent criteria shall apply.

9.4.2 Building Classification

The building is classified as category IV per IBC. The facility shall meet the most current version of UFC 4-010-01, DoD Minimum Antiterrorism Standards for Building. For the main portion of the facility, based on the expected routine occupancy, in which 11 or more unaccompanied DoD personnel are routinely housed, the facility shall be classified as "Billeting" and shall meet a "Low Level" of protection (LLOP) in accordance with UFC 4-010-01. For the service bays and adjacent spaces, which shall have a population of 11 or less or a population density less than one person per 40 gross square meters (430 gsf), shall be classified as a "Low Occupancy" area and be exempt from AT/FP requirements. The building walls, roof, windows and doors at the "Billeting" areas shall be designed for the blast loading caused by Explosive Weight II for the actual setback to the parking/roads.

9.4.3 Dead Load

The dead load consists of the weight of structure, coverings, access floors, raised floors, ceilings, and permanent contents, plus five (5) percent of steel member weights shall account for connections.

9.4.4 Collateral Load

The collateral load shall be 10 psf minimum on roof to account for miscellaneous loads.
9.4.5 Roof Live Load per IBC

The roof live load shall be 20 psf, reducible per IBC and ASCE 7.

9.4.6 Live Loads per Appendix D of UFC 3-301-01

In accordance with Appendix 4 of UFC 3-310-01, the following floor areas shall be designed using the stated uniform loads, as a minimum:

a. Offices, Administrative Areas: 50 psf.
b. Storage, unless noted otherwise: 250 psf.
c. Mechanical/Electrical Rooms: 125 psf.
   (1) If equipment load exceeds 125 psf, then supporting members shall be designed for the actual equipment load, not the listed load.

Fire Truck Loading: Slab on shall be designed to resist a TI-3000 Air Rescue and Fire Fighting Vehicle and Design Truck HL-93

9.4.7 Wind Loads per IBC and ASCE

Basic wind speed and exposure category shall be in accordance with the UFC 3-301-01 for an Occupancy Category IV structure.

9.4.8 Snow Loads per IBC and ASCE

Ground snow load, exposure factor, and thermal factor shall be in accordance with UFC 3-301-01. Importance factor shall be 1.2 for an Occupancy Category IV structure. Contractor's design shall account for roof slope, unbalanced snow loads, snow drifts, sliding snow, and rain-on-snow surcharge load, as applicable.

9.4.9 Seismic Loads per IBC

Spectral response coefficients and site class shall be in accordance with the UFC 3-301-01. Importance factor shall be 1.5 for an Occupancy Category IV structure.

9.4.10 Blast Loads per UFC 4-010-01, UFC 4-010-02 (FOUO) and UFC 4-020-01FA (FOUO)

At the controlled perimeter, and at parking and roadways where there is no controlled perimeter:

Design basis threat: Explosive weight I.
Level of protection: Low (moderate damage, glazing fractures and may come out of the frame at a reduced velocity).

At all parking, roadways and trash and recycle containers:

Design basis threat: Explosive weight II.
Level of protection: Low (moderate damage, glazing fractures and may come out of the frame at a reduced velocity).
ATFP Blast Loading and Member Checking: Per UFC 4-010-01, setbacks have been established for use of conventional constructions without any additional blast loading or member checking. Per the UFC and its back-up document PDC TR-10-01, definitions for the assumed conventional construction types are defined. The UFC states any construction outside these ranges of properties in Table 2-3 for walls and roof (see associated document PDC TR-10-01, definitions for the assumed conventional construction types are defined. The UFC states any construction outside these ranges of properties in Table 2-3 for walls and roof (see associated document PDC TR-10-10 for additional assumptions assumed) must be analyzed for blast loading based on charge weight and actual setbacks. The conventional construction definitions are very limited and do not cover most conditions (i.e., joists are only defined as conventional construction for 30 foot spans, and any W section roof beams since they are not covered by tables, metal panel is actually Vulcraft 1.5 inch and 3 inch, 22, 20, or 18 gage desks at certain spans, steel studs are limited to only certain sizes, gages, spans, and spacing. Anything outside these narrow definitions conventional constructed must be analyzed. Provide an analysis of the exterior elements showing how all elements meet the definitions of conventional construction or provide the required analysis showing members meeting ATFP blast requirements.

9.4.11 Overhead Fall Protection

Overhead fall protection in the apparatus bays shall be designed to the requirements of the USACE Fall Protection Guide dated 1 April 2012, OSHA 29 CFR 1910 and 29 CFR 1926, and the American National Standards Institute ANSI Z359 Fall Protection Code and Standards. System shall consist of an enclosed track system with two workers centered over each firefighting apparatus. Coordinate locations of bays with architectural and mechanical requirements.
9.5 BUILDING SUBSTRUCTURE

9.5.1 Foundations and Floor Slab

Contractor’s geotechnical engineer shall make recommendations for foundations, floor slabs, and the support of underground utilities. Preliminary recommendations are provided in the Preliminary Geotechnical Study in the appendices. These recommendations are for information only and the Contractor shall be responsible for the final design of the foundations.

All slabs-on-grade shall be underlain by capillary water and vapor barriers.

Structural fill or backfill for slabs and foundations shall be placed in eight (8)-inch loose lifts and compacted to ninety-five (95) percent of modified Proctor density (ASTM D1557) at moisture content from minus two (2) percent to plus two (2) percent of the optimum moisture content. Slabs-on-grade shall be isolated from foundations to prevent cracking of the slab due to differential settlement. Positive drainage away from the exterior perimeter of the proposed building shall be maintained.

Contractor’s geotechnical engineer shall make recommendations on the need to tie door landings into the building foundation based upon the presence (or lack thereof) of expansive-type soil.

9.6 BUILDING SUPERSTRUCTURE

9.6.1 Building Framing

The building superstructure shall be reinforced masonry, structural steel, cold-formed steel, or a combination of these. Exterior walls shall comply with Base architectural compatibility standards and be fully grouted reinforced masonry. All lateral-force-resisting elements shall be coordinated with architectural requirements and layouts.

9.6.2 Roof System

The roof shall be metal deck on joist or structural steel framing supported by exterior CMU masonry bearing walls and interior structural steel columns. Minimum roof slope shall comply with Base Architectural Compatibility Plan/Design Guide.

9.6.3 Lateral Bracing System

The lateral bracing shall be steel systems not specifically detailed for seismic resistance, ordinary steel braced frames, ordinary moment frames, or ordinary masonry shear walls as required and coordinated with architectural requirements and layouts.

9.6.4 Exterior Walls

The exterior façade shall be load bearing CMU masonry wall except as required with steel column support at the high bay apparatus room.
9.7 CONCRETE

9.7.1 Strength

Specified compressive strength f'c shall be a minimum of thirty-five hundred (3,500) psi at twenty-eight (28) days for all structural concrete, except as otherwise specified in this document.

Slabs-on-grade to receive vehicular traffic shall have a specified minimum flexural strength of six hundred fifty (650) psi at twenty-eight (28) days. Mix designs shall include recycled materials, such as fly ash and ground granulated blast furnace slag, to the maximum extent possible. Reinforcement shall comply with ASTM A615, grade sixty (60) minimum. Structural plain concrete is not permitted.

9.7.2 Reinforcing

The reinforcing of concrete walls, continuous footings, and tie and bond beams shall be continuous, and therefore, typical details showing the arrangement of reinforcing at corners and intersections of these members shall be shown on the drawings.

9.7.3 Slabs-on-Grade

In no case shall a slab-on-grade be less than four (4) inches thick. Thickened slabs shall be required for walls and partitions that have a vertical load of three hundred (300) pounds per foot to nine hundred fifty (950) pounds per foot. A separate, isolated wall footing shall be provided for walls having a vertical load in excess of nine hundred fifty (950) pounds per foot. A minimum ratio of reinforcement area to gross concrete area of 0.0015 shall be used in each direction. Welded wire mesh or reinforcing bars shall be provided in each direction in slabs. Welded wire fabric shall be placed in the top one-third (1/3) of the slab thickness. Welded wire fabric in flat sheets or deformed reinforcing bars shall be used.

Slabs-on-grade shall be placed in lanes. The area bounded by crack control joints shall not exceed two hundred and twenty five (225) square feet. The distance between parallel crack control joints shall not exceed twenty-five (25) feet and the ratio between the dimensions of the slab panel length to the slab panel width shall not exceed one (1) to twenty five (25). Crack control joints may be construction joints, contraction joints, expansion joints, or isolation joints. Reentrant corners in slabs shall be minimized, and where unavoidable, they shall be reinforced with two (2) #4 bars, four (4) feet long, placed diagonally to the corner. Discontinuous joints shall be minimized, and where unavoidable, they shall be reinforced with two (2) #4 bars, four (4) feet long, placed opposite the end of the discontinuous joint. No joints shall be located under ceramic tile floors. Slabs-on-grade shall include exterior door landings in areas subject to expansive-type soils.

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Bullfloated 1/2 inch  
Straightedged 5/16 inch  
Float Finish 3/16 inch  
Trowel Finish 3/16 inch

Tolerances may also be measured by the F-number system in accordance with ACI 117.

9.7.4 Embeds

Exterior steel embedded in concrete for such purposes as exterior railing, handrails, fence, base plates, anchor bolts, etc. shall be hot-dipped galvanized unless otherwise directed.

9.7.5 Waterstops

Rubberized, keyed waterstops shall be provided in all construction joints below grade between the exterior and interior of the building.

9.8 STEEL

9.8.1 Base Plates

All column base plates shall be placed on a minimum of two (2) inches of cementitious non-shrink grout. All column base plates and anchor bolts shall be completely encased in concrete. All below-grade steel shall be completely encased in concrete.

9.8.2 Connections

In general, shop connections for structural steel shall be welded, and field connections shall be made with high-strength bolts (ASTM A325) in bearing-type connections. All connections other than standard AISC shear connections shall be designed by the Structural Engineer and fully detailed on the final plans. Connection angles shall be a minimum five-sixteenths (5/16)-inch thick and bolts shall be a minimum of three-fourths (3/4)-inch in diameter.

9.8.3 Cold-Formed Framing

All cold-formed steel framing shall be formed from steel that conforms to the requirements of ASTM A653, grade thirty-three (33) or higher, with a minimum yield strength of thirty-three (33) ksi. Minimum uncoated steel thickness (design thickness times 0.95) shall be 0.0329-inch (twenty (20)-gage). Coat cold-formed steel framing with a G-60 galvanized coating. Coat all cold-
formed steel framing connectors with a G-90 galvanized coating. Cold-formed steel framing units acting as structural lateral-load-resisting elements are prohibited.

9.8.4 Joists

Anchor joists to steel supports by bolting or field welding. Provide embedded steel plates in masonry work. Where top chords are extended, provide required section modulus of extensions on the drawings.

9.8.5 Bracing

If braced frames are used as all or part of the main lateral force resisting system, the stability of the structural system shall not depend on any single member or connection. Redundancy shall be provided either by using multiple bays of tension-only X-bracing members or by using bracing members that are capable of both tension and compression if bracing is placed in a single bay.

9.8.6 Steel Certificate

If a structural steel frame is provided, the fabricating plant furnishing the structural steel shall be certified under the AISC Certification Standard for Steel Building Structures. The erection plan shall be reviewed, stamped and sealed by a structural engineer licensed by the jurisdiction in which the Project is located.

9.8.6 Lintels

Steel lintel angles over masonry veneer openings shall have a minimum thickness of five-sixteenths (5/16)-inch and shall be hot-dipped galvanized in accordance with ASTM A123. Provide a minimum coating grade of one hundred (100). Field clean, prime and finish paint other steel lintels.

9.9 METAL DECK

9.9.1 Roof Deck

Metal roof deck material shall be galvanized steel and have a minimum thickness of 0.0295-inch (twenty (20)-gage). A structural metal roof deck shall be provided under all roofs. Where metal deck is used, show required section modulus and moment of inertia on drawings. Steel roof deck shall have a G-90 galvanized coating thickness.

9.9.2 Construction

Structural metal roof decks shall be attached to structural supports and to adjoining units using mechanical fasteners, such as screws or powder actuated or pneumatically driven fasteners. Welding shall be allowed to attach roof decks.

9.10 CONCRETE MASONRY UNITS AND CONCRETE MASONRY VENEER UNITS
9.10.1 Walls

All masonry walls shall be designed as reinforced masonry, neglecting the tensile strength of masonry to resist all applicable vertical and horizontal loads. All exterior masonry walls shall satisfy the minimum vertical and horizontal reinforcement requirements of UFC 4-010-01. All masonry shall be running bond only.

9.10.2 Vertical Reinforcement

Minimum thickness of structural masonry walls shall be eight (8) inches (nominal). Reinforcement shall comply with ASTM A615, grade sixty (60) minimum. Minimum bar size shall be #4. Three (3) vertical reinforcing bars shall be provided continuously from support to support at each wall corner, and one (1) vertical reinforcing bar shall be provided at each side of each opening, at each side of each control joint, at the end of each wall, and elsewhere in the wall panels at a maximum horizontal spacing of forty-eight (48) inches. This minimum reinforcement shall be of the same bar size as the vertical reinforcement provided for flexural stresses.

9.10.3 Horizontal Reinforcement

Joint reinforcement shall be provided at the top of the first course and at a maximum vertical spacing of sixteen (16) inches. In addition, horizontal reinforcement in continuous masonry bond beams shall be provided at the bottom course, within sixteen (16) inches of the top course, and at a maximum vertical spacing of forty-eight (48) inches. Horizontal reinforcement shall also be provided above and below all wall openings. These bars shall extend a minimum of forty (40) bar diameters, but not less than twenty-four (24) inches, past the edges of the opening. The minimum horizontal reinforcement shall be two (2) #4 bars per bond beam. Lintel units shall not be used in lieu of bond beam units.

9.10.4 Control Joints

Concrete masonry walls shall have vertical control joints as follows.

a. At a maximum spacing of twenty-four (24) feet or three (3) times the wall height, whichever is less,

b. At changes in wall height or thickness,

c. At approximately one-half (1/2) the maximum spacing from wall intersections,

d. At points of stress concentration, and

e. At control joints in foundation walls and in floor slabs that support masonry walls.

Control joints shall not be located at wall openings.

9.10.5 Inspection

A qualified masonry inspector approved by the COR shall perform inspection of the masonry work. Minimum qualifications for the masonry inspector shall be five (5) years of reinforced masonry inspection experience or acceptance by a
state, municipality, or other governmental body having a program of examining and certifying inspectors for reinforced masonry construction. The masonry inspector shall be present during preparation of masonry prisms, sampling and placing of masonry units, placement of reinforcement (including placement of dowels in footings and foundation walls), inspection of grout space, immediately prior to closing of cleanouts, and during grouting operations. The masonry inspector shall assure Contractor compliance with the drawings and specifications. The masonry inspector shall keep a complete record of all inspections and shall submit daily written reports to the Quality Control representative reporting the quality of masonry construction.

9.10.6 Caps

Provide a precast concrete cap on top of all masonry parapet walls and masonry screen walls. Metal flashing shall be provided under the precast concrete cap.

9.11 ANTI-TERRORISM / FORCE PROTECTION

9.11.1 General

The structural design shall incorporate all applicable requirements of UFC 4-010-01. The facility shall meet the most current version of UFC 4-010-01, DoD Minimum Antiterrorism Standards for Building. For the main portion of the facility, based on the expected routine occupancy, in which 11 or more unaccompanied DoD personnel are routinely housed, the facility shall be classified as "Billeting" and shall meet a "Low Level" of protection (LLOP) in accordance with UFC 4-010-01. For the service bays and adjacent spaces, which shall have a population of 11 or less or a population density less than one person per 40 gross square meters (430 gsf), shall be classified as a "Low Occupancy" area and be exempt from AT/FP requirements.

The building walls, roof, windows and doors at the "Billeting" areas shall be designed for the blast loading caused by Explosive Weight II for the actual setback to the parking/roads.

At the inhabited/billeting areas, a zone of unobstructed space, in which placement of any explosive device would be observable by building occupants, shall surround the facility. Electrical and mechanical equipment and landscaping located within this area shall be configured to provide no opportunity for concealment of explosive devices. Building overhangs with inhabited space above them shall not be used.

9.11.2 Blast Effects

The inhabited portions of the facility shall provide both of the following:

   a. A Low level of protection, as defined by UFC 4-010-01, against explosive weight I, as specified by UFC 4-010-02 (FOUO), at the actual standoff distance to the controlled perimeter, or to parking and roadways where there is no controlled perimeter. This is the minimum requirement specified by UFC 4-010-01, which means that analysis and design for the corresponding blast effects are not required if the site
design provides all of the conventional construction standoff distances.

b. A Low level of protection, as defined by UFC 4-010-01, against explosive weight II, as specified by UFC 4-010-02 (FOUO), at the actual standoff distance to any parking, roadways, and trash and recycle containers. This is the minimum requirement specified by UFC 4-010-01, which means that analysis and design for the corresponding blast effects are not required if the site design provides all of the conventional construction standoff distances.

9.11.3 Exterior Walls and Roof

Structural and non-structural elements subject to blast effects shall be designed in accordance with recognized principles of structural dynamics, including appropriate strength increase factors and response limits, as outlined in PDC-TR 06-08.

9.11.4 Windows and Skylights

All glazing shall meet the requirements of UFC 4-010-01 and the additional blast effects provisions specified above.

9.11.5 Supporting Structural Elements

Unless dynamic analysis is employed to evaluate blast effects, design supporting structural elements and their connections using their nominal strengths and a factored design load equal to eight (8) times the glazing resistance determined using ASTM E1300. Distribute the design load to the structural elements only from the tributary area of the glazing. It is not necessary to account for reactions from the supporting structural elements in the design of the remainder of the structure.

9.11.6 Submittals

Demonstration that each different size and type of window or skylight system and its connection to the structure meets the minimum antiterrorism requirements specified herein shall be submitted to the Government for approval. Demonstration shall be by either Design Analysis or Standard Airblast Test results, as described below:

a. Design Analysis prepared and signed by a licensed professional engineer. The analysis shall include calculations verifying the structural performance of each window or skylight system proposed for use under the specified blast loads. The window components and anchorage devices to the structure, as determined by the analysis, shall be reflected in the shop drawings.

b. Standard Airblast Test results. In lieu of a design analysis, Standard Airblast Test results may be submitted to demonstrate conformance with the minimum antiterrorism requirements. Standard Airblast Test shall be conducted by arena test or shock tube method in accordance with ASTM F1642 by an independent testing agency regularly engaged in blast testing. Results shall be included in a test report.
providing information in accordance with ASTM F1642, as prepared by the agency performing the test. The test results shall demonstrate the ability of each window or skylight system proposed for use to withstand the airblast loading parameters and achieve the hazard level rating specified. For proposed systems that are of the same type as the tested system but of a different size, the test results may be accepted, provided that the proposed size is within the range from twenty-five (25) percent smaller to ten (10) percent larger in area, when compared with the tested assembly. The test shall be performed on the entire proposed window or skylight system, which shall include, but not be limited to, the glazing, framing system, operating devices, and all anchorage devices. Anchorage of the window or skylight frame or subframe shall replicate the method of installation to be used for the project. The minimum airblast loading parameters for the test shall be the peak positive reflected pressure and positive phase reflected impulse that correspond to the applicable design basis threat and standoff distance. The hazard rating for the proposed window systems, as determined by the rating criteria of ASTM F 1642, shall not exceed the "Very Low Hazard" rating. Results of systems previously tested by test protocols other than ASTM F1642 may be accepted, provided that the required loading, hazard level rating, and size limitations stated herein are satisfied.

9.12 SPECIFICATIONS

The Contractor shall edit and submit, as applicable, the following UFGS sections, as well as any others required for construction of the Project:

| 01 45 35 | Special Inspections (with attached Contractor Inspection Statement and Schedule of Special Inspections) |
| 03 11 13.00 10 | Structural Cast-in-Place Concrete Forming |
| 03 15 00.00 10 | Concrete Accessories |
| 03 20 00.00 10 | Concrete Reinforcing |
| 03 30 00.00 10 | Cast-In-Place Concrete |
| 03 39 00.00 10 | Concrete Curing |
| 04 20 00 | Masonry |
| 05 05 23 | Welding, Structural |
| 05 12 00 | Structural Steel |
| 05 21 19 | Open Web Steel Joist Framing |
| 05 21 23 | Steel Joist Girder Framing |
| 05 30 00 | Steel Decks |
| 05 40 00 | Cold-Formed Metal Framing |
| 05 50 13 | Miscellaneous Metal Fabrications |

10.0 HEATING, VENTILATING AND AIR CONDITIONING (HVAC)

10.1 CODES AND REFERENCES

The facility shall comply with the following: Where there is a conflict between the RFP and building codes, the more stringent, and of those, the most current directive(s) or regulation(s) shall apply. Dates are provided where available and are listed to provide a starting point to determine the most "current" date for each directive, regulation, and guideline. Note:
Codes listed below are not intended to be an all-inclusive list but a general list of commonly used codes.

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10.2 GENERAL DESIGN REQUIREMENTS

The HVAC systems shall be designed to the latest industry standards, codes, Government regulations, and to the specifications included in this solicitation. Design documents shall be submitted and approved prior to commencing work on the HVAC system. The Contractor shall be responsible for the professional quality and technical accuracy of all HVAC design documents and shall insure construction meets all requirements of the approved design. Drawings, specifications, and other design documents upon which construction is based shall be coordinated with other disciplines to insure compatibility.
and constructability of all building systems. Documentation shall be provided proving the proposed design achieves thirty (30) percent energy savings below ASHRAE 90.1 baseline in accordance with UFC 1-200-02 and EPAct 2005 if life cycle cost effective.

A life cycle cost analysis shall be performed to compare different system types to ensure that the most efficient and economical system is selected. Systems to be considered shall include, but not be limited to: chilled water variable air volume air handling units, water source heat pumps, and air cooled heat pumps. Systems selected for the analysis shall be viable solutions for the climate and geographical conditions.

Air handling units serving the building spaces shall be located inside mechanical rooms. The layout of the rooms and equipment shall consider proper maintenance clearances around all equipment including coil pull space, separation of conditioned and unconditioned areas, and observance of the "dedicated electrical space" around electrical equipment as required by the National Electrical Code (NEC).

Outside air for ventilation shall be drawn in through wall-mounted louvers located a minimum of ten (10) feet above finished grade. The outside air shall be ducted to and conditioned by a Dedicated Outside Air (DOA) air-to-air total energy recovery ventilator to assist in humidity control in the facility and to reduce cooling and heating loads on the central station HVAC systems. The conditioned outside air shall be directly to the individual spaces at room neutral temperatures. The DOA shall condition the air using an enthalpy type wheel, or heat recovery loop, or a plate and frame heat exchanger. The DOA supply fan shall operate at variable speeds as required by CO2-based demand ventilation control system. The DOA exhaust/relief fan shall operate at variable speeds as required for building pressurization control.

All equipment shall be of the high efficiency type, and shall be Energy Star rated, if applicable. Air-cooled chillers, direct expansion condensing units, and other such equipment shall be located in an exterior utility yard. Hydronic chilled and heating water pumps may be base mounted end suction or inline centrifugal pump and located in the mechanical room.

Materials, U-factors, building orientation, energy efficient equipment including electric motors, temperature control systems, heat reclaim, shading, daylighting, demand control ventilation, solar HW collection, etc. shall be utilized to the extent possible to provide an energy efficient facility which shall be in compliance with ASHRAE 90.1. As a minimum, and in accordance with the Energy Policy Act (EPAct) of 2005, the building systems shall exceed the energy efficiency requirements of ASHRAE 90.1 2010 by 30% if life cycle cost effective.

The design shall make use of the latest technology to provide equipment with the highest efficiency possible without compromising maintainability. The design shall comply with UFC 1-200-02, EPAct 2005 and 10 CFR 435, "Energy Conservation Voluntary Performance Standards for New Commercial and High Rise Residential Buildings; Mandatory for New Federal Buildings."

SECTION 01 10 10 Page 67
10.3 DESIGN CRITERIA

Heat gain and loss calculations shall be, as a minimum, in accordance with the current edition of the ASHRAE Fundamentals Handbook. Computer generated loads must be submitted with complete input and output summaries during the design process. Load calculation software must be ASHRAE based. The cooling equipment shall be selected based on satisfying both the total and latent calculated loads. System’s shall be designed, installed, balanced, and adjusted to distribute heating and cooling to all habitable rooms, in proportion to the calculated heat losses/gains in these rooms plus a 10% percent safety factor. HVAC systems shall provide uniform and consistent interior space temperature while using equipment that is energy efficient and easily maintained.

Verify ventilation rates of each space with the referenced publications in this mechanical design section. Conduct air balance calculations for the spaces in the facility to verify total supply air, outdoor air, return air, and exhaust air. The space (airflow) pressure relationships shall be maintained. Administrative areas shall maintain a positive pressure with respect to outdoors to aid in keeping generated pollutants and hazardous particles out of the office supply airstream. Total airflow calculations to include supply, return, exhaust and outside air, shall be performed to verify that the administrative area pressure is positive with respect to outdoors.

10.3.1 Design Parameters

10.3.1.1 Outside Design Conditions

The design parameters for sizing HVAC equipment are based on UFC 3-400-02 “Engineering Weather Data” and are as listed:

Latitude: 30.48N
Longitude: 86.53W
Elevation: 20 Feet
Summer Outdoor Conditions (1%): 93.4 db / 76.2 wb
Winter Outdoor Conditions (99%): 28.3 db

10.3.1.2 Inside Design Conditions

Summer Indoor Conditions:
Shall be in accordance with UFC 3-410-01

COMM Rooms - Cooled to seventy-two (72) degrees F. Equipment Cooling Load: fifty (50) watts per square foot minimum. Comm rooms shall be cooled with dedicated units to allow twenty-four/seven (24/7) conditioning if the main systems fail.

Mechanical rooms - Ventilated in summer to maintain a maximum of ten (10) degree difference between the room and outside temperatures.

Electrical rooms - Ventilated in summer to maintain a maximum of ten (10) degree difference between the room and outside temperatures.

Apparatus Bay - Ventilated in summer to maintain a maximum of ten (10) degree difference between the room and outside temperatures.
Winter Indoor Conditions:
Shall be in accordance with UFC 3-410-01
55°F (Mechanical, Electrical Rooms and Apparatus Bay)

10.3.2 Site Utility Information

- Electric: 0.0827 $/kWh. (U.S. Energy Information Administration Industrial Feb 2017 rates)
- Natural Gas: 0.6114 $/therm (U.S. Energy Information Administration Industrial Feb 2017 rates)

10.3.3 Ventilation

Minimum outdoor supply rates for occupants shall meet the minimum requirements of ASHRAE 62.1, “Ventilation for Acceptable Indoor Air Quality.” Designer shall evaluate the systems for achieving LEED IEQc2, "Increased Ventilation" by increasing ventilation rates to thirty (30) percent above minimum ASHRAE 62.1 rates. Mechanical ventilation shall be provided for all normally occupied areas. Interior spaces shall be designed as non-smoking. Exhaust ventilation rates for bathrooms, showers and locker rooms shall meet the requirements of the International Mechanical Code and shall not be less than two (2) cfm/sqft of floor area. HVAC related background sound in rooms shall not exceed the ASHRAE Applications Handbook “Design Guidelines for HVAC-Related Background Sound in Rooms.” Refer to ASHRAE 62.1 for all other ventilation standards. Low leakage dampers shall be installed with a maximum leakage rate of three (3) cfm/sqft of area at a differential pressure of one (1) in.wg. for all outside air intake, exhaust, or relief discharge in accordance with UFC 4-010-01.

Provide an “Emergency Air Distribution Shut-off” button which shall shut off all sources of ventilation air and exhaust air in the facility to comply with UFC 4-010-01. One (1) Emergency Air Distribution Shut-off button shall be located on each floor of the facility. The shut-off buttons shall be located near the mass notification system panels, and shall be coordinated with the user and base personnel. Emergency Air Distribution Shut-off buttons shall be labeled and protected by a cover to prevent accidental initiation and shall be in a controlled accessible locations.

10.3.4 Cooling Systems

10.3.4.1 System Description

Cooling for administrative areas and other areas authorized to have air conditioning shall be provided by chilled water and or direct expansion, as identified by the life cycle cost analysis. Use of CFC and HCFC refrigerants is prohibited. The heat rejection equipment shall be located in the utility yard on concrete pads in accordance with UFC 4-010-01.

Chiller efficiency shall be in the upper twenty-five (25) percent for similar equipment manufactured and shall be a minimum COP of 3.0 unless otherwise
indicated by ASHRAE 90.1-2010. Chiller shall be complete with water flow switch. Chilled water system shall be complete with chilled water pumps, air separator, shot feeder and bladder type compression tank. Chiller shall be listed in the AHRI “Applied Directory of Certified Products.” A factory applied phenolic coating will be applied to chiller coils subject to corrosion from exposure to outside air. Utilize primary/secondary pumping system for facility chilled water distribution. Chilled water pumps shall be located in the first floor mechanical room. A decoupling bypass shall be sized for primary chilled water flow for primary/secondary systems. Two-way valves shall be utilized for capacity control in the secondary loop. Two-way valve shall be provided on a bypass line for secondary loop.

Chilled Water Pumps shall be variable speed centrifugal circulating pumps with motor, motor starter, and motor enclosure conforming to the appropriate NEMA standards. Provide suction diffusers on base-mounted pumps. Pump motor efficiencies shall meet or exceed that listed in EPAct 2005, for FEMP or Energy Star, or as listed in ASHRAE 90.1-2010, whichever is greatest. Select pumps so that the operating point on selected impeller curve shall lie approximately two-thirds of the distance along the curve between the shutoff head and maximum flow of the specific pump curve, and not more than five (5) percent below, point of maximum efficiency for impeller. The impeller diameter shall not exceed eighty-five (85) percent of the cut-water diameter of the pump volute.

Insulate chilled water pumps with two (2) inch thick flexible unicellular insulation. Insulate pumps by forming a box around pump housing, drive shaft, and piping. Apply insulation to inside surfaces of twenty (20)-gage galvanized sheet metal boxes having openings for drive shaft and pipes. Construct box to be easily disassembled to facilitate pump maintenance.

Direct expansion equipment shall not be selected for use in high humidity locations without outside air preconditioning systems. Consider hot gas reheat or other methods for additional latent capacity on cooling coils. Condensing units shall be interlocked with indoor evaporator equipment. Compressors shall be provided with short-cycle timers to prevent early compressor failure.

Provide dedicated cooling systems for communications rooms, LAN hub, and all other rooms that cannot tolerate any down time or are so continuous in operation that it is logical to have them operate separately from the main building system. Consider strategies to control static electricity, such as humidifiers to prevent electronic equipment damage.

10.3.4.2 Sizing Requirements

The capacity of the cooling equipment shall be selected based upon the maximum needs of the facility plus up to an additional 10 percent safety factor.

Chilled water system shall be designed for a minimum of a 14°F chilled water temperature difference.

A minimum of two hydronic water pumps shall be sized for one-hundred (100) percent of the total system capacity and shall operate in parallel in a lead-lag arrangement for the primary and secondary pumping systems.
Direct Expansion (DX) Systems shall be designed where piping is sized and designed for the actual piping layout, including oil traps, double risers, specialties and pipe and tube sizes to ensure proper operation and compliance with warranties of connected equipment.

10.3.4.3 Piping

Hydronic water piping shall be installed to distribute water to the air handling units, fan coil units, computer room units and any other equipment requiring cooling water. Piping shall be sized to have pressure loss of less than four (4) feet per one hundred (100) feet of pipe and velocity less than six (6) feet per second. Provide calibrated balancing valves with differential test ports and pressure test/temperature ports (Pete’s Plugs) for flow measurement at each coil and at the end of each loop. Provide pressure gages and thermometers at inlet and outlet of each air handling unit coil, fan coil unit, computer room unit, and any other heat exchanging devices. Pipe hangers and supports shall conform to referenced MSS Standards. Provide manual air vents at high point in systems. Ball valves shall be used for two (2) inches and smaller shutoff and butterfly or plug valves used for two and one-half (2 1/2) inch and larger sizes.

Above ground piping shall be electric resistance welded or seamless Schedule 40 black steel conforming to ASTM A53 with welded, screwed, flanged or copper piping, ASTM B88, type “L” with wrought copper or grooved fittings. Provide dielectric fittings between different materials.

Provide calibrated balancing valves sized per manufacturer’s recommendation.

Provide full thermal insulation and pipe identification system for piping systems. Insulation shall be cellular glass insulation conforming to ASTM C 552-00 and UFGS 23 07 00 for aboveground piping. Provide thickness as recommended by the manufacturer for the application. All insulations joints seams shall be sealed. Provide with an all-purpose jacket vapor-barrier, and PVC covers for fittings. Provide aluminum jacket for exposed piping indoors in high abuse areas below eight (8) feet and for all exposed piping outdoors. Exterior piping shall have weatherproof jacket. Insulation shall comply with NFPA 90A for UL flame spread and smoke developed ratings.

Chilled water piping systems shall be reverse return where multiple floors are served with each floor having a circuit setter.

Refrigerant (DX) piping shall be installed distribute refrigerant to the air handling units, fan coil units, computer room units and any other equipment requiring DX cooling. Size piping and design actual piping layout, including oil traps, double risers, specialties, and pipe and tube sizes to accommodate, as a minimum, equipment provided, elevation difference between compressor and evaporator, and length of piping to ensure proper operation and compliance with warranties of connected equipment.

Refrigerant piping insulation and related materials perform, as determined by testing identical products according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
Refrigeration piping insulation Installed Indoors shall have a Flame-spread index of 25 or less, and smoke-developed index of 50 or less. Insulation Installed Outdoors shall have flame-spread index of 75 or less, and smoke-developed index of 150 or less.

10.3.5 Heating Systems

10.3.5.1 System Description

Heating for the building shall be provided by hot water boilers as determined by life cycle cost analysis. VAV terminal units shall be provided with heating hot water reheat coils as determined by life cycle cost analysis. Hydronic fan-coil units or other systems may be selected to heat the spaces, as determined by the life cycle cost analysis. All systems selected shall provide uniform, consistent, and comfortable space conditions. Equipment efficiencies shall meet or exceed requirements of ASHRAE 90.1-2010.

Gas-fired boiler shall be high efficiency, corrosion resistant, condensing type rated at 50 psi (minimum). Gas-fired boiler shall have an efficiency of 92 percent or higher at design operating conditions and shall be installed within a mechanical room. Outdoor boiler installation is prohibited. The boiler shall be equipped with an ASME-rated pressure relief valve. Provide a condensate neutralization system. The boiler water shall be treated to reduce corrosion and scaling and shall be provided with filter type chemical shot feeders. The water treatment system shall be located within the mechanical room. A reduced pressure principal type backflow preventer shall be provided for the boiler makeup water line. The boiler shall be mounted on and anchored to a reinforced concrete housekeeping pad with a minimum of 6-inch clear space from the boiler to the edge of the pad. Boiler intake and exhaust vents shall be provided in accordance with NFPA 54. Heating hot water boilers shall have a maximum NOx emission level of 20 parts per million. For condensing boilers, intake vents shall be constructed of pipe materials recommended by boiler manufacturer, and exhaust vents shall be AL29-4C stainless steel. Heating water boilers shall be vented to the outside per International Mechanical Code requirements. Natural gas piping for the heating water boilers shall be installed in accordance with NFPA 54 and the International Mechanical Code. Provide boilers with a safety shutdown switch in accordance with ASME CSD-1. Refer to the plumbing section of this specification for natural gas system requirements.

Utilize primary/variable speed secondary pumping system for facility heating hot water distribution. Hot water pumps shall be located in the mechanical room. A decoupling bypass shall be sized for primary heating hot water flow for primary/secondary systems.

Heating Hot Water Pumps shall be variable speed centrifugal circulating pumps with motor, motor starter, and motor enclosure conforming to the appropriate NEMA standards. Provide suction diffusers on base-mounted pumps. Pump motor efficiencies shall meet or exceed that listed in EPAct 2005, for FEMP or Energy Star, or as listed in ASHRAE 90.1-2010, whichever is greatest. Select pumps so that the operating point on selected impeller curve shall lie approximately two-thirds of the distance along the curve between the shutoff head and maximum flow of the specific pump curve, and not more than five (5) percent below, point of maximum efficiency for impeller. The impeller
diameter shall not exceed eighty-five (85) percent of the cut-water diameter of the pump volute.

Above ground piping shall be electric resistance welded or seamless Schedule forty (40) black steel conforming to ASTM A53 with welded, screwed, or copper piping, ASTM B88, type "L" with wrought copper fittings. Provide dielectric fittings between different materials.

Provide calibrated balancing valves sized per manufacturer’s recommendation.

Provide full thermal insulation and pipe identification system for piping systems. Provide cellular glass insulation conforming to ASTM C552-00 and UFGS 23 07 00 for aboveground piping. Provide thickness as recommended by the manufacturer for the application. Provide with an all-purpose jacket vapor-barrier, and PVC covers for fittings. Provide aluminum jacket for exposed piping indoors in high abuse areas below eight (8) feet and for all exposed piping outdoors. Exterior piping shall have weatherproof jacket. Insulation shall comply with NFPA 90A for UL flame spread and smoke developed ratings.

Provide gas-fired infrared heaters for heating in the Apparatus Bay. The heater's emitter tube shall operate at an average surface temperature of 700°F - 800°F and shall be made of 16-gauge calorized aluminized steel or calorized titanium alloy Alumi-Therm steel. The emitter tube shall be calorized for longevity, corrosion resistance, high humidity, harsh environment installations, and high radiant efficiency. The system shall have a radiant efficiency (or radiant coefficient) of 58%. The heaters shall operate under negative pressure (pull through system) at all times during operation to preclude the escape of combustion gases inside the building. The heater exhaust assembly shall include a 120-volt draft inducer. The draft inducer shall be equipped with a permanently lubricated, totally enclosed, and shielded, fan cooled, and heavy-duty ball bearing motor. The motor shall not require maintenance or lubrication for the life of the unit. The draft inducer assembly shall be capable of rotating 90° for vertical or horizontal venting. The positive pressure (or push through system) tube heaters shall not be accepted. The heaters shall be equipped with a step opening and modulating two stage gas controls for negative pressure operation. The heaters shall be controlled by a digital thermostat with adjustable set points, monitored, and controlled by the buildings DDC. The 24V thermostat connection shall be external to the control box with quick slip on terminal connection for high/lo operation. Modulating two stage control systems operating under positive pressure will not be accepted. Heaters shall be equipped with a 24-volt direct spark ignition with automatic 100% shutoff system. The heater controls shall include a pressure switch designed to provide complete unit shutoff in the event of combustion air or flue blockage. The heaters shall be equipped with an on-line diagnosis monitoring light system. The four lights shall monitor the power to the heater, insufficient airflow, and the spark ignition/ the combination gas valve operation for the single stage as well as the second stage. The heaters shall utilize factory assembled, highly efficient aluminum reflectors with a reflectivity of 97.5%. The reflector ends shall be enclosed for maximum radiant heat output and minimum convection losses. The heaters shall be factory assembled and tested. The heaters shall not require any field adjustments to assure maximum performance and safety. The heater's burner shall consist of a heavy-duty cast iron atmospheric burner. The flame characteristics shall be highly luminous for maximum radiant heat transfer.
through the emitter tube wall. The heaters will be CSA design certified for vertical or horizontal venting, maximum 75 feet horizontal sidewall venting, and for 50 feet outside combustion air inlet duct. There shall be no draft hoods. The combustion chamber shall be totally enclosed. Heaters shall operate satisfactorily in any position from horizontal to forty-five degrees (45°) from horizontal, and incline mounted up to 2/12 pitch, and shall be suitable for vented/indirect vented applications. Heaters shall be designed to operate on natural gas.

10.3.5.2 Sizing Requirements

The capacity of the heating equipment shall be selected based upon the maximum needs of the facility plus up to an additional fifteen (15) percent safety factor.

Heating hot water system shall be designed for a minimum of a 30 degrees F heating hot water temperature difference.

All hydronic loops shall be equipped with a minimum of two water pumps each be sized for one hundred (100) percent of the total system capacity.

10.3.6 Central Supply Air Systems

10.3.6.1 Ventilation Air

Total ventilation air shall be adequate to ensure positive pressurization of the building with respect to the exterior, with exhaust fans operating.

DOA(s) shall precondition the air using hydronic heating and cooling coils. The outside air shall be dehumidified to a maximum dewpoint of 53°F. Provide AHRI 430 and AMCA 210 certified fans and AHRI 410 certified coils. Unit shall be rated as an entire assembly. Sound rating shall conform to ANSI/ASHRAE 68. For casing, provide a minimum of two (2)-inch thick insulation, one and one-half (1-1/2) lbs. per cubic foot density sandwiched between two sheets of solid galvanized steel, except that plug fan sections and discharge plenum sections shall be insulated with minimum four (4) inch thick, one and one-half (1-1/2) lbs. per cubic foot density insulation. Coils shall be copper tube, copper fin type with stainless-steel frames provided by the air handling unit manufacturer. Units shall have factory phenolic coating applied to coils. Provide positive-draining, stainless-steel drain pans. Units over six (6) feet in width shall drain to both sides of unit. Drain pan shall extend minimum eighteen (18) inches beyond cooling coil. Provide a minimum of twenty-four (24) inch access section with door upstream of each coil section. Maximum cooling coil face velocity shall be limited to five hundred fifty (550) fpm. Configure units with access between all sections, with a large access after the cooling coil. Provide smoke detectors in the supply per NFPA 90A. Install the AHUs on six (6)-inch high concrete pads or suspended in the mechanical rooms. Concrete pad shall extend a minimum of six (6) inches beyond the AHU footprint on all sides unless otherwise noted and have chamfered edges.

10.3.6.2 Air Handlers
Provide modular construction, double wall air handling units. Provide AHRI 430 and AMCA 210 certified fans and AHRI 410 certified coils. Unit shall be rated as an entire assembly. Sound rating shall conform to ANSI/ASHRAE 68. Provide a minimum of two (2) inch thick insulation, one and one-half (1 1/2) pounds per cubic foot density sandwiched between two sheets of solid galvanized steel, except that plug fan sections and discharge plenum sections shall be insulated with minimum four (4) inch thick, one and one-half (1 1/2) pounds per cubic foot density insulation. Coils shall be copper tube, aluminum fin type with stainless steel frames provided by the air handling unit manufacturer. Units which have outside air at twenty-five (25) percent of total supply air or more shall have factory phenolic coating applied to cooling coils. Provide positive-draining, stainless steel drain pans. Units over six (6) feet in width shall drain to both sides of unit. Drain pan shall extend minimum eighteen (18) inches beyond cooling coil. Provide a minimum of twenty-four (24) inch access section with door upstream of each coil or heating section. Maximum cooling coil face velocity shall be limited to five hundred fifty (550) fpm. Configure units in a draw through arrangement with access between all sections, with a large access after the cooling coil. Provide Variable Frequency Drives (VFD’s) for AHU fans. Provide smoke detectors in the supply and return ductwork per NFPA 90A. Install the AHU’s on six (6) inch high concrete pads in the mechanical rooms. Concrete pad shall extend a minimum of six (6) inches beyond the AHU footprint on all sides unless otherwise noted and have chamfered edges.

10.3.6.3 Ductwork

Ducts shall be galvanized steel with G90 coating. Ducts shall be designed, constructed and installed accordance with SMACNA Standards. Provide external FSK foil faced wrap insulation or rigid duct insulation for supply and outside air ducts to provide a U-value less than 0.165 BTU/sq. ft. - °F. Internally lined duct is prohibited except in return air transfer boots. Duct systems shall not be installed underground. Flexible ducts shall comply with NFPA 90A and UL 181 and be limited to five (5) foot maximum length and flexible elbows shall be limited to less than ninety (90) degrees total bend. Only one section of flexible duct is allowed for each diffuser. All ninety (90) degree elbows shall be constructed from hard duct. Turning vanes shall be provided in duct changes of direction with non-radius elbows.

In areas where the ducts are exposed, provide double wall round spiral seam duct with insulation in the cavity between inner and outer walls. Fiberglass duct shall not be used. Size all exhaust, return, outside air, and low-pressure supply ductwork utilizing the static regain method for pressure drop rating of 0.08 inch static pressure per one hundred (100) feet of duct. Medium-pressure supply ductwork shall be sized for maximum pressure drop of 0.25 inch static pressure per one hundred (100) feet of duct and a maximum velocity of two thousand (2,000) fpm.

Do not use scoops in the ductwork for extraction of air to branch lines. Use forty-five (45) degree leading edge takeoffs with volume dampers.

Bends in rigid ductwork shall be at a minimum radius to diameter ratio of one and one-half (1-1/2). Each duct branch shall be fitted with a manual balancing damper. All ductwork shall be located above slab, supported from roof structures. Return air shall be ducted to unit from return ducts routed...
into return air plenum space. Ceiling return air plenums can be used for administration or support areas. Duct return shall maintain NC-25 requirements at rooms for general occupancy space. Leak test ductwork in accordance with SMACNA Duct Leakage Test Manual. Total duct leakage shall not exceed two (2) percent of total system airflow (cfm). Ceiling access shall be provided to all devices or areas that may require periodic inspection, including but not limited to balancing devices, motor operated dampers, airflow measuring stations, smoke/fire dampers, etc. Provide permanent test ports in ductwork at static pressure test points and DDC sensor locations. Provide manual balancing dampers at each take-off to a diffuser, register, or grille, located as far away from the air outlet as practical.

Provide minimum size eight (8) inch by eight (8) inch access doors in ducts to allow access to fire dampers, coils, dampers and other items requiring service.

Fire dampers or combination fire/smoke dampers shall be provided for all rated walls, chase walls and corridors as required by the International Building Code.

The following materials shall be used:

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<th>Ductwork</th>
<th>System Material</th>
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<td>Galvanized Steel – Insulated</td>
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<tr>
<td>Return Air</td>
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<tr>
<td>Exhaust Air</td>
<td>Galvanized Steel – Insulated</td>
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Ductwork Accessories

For low-pressure and medium-pressure rectangular duct systems, use forty-five (45) degree leading edge entries into branches from the main duct. Provide manual volume dampers in each branch take-off from the main duct to control air quantity. Dampers shall conform to SMACNA Duct Construction Standards. Provide out of the airstream, dynamic rated, curtain type fire dampers per UL 555 where required. Provide smoke dampers rated per UL 555S where required by International Building Code. Provide outdoor air intake and exhaust louvers of aluminum designed to prevent the entry of rain or snow. Louvers shall be designed to meet the wind load rating for the building as indicated in the structural chapter. Intake plenums shall have bottom panel sloped towards the louver opening to drain any water that comes through the louver. Intakes shall be a minimum of twenty-five (25) feet from the nearest exhaust outlet and exterior mechanical equipment and minimum of ten (10) feet above the ground per ATPF requirements. Provide birdscreen at all louvers. Provide a low-leakage motorized damper at each outside air intake, exhaust discharge and relief discharge. Duct balancing devices shall be heavy duty, opposed blade dampers with sleeved bearings. The manual actuator shall extend through the insulation with extension standoff. Actuator shall have locking quadrant for setting. Provide balancing dampers at each branch take-off from a main duct in supply, return and exhaust systems.
10.3.6.4 Diffusers, Registers and Grilles

Diffusers, registers and grilles shall be selected as appropriate for the application and should be consistent throughout the building. Perforated face diffusers shall not be allowed. Select to ensure maintaining noise levels below specified criteria. Ductwork behind registers and grilles shall not be visible or the ductwork shall be painted black. All diffusers and grilles shall be aluminum to prevent corrosion and shall be painted to match interior. Provide lay-in, surface mount type supply diffusers in all rooms based on the ceiling type, served by air handling units. Each room will require a lay-in, surface mount return air grille open to the plenum ceiling with the exception of the restrooms, locker rooms, and janitor’s closets.

10.3.6.5 Terminal Equipment

VAV terminal units shall be pressure independent-type rated per AHRI 880. Box shall be fully insulated per NFPA 90A and UL 181 with a minimum one-half (1/2) inch thick, one and one-half (1-1/2) pounds per cubic foot density glass fiber. Provide insulation on all areas of the box that are subject to sweating, including inlet and outlet connection and heating coil casings. VAV box shall include sound attenuators if required to meet noise constraints. Locate boxes to be accessible for maintenance and replacement. Access panel shall be provided for reheat coils maintenance and cleaning. Provide standard VAV boxes with heating hot water reheat coils for internal spaces and fan powered VAV boxes with reheat for perimeter spaces. Each VAV terminal shall have DDC control with Energy Management and Control System (EMCS) interface. VAV boxes shall not be allowed to fully shut-off. Controls shall be installed by VAV box manufacturer.

A variable refrigerant flow (VRF) direct expansion (DX) system is not allowed.

10.3.7 Toilet Exhaust Systems

10.3.7.1 System Requirements

Rooms shall be exhausted via an inline or roof mounted exhaust fans with heavy gauge backdraft damper. Exhaust fans shall be V-belt driven by belt drives sized for one hundred-fifty (150) percent of design power requirement. Provide adjustable sheaves for fans up to five (5) horsepower. Small fans not available with V-belt drive may be directly driven. Provide direct drive type exhaust fans with electronic speed controller. Motor selection shall permit non-overloading operation at all conditions. All fans shall be provided with vibration isolators to decouple the motor assembly from the fan housing. Suspend inline fans with vibration isolators from building structure. Fans shall be AMCA 210 certified, with AMCA seal. Fan bearings shall have a minimum average life of two hundred thousand (200,000) hours at design operating conditions. Locate fans such that they are readily accessible for maintenance.

10.3.8 Apparatus Bay Exhaust Systems

The Apparatus Bay shall be negatively pressurized relative to adjacent occupied spaces. A vehicle attached exhaust containment systems shall not be
used. Provide a Fire Apparatus Vehicle Exhaust Removal System (FAVERS) in compliance with NFPA 1500, ASHRAE 62.1, and UFC 4-730-10. to eliminate 100% of vehicle exhaust emissions. Make-up air should be distributed to minimize drafts and be introduced above apparatus level since diesel exhaust is heavier than air. In this way, the make-up air flow downward will assist in pushing the exhaust fumes out the Apparatus bay doors when open. Exhaust system shall include carbon monoxide, nitrous oxide, and occupancy sensors to control exhaust rates and alarms. Number and location of air contaminate sensors shall be installed per manufacturers recommendations. Air sensing system shall have audible and visual alarms for alarm-1 (warning) and alarm-2 (danger) carbon monoxide and nitrous oxide levels.

Exhaust system shall modulate to full design flow upon emergency call requiring vehicle response and run at full design flow for a set period of time (set by designer).

Apparatus Bay shall be exhausted via inline exhaust fans with heavy gauge backdraft damper. Exhaust fans shall be V-belt driven by belt drives sized for one hundred-fifty (150) percent of design power requirement. Provide adjustable sheaves for fans up to five (5) hp. Small fans not available with V-belt drive may be directly driven. Provide direct drive type exhaust fans with electronic speed controller. Motor selection shall permit non-overloading operation at all conditions. All fans shall be provided with vibration isolators to decouple the motor assembly from the fan housing. Suspend inline fans with vibration isolators from building structure. Fans shall be AMCA 210 certified, with AMCA seal. All exposed fan components shall be aluminum or 316 stainless steel. Fan bearings shall have a minimum average life of two hundred thousand (200,000) hours at design operating conditions. Locate fans such that they are readily accessible for maintenance.

Exhaust duct work shall be stainless steel. Exhaust intakes shall be distributed throughout the Apparatus Bay to ensure vehicle exhaust is removed from the Apparatus Bay in its entirety. Exhaust intakes shall be positioned near apparatus exhaust locations to limit the spread of vehicle exhaust throughout the Apparatus Bay. Exhaust air must be ducted out of the building via wind driven rain protected exhaust stack.

Make-up air should be distributed so as to minimize drafts and be introduced above apparatus level since diesel exhaust is heavier than air. In this way, make-up air flow downward will assist in pushing the exhaust fumes out of the Apparatus Bay doors when open. Make-up air must be protected by louvers in compliance with section 1.12.3.5.4 of this specification.

10.3.8.1 Apparatus Bay Exhaust Flow Rates

Apparatus Bay exhaust system shall be sized and designed such that carbon monoxide and nitrous oxide levels never raise above the upper limit levels (detailed below) and are below the fifteen (15) minute limit levels (detailed below) after a maximum of 15 minutes of operation after running vehicles have departed the Apparatus Bay.

Upper Limit: Carbon Monoxide – 50 ppm; Nitrous Dioxide – 1 ppm

15 Minute Limit: Carbon Monoxide – 25 ppm; Nitrous Dioxide – 0.2 ppm
Maximum exhaust flow rate shall not be less than the sum of all vehicle exhaust flow rate at room temperature.

Maximum exhaust flow rate shall not be less than airflow required to ventilate the Apparatus Bay to within 10 degrees F of outside air temperature.

10.3.8.2 Apparatus Bay Apparatus Operations

Specified Apparatus Bay conditions must be maintained before, during, and after apparatus operations detailed within this section. Contractor is required to test that the Apparatus Bay Exhaust System meets the requirements detailed in Section 1.12.3.5.8 of this specification for these apparatus operations as a part of the required building commissioning. Required support from the Fire Department for apparatus operation must be coordinated through USACE. The three apparatus operational scenarios are:

- **a. Full Crash Response** - Responding Apparatus: P-34 (RIV-3), P-19H (C-6), P-23 (C-5), P-26 (T-13), CH-2 King Cab, P-22 (E-9), P-28 (R-7).

- **b. Structural Response** - Responding Apparatus: CH-2 King Cab, P-22 (E-9), P-22 (E-4), P-28 (R-7).

- **c. Medical Response** - Responding Apparatus: CH-2 King Cab, P-22 (E-9), P-28 (R-7).

For each operational scenario only the doors for the identified responding apparatus shall be open. The identified responding apparatus shall all run simultaneously for three (3) minutes before departing the Apparatus Bay. Once the apparatus have departed all doors to the Apparatus Bay shall be

10.3.9 Dryer Vent System

Provide dryer vent for dryers. Vent materials, routing, and installation shall comply with the International Mechanical Code and dryer manufacturer's requirements. Route vent to exterior and terminate with wall cap. Limit length of vent to that recommended by dryer manufacturer or include booster fan. Provide lint trap and access point for cleaning vent as required.

10.3.10 Commercial Kitchen Exhaust Systems

A Type 1 commercial kitchen exhaust hood shall serve the kitchen range and oven in the kitchen. Exhaust system shall be designed per NFPA 96 and ASHRAE 154. Direct make-up air serving exhaust hood may be unconditioned. Provide a wet chemical automatic fire extinguishing systems for the kitchen exhaust hood.

10.3.11 Ductwork

Ductwork shall be constructed and installed per SMACNA standards and meet the requirements of the centralized supply air system and shall be insulated.
10.3.12 Filtration Rates

All areas minimum – thirty-five (35) percent efficiency MERV eight (8) prefiltrers and eighty-five (85) percent efficiency MERV thirteen (13) final filters.

10.3.13 Exhaust Rates

a. Restrooms Greater of 75 cfm per water closet/urinal or 2 cfm per sq. ft.
b. Janitor’s Closets Minimum 1 cfm per sq. ft.
c. Locker Rooms Minimum 2 cfm per sq. ft.
d. Apparatus Bay Per Section 10.3.5.6.2 of this Specification

10.3.13 Permitting

The Contractor shall be responsible for all applicable environmental permitting and testing concerning the mechanical systems, diesel generator set, including coordination of the permitting with the Contracting Officers Representative.

10.3.14 Miscellaneous Information

Refrigerant Ozone Depletion Factor: 0.05 or Lower
Seismic Design: See Structural Section
Outside Air Criteria: Designed to ASHRAE Standard 62.1 requirements

10.4 GENERAL HVAC EQUIPMENT

10.4.1 Material and Equipment

All materials and equipment shall be new and free from defects. Materials and equipment shall be proven to be satisfactory in commercial or industrial use for two (2) years prior to the bid opening. The prior two (2) year satisfactory use shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been for sale on the commercial market through advertisements, manufacturer’s catalogs, or brochures during the two (2) year period. All materials in the same category shall be the product of a single manufacturer (i.e., fans, gate valves, globe valves, sprinkler heads, etc.). All equipment shall be located to allow a minimum of three (3) feet of clearance around all access/service panels. Clearance around electrical and electrical panels shall be provided in accordance with the National Electrical Code (NEC). Access panels designed for removal and/or replacement of parts, which require greater than three (3) feet for this activity, shall be provided with sufficient clearance to remove the largest and/or longest part of the assemblage.

All access panels shall be appropriately labeled with stencils, or a minimum of three (3) inch tall letters. Building mechanical equipment shall be held in place with anchor bolts set in “green” concrete and held in place by plywood templates until the concrete has cured. Housekeeping pads shall be provided for all other floor mounted mechanical equipment. Contractor shall provide all safety equipment required to operate and install the equipment. Air handling units, fan coil units, or other pieces of air conditioning
equipment producing condensate, shall be provided with stainless steel or aluminum drip pans (insulated where required, such as in non-conditioned spaces, to prevent sweating) under the coils, with piping routed to floor drains. Piping shall include p-traps configured for the airflow arrangement at the cooling coil, i.e. blow through or draw through arrangement, and cleanouts. Provide secondary containment for units suspended above ceilings and/or equipment, for overflow of condensate with leak detection alarms and shut-off switches to shut down the air handling equipment, where permitted, and to notify maintenance personnel of potential clogs.

All exterior mechanical equipment shall have painted finishes that pass a salt spray test conducted per ASTM B117 for duration of at least one thousand (1,000) hours.

10.4.2 Maintainability

System maintainability is a critical, but often overlooked, aspect of a facility. The contractor shall provide for maintenance of all items in this facility. This shall be coordinated with all systems (i.e., it is unacceptable planning to install lights, then block access to them with pipes and conduit). The design analysis and O&M manuals shall address the features/procedures described below in detail.

10.4.2.1 Routine Maintenance (Filters, Lights, Lubrication, Inspection, etc.)

This type of maintenance requires the most frequent and easiest access. The need for portable or fixed ladders (no more than ten (10) ft tall) should be minimized and, where needed, ensure that space is available to use them properly.

10.4.2.2 Component Replacement (coils, fans, motors, boiler/chiller tubes, etc.)

This type of maintenance requires less frequent access, but when the need arises, this work must be done quickly and efficiently, since normally this has the greatest impact on the User. Everything needed to perform these tasks shall be provided (work platforms, equipment access hatches/panels, hoists, cranes, freight elevators, etc.)

10.4.2.3 Equipment Replacement (Air Handling Unit, Switchgear, Chillers, etc.)

Equipment replacement seldom occurs and is based on equipment failure and useful life evaluation so permanent equipment to support these tasks is not required. However, equipment replacement access must be accommodated and the facility shall include items such as removable wall sections, access routes, etc. to allow replacement with the least amount of collateral damage.

10.4.2.4 Maintenance Features and Procedures

Ensure that all equipment, including filters, controls, control valves, backflow preventers, and coils are easily accessible and have ample room for servicing, inspection, and cleaning. Isolation valves shall be provided for each terminal unit, zone, branch, long runs, etc. as necessary for proper isolation of equipment and components, and maintenance. As a minimum, process systems shall be provided so that no more than one (1) floor of the facility

SECTION 01 10 10 Page 81
need be shut off to work on the distribution system. Coils shall be fully removable without requiring demolition of any building components. Piping configuration at all coils shall include unions or flanges to facilitate easy coil removal.

The contractor shall ensure that all maintenance and repair activities can be performed safely and efficiently without needing to bring in extensive material handling (i.e. A-frames) or access equipment (i.e. ladders).

Locate all valves, pumps, strainers, controls, sensors, and other items requiring regular service such that they may be maintained from floor level when possible. If not accessible from floor level, then permanent maintenance access shall be provided.

Ensuring maintainability requires careful coordination of piping, conduit, etc., to avoid blocking access by cranes, hoists, ladders, etc. This shall be a priority in both the design and construction, recognizing this will generally result in longer runs of pipe/conduit.

All above ceiling utilities (cable trays, ductwork, junction boxes, utility piping, etc.) shall be accessible for a worker to reach two sides plus the service side with a minimum three (3) feet of clearance (greater if required for component maintenance/disassembly).

Permanent maintenance access shall be provided for all suspended mechanical equipment. Refer to the Architectural section for requirements. Provide catwalks for all equipment requiring servicing located above ceilings.

Water treatment systems for chillers and boilers shall be designed and installed such that chemical handling is accomplished at floor level.

10.4.3 Operation and Maintenance Manual

Operations and Maintenance Manuals – Contractor shall provide Operation Manuals, Maintenance Manuals and spare parts inventory lists for each piece of mechanical equipment. Contractor shall furnish control diagrams as part of as-built documentation. Refer to Section 01 10 12 for requirements.

10.4.4 Training

Contractor shall provide operator training for all systems for which an operation and/or maintenance manual is provided. In addition, the Contractor shall provide video tapes of the training sessions. Refer to Section 01 10 12 for additional requirements.

10.4.5 Spare Parts

Contractor shall replace all filters in all systems at building occupancy by the user, plus one additional set of replacement filters shall be provided for all systems. Contractor shall provide replacements for a minimum of ten (10) percent of all belts, pulleys, flush valves, sprinkler heads, and bearings in all sizes provided.
10.4.6 Energy Conservation

Mechanical system designs shall comply with UFC 3-400-01. Energy consumption for the buildings shall meet the requirements of UFC 1-200-02, and the requirements of ASHRAE 90.1-2010. UFC 1-200-02 requires that this project must achieve a 30 percent reduction of the energy consumption levels of the ASHRAE 90.1 Appendix G baseline building unless not life cycle cost effective. It has been shown that achieving the 30% energy savings required by UFC 1-200-02 is not life cycle cost effective. This project must achieve a minimum of 12 percent reduction of the energy consumption levels of the ASHRAE 90.1 Appendix G baseline building. This project shall comply with all mandatory provisions of ASHRAE 90.1 and the energy consumption level calculations shall be calculated in accordance with ASHRAE 90.1 Appendix G Performance Rating Method. The 2010 version of ASHRAE 90.1 shall be used in the UFC 1-200-02 compliance calculations as indicated in the mechanical references section of this section. Energy savings shall be calculated in accordance with UFC 1-200-02. Calculations shall be performed using a computer program conforming to ASHRAE 90.1 Appendix G requirements. The energy usage calculations for the building shall include space cooling, space heating, domestic water heating, ventilation, lighting loads, and all process loads. Process loads shall be modeled consistently for all calculations. Design submissions of the building energy analysis shall include complete input and output data as indicated in RFP Section 01 10 12 DESIGN AFTER AWARD. Input and output data shall show that all requirements of ASHRAE 90.1 have been modeled accurately and results are justified. Submission shall meet the requirements of UFC 1-200-02. The energy calculations shall be separate from the building load calculations.

10.4.7 Routing

Routing of piping and ductwork in exposed locations shall be parallel or perpendicular to the building structure. Do not install any HVAC or plumbing piping inside the block cores of exterior concrete masonry unit (CMU) walls. Install all piping in furred walls or in pipe chases.

10.5 TECHNICAL NOTES

10.5.1 Diffusers

All diffusers shall be aluminum louvered face type. Perforated face diffusers shall not be allowed. Diffusers shall be selected and sized to distribute air at specified sound levels.

10.5.2 Zoning

The HVAC systems shall be zoned to provide maximum year-round comfort and to provide adequate flexibility for utilizing areas of the facility during non-work hours. Individual zones shall have the means of independent thermostatic control. Zoning shall consider building orientation, internal loads, function, location, and use of rooms. Unless otherwise specified in the room data sheets, HVAC zoning shall meet the following requirements. Individual zones shall cover up to a maximum of 1,250 square feet in the large open areas, and a maximum of 450 square feet in the hard-walled office areas or a maximum of two hard walled offices, whichever is less. In
addition, each individual office with an area greater than 300 square feet, and each conference/training room shall be its own zone. Each individual dorm room shall be its own zone. Each electrical and communication rooms shall be its own independent zone. Spaces not specifically defined above shall have zones limited to a maximum of 1250 square feet and shall serve a maximum of three spaces. Spaces shall be zoned such that only spaces of similar occupancy and load profile shall be zoned together.

10.5.3 Balancing

The design shall include testing, balancing, and adjusting of all HVAC systems by a certified AABC or NEBB test and balance firm. Reports of all tests shall be submitted for approval to the Contracting Officer’s Representative on standard AABC or NEBB forms. The air distribution system shall be designed to meet specified room criteria (RC) sound levels when operating at maximum space design requirements (Maximum air flow). Fire dampers, smoke dampers, exhaust fans, terminal units, turning vanes, balancing dampers, control dampers, diffusers, registers, grilles, louvers, flexible connections, etc. shall be selected to provide a complete, easy to balance air distribution system free of objectionable noise. Mechanical rooms or penthouses shall not be used as return air plenums.

10.5.4 Piping and Pumps

Piping systems shall be designed to include pipe, fittings, dial type thermometers, gages, pumps, hangers, valves, flexible connectors, balancing cocks, wells for controllers and sensors, strainers, traps, reducing stations, Barco (or equal) type venturi flow meters, etc. as required to provide complete, functional, easy to balance systems. All pumps shall be equipped with inlet and outlet pressure gages. Chilled water piping systems shall be provided with a chemical treatment system complete with feeder and chemicals to control scaling inside the pipe. Pumps shall be selected such that the pump impeller does not exceed eighty-five (85) percent of the “cut-water” diameter of the volute.

10.5.5 Identification

All piping and HVAC systems shall be clearly marked for identification with permanent color coded markers. Identification scheme shall be per ASME A13.1. Pipes and ducts shall be labeled at each valve or damper, control device, tee and elbow and also regular interval not greater than twenty (20) feet between markers. Valves shall be tagged and a laminated valve schedule shall be mounted in the mechanical room.

10.5.6 Valves

Valves shall be provided on supplies to equipment and fixtures. Valves two (2) inches and smaller shall be bronze with threaded bodies for pipe and solder type connections for tubing. Valves two and one-half (2-1/2) inches and larger shall have flanged bodies and bronze trim. Valves shall conform to the following standards:
Description

<table>
<thead>
<tr>
<th>Description</th>
<th>Standard</th>
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<tr>
<td>Butterfly Valves</td>
<td>MSS-SP-67</td>
</tr>
<tr>
<td>Cast-Iron Gate Valves</td>
<td>MSS SP-70</td>
</tr>
<tr>
<td>Cast-Iron Swing Check Valves</td>
<td>MSS SP-71</td>
</tr>
<tr>
<td>Ball Valves, Threaded, Socket-Welding, Solder</td>
<td>MSS SP-110</td>
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<td>Joint and Flared ends</td>
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<td>Cast-Iron Plug Valves</td>
<td>MSS SP-78</td>
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<td>Bronze Gate, Globe, Angle and Check Valves</td>
<td>MSS SP-80</td>
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<tr>
<td>Steel Valves, Socket-Welding and Threaded Ends</td>
<td>ASME B16.34</td>
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<tr>
<td>Cast-Iron Globe and Angle Valves</td>
<td>MSS SP-85</td>
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<td>Vacuum Relief Valves</td>
<td>ANSI Z21.22</td>
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<tr>
<td>Water Pressure Reducing Valves</td>
<td>ASSE 1003</td>
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<tr>
<td>Water Heater Drain Valves</td>
<td>ASSE 1005</td>
</tr>
<tr>
<td>Trap Seal Primer Valves</td>
<td>ASSE 1018</td>
</tr>
</tbody>
</table>

10.5.7 Gages

Provide meters, thermometers and gages for mechanical systems. Provide temperature and pressure gauges at all pumps, chillers, boilers, air handlers, heat exchangers, and other similar devices. Provide pressure gages at all pressure reducing devices, fire sprinkler risers and water service entrances.

10.5.8 Hangers and Supports

Hangers and supports shall be factory fabricated according to MSS SP-58. The manufacturer providing all hangers and supports for the project shall have a licensed engineer providing a certified design for the products provided. Lateral supports shall be provided to prevent piping and ductwork from swaying.

Mount all overhead utilities and other fixtures weighing thirty-one (31) pounds or more (excluding distributed systems such as piping networks that collectively exceed that weight) using either rigid or flexible systems to minimize the likelihood they will fall and injure building occupants. Design all equipment mountings to resist forces of one-half (1/2) times the equipment weight in any horizontal direction and one and one-half (1 1/2) times the equipment weight in the downward direction. These requirements are in addition to necessary seismic requirements.

10.5.9 Strainers

Install strainers upstream of all control valves. Install unions at all pieces of equipment.

10.5.10 Mechanical Vibration Control and Seismic Control

Mechanical Vibration Control and Seismic Control: All vibrating equipment shall be isolated with vibration isolators and flexible connections according to UFC 3-450-01 standards. Design calculations, isolation base designs and seismic restraint designs shall be certified by a qualified professional engineer.
10.5.11 Sound Criteria

Each room shall be designed to be less than the maximum allowable room criteria (RC) levels per ASHRAE Fundamentals Handbook 2013, Chapter 8.

10.5.12 Motors

Single-phase, fractional-horsepower, alternating-current motors shall be NEMA premium efficiency types, corresponding to the applications listed in NEMA MG 11. Polyphase motors shall be selected based on high-efficiency characteristics relative to the applications as listed in NEMA MG 10. Additionally, all polyphase squirrel-cage medium-induction motors with continuous ratings shall meet or exceed energy efficient ratings in accordance with Table 12-10 of NEMA MG 1. Motors used with variable speed drives shall be rated for variable speed drive service.

10.5.13 Variable Frequency Drives

The same manufacturer shall provide all variable frequency drives (VFD’s) used on electric motors for system components. Variable frequency drives shall be solid state, with a Pulse Width Modulated output waveform. The VFD’s shall employ a twelve (12) pulse full wave rectifier, DC Line Reactor, capacitors and insulated, Gate Bipolar Transistors as the output-switching device. The drive efficiency shall be ninety-seven (97) percent efficient or better at full speed and full load. Fundamental power factor shall be 0.98 at all speeds and loads. Enclosure shall be NEMA Type 1, or as dictated by location. The VFD’s shall have a door interlocked disconnect switch and a manual bypass switch, which allows servicing of the drive while the driven equipment is operating. Variable frequency drives must be set-up during testing and balancing procedures. A control interface shall be provided to allow for remote monitoring of VFD functions and alarms from the DDC control system front-end computer.

10.5.14 Metering

Natural Gas and Domestic Water: Contractor shall provide base monitored domestic water and natural gas meters (see the Electrical section for electric meters and their requirements). Utility meters shall all have pulse outputs, data collection capability, and shall have radio frequency (RF) transmitters compatible with the Eglin Air Force Base utility metering system. All meters shall be monitored by the base-wide Energy Management and Control System (EMCS). Metering equipment specifications must be submitted to the Government for approval 6 weeks in advance for frequency management approval.

10.6 CONTROL SYSTEM

10.6.1 General

A complete automatic temperature control system shall be designed by the HVAC design engineer. Provide building level supervisory controllers based on Eglin’s existing Niagara AX Framework Revision 3.6 or later. The building...
level supervisor controllers shall include point-2-point (P2P), Secure Socket Layer (SSL), Web server and embedded WorkBench (WB). The building level supervisor controllers shall contain all building logic and graphics. All graphics and points shall be duplicated in the existing Niagara AX Framework ENS (Enterprise Network Server) using existing workbench software located in Building-696 which will serve as the Web Server for the system. All trended points shall be transferred via P2P to the server for history trending of points. The direct digital control (DDC) shall be a complete system suitable for the heating, ventilating and air-conditioning (HVAC) system. The DDC system shall be BACnet and shall be compatible with the existing Base-wide EMCS. The Contractor is responsible for interfacing the new controls system with the existing Base-wide (EMCS). The Contractor is responsible for any required graphics programming and software modifications and/or upgrades to existing Base-wide EMCS to interface all new DDC/EMCS elements in this new project. Control and network wiring shall be run as high above the ceiling as possible to allow easy removal of ceiling tiles without interference due to control or network wiring. Control wiring in partition walls, structural walls, or run exposed in equipment rooms shall be in dedicated metallic raceways. The design shall include complete control system drawings, complete technical specifications, and commissioning procedures for each control system. Temperature control drawings shall be prepared by the control system vendor and shall be similar to shop drawings. No catalog cuts or specific component information is required on the temperature control system design drawings. The entire control system shall be connected to the existing base wide EMCS network. The HVAC controls design shall include connection to the existing central control and monitoring system through a LAN (provide LAN card in computer) connection, for monitoring and control of the HVAC system as indicated below. Insure a LAN connection is installed in the mechanical room near controls as necessary.

Provide one (1) laptop computer with the latest operating system, CPU, and technology as it relates to laptops. Provide software and USB adapters for each type of DDC field controllers, to include factory installed DDC controllers. The laptop shall be used as a field interface device to monitor, control, and reset any applicable point for any control device. The supplier of the control system shall provide a copy of the operating software and the technical manuals for the control system to the Contracting Officer’s Representative.

Humidity shall be monitored at all times by space mounted humidistats. The control system shall have the capability to initialize the HVAC systems to maintain maximum relative humidity levels, even when in night set-back mode.

10.6.2 Basic System Design Features

The facility mechanical systems shall be designed and controlled with the consideration that maintenance personnel shall not be readily available to address operational problems in a timely manner. To this end, the controls shall provide for automatic restart of all equipment (air and water sides) after interruptions except in the case of safety code requirements for a manual restart.

Zone by zone direct digital logic control of space temperature, scheduling, optimum starting, equipment alarm reporting, and override timers for after-hours usage. A zone is the area served by one Heating, Ventilation, Air-
Conditioning (HVAC) logic controller unit (for each Variable Air Volume (VAV) box, unit ventilator, fan coil, etc.)

The complete system, including, but not limited to terminal unit controllers, global controllers and operator’s terminals, are to reside in auto-restart, without operator intervention, on resumption of power after a power failure. Database are to be stored in global controller memory and should be battery backed up for a minimum of 1 year. All other logic controllers are to utilize Electronically Erasable Programmable Read Only Memory (EEPROM) for all variable data storage.

All building control network requires the use of CEA-709.1 communication protocol over a TP/FT-10 network connected in a doubly-terminated topology. The network should be of one or more local control buses connected to it via routers and servers.

The air handling control systems shall allow for an emergency shutoff capability for a complete shutdown of all air moving equipment and closing of all the outside air, exhaust air, and relief air shutoff dampers.

For Anti-Terrorism/Force Protection issues, consider the following:

1. Outdoor air intakes shall be at least ten (10) feet above the ground.
2. There must be at least one (1) emergency shutoff button per floor in the HVAC control system that can immediately shut down HVAC air distribution throughout the building.

10.6.3 Testing

10.6.3.1 Site Testing

Personnel, equipment, instrumentation, and supplies shall be provided as necessary to perform site testing, adjusting, calibration, and commissioning. The tests shall not be conducted during scheduled seasonal off periods of base heating and cooling systems. Wiring shall be tested for continuity and for ground, open, and short circuits. Ground rods installed by the Contractor shall be tested as specified in IEEE Std 142. Written Government approval of the specific site testing procedures shall be obtained prior to any test. Written notification of any planned site testing, commissioning or tuning shall be given at least 14 calendar days prior to any test.

10.6.3.2 Coordination with HVAC System Balancing

The HVAC control system shall be tuned after all air-system and hydronic-system balancing has been completed, minimum damper positions set and a report issued.

10.6.3.3 Control System Calibration, Adjustment, and Commissioning

Instrumentation and controls shall be calibrated and the specified accuracy shall be verified using test equipment with calibration traceable to NIST standards. Mechanical control devices shall be adjusted to operate as specified. Control parameters and logic (virtual) points including control loop set points, gain constants, and integral constraints, shall be adjusted before the system is placed on line. Communications requirements shall be as
indicated. Control system commissioning shall be performed for each HVAC system. The report describing results of functional tests, diagnostics, and calibrations, including written certification, shall state that the installed complete system has been calibrated, tested, and is ready to begin performance verification testing. The report shall also include a copy of the approved performance verification test procedure.

10.6.3.4 Performance Verification Test

Compliance of the HVAC control system with the contract documents shall be demonstrated. Using test plans and procedures previously approved, physical and functional requirements of the project, including communication requirements shall be demonstrated. The performance verification test procedures shall explain, step-by-step, the actions and expected results that shall demonstrate that the control systems perform in accordance with the sequences of operation. The performance verification test shall not be started until after receipt of written permission by the Government, based on the Contractor's written certification of successful completion of site testing and training.

10.6.3.5 Endurance Test

The endurance test shall be used to demonstrate the specified overall system reliability requirement of the completed system. The endurance test shall not be started until the Government notifies the Contractor in writing that the performance verification test is satisfactorily completed. The Government may terminate the testing at any time when the system fails to perform as specified. Upon termination of testing by the Government or by the Contractor, the Contractor shall commence an assessment period as described for Phase II. Upon successful completion of the endurance test, the Contractor shall deliver test reports and other documentation as specified to the Government prior to acceptance of the system.

The test shall be conducted 24 hours per day, 7 days per week, for 15 consecutive calendar days, including holidays, and the system shall operate as specified. The Contractor shall make no repairs during this phase of testing unless authorized by the Government in writing.

After the conclusion of test, the Contractor shall complete an assessment phase that identifies failures, determines causes of failures, repairs failures, and delivers a written report to the Government. The report shall explain in detail the nature of each failure, corrective action taken, results of tests performed, and shall recommend the point at which testing may be resumed. After delivering the written report, the Contractor shall convene a test review meeting at the job site to present the results and recommendations to the Government. As a part of this test review meeting, the Contractor shall demonstrate that all failures have been corrected by performing appropriate portions of the performance verification test. Based on the Contractor's report and test review meeting, the Government may require that the test be totally or partially rerun. After the conclusion of any retesting which the Government may require, the assessment shall be repeated as if testing had just been completed. The control systems shall allow for an emergency shutoff capability for a complete shutdown of all air moving equipment and closing of all the outside air, exhaust air, and relief air shutoff dampers.
10.7 SPECIFICATIONS

The Contractor shall edit and submit the following UFGS (as a minimum):

13 48 00.00 10 Seismic Protection for Mechanical Equipment

23 00 00 Air Supply, Distribution, Ventilation, and Exhaust Systems
23 05 15 Common Piping for HVAC
23 05 93 Testing, Adjusting, and Balancing of HVAC Systems
23 07 00 Thermal Insulation for Mechanical Systems
23 08 00.00 10 Commissioning of HVAC Systems
23 09 23.13 20 BACnet Direct Digital Control for HVAC
23 11 25 Facility Gas Piping
23 52 00 Heating Boilers
23 64 10 Water Chillers, Vapor Compression Type
23 64 26 Chilled and Condenser Water Piping Systems
23 72 00.00 10 Energy Recovery Systems
23 82 02.00 10 Unitary Heating and Cooling Equipment
25 10 10 Utility Monitoring and Control System Front-End Integration

11.0 PLUMBING

11.1 CODES AND REFERENCES

The facility shall comply with the following: Where there is a conflict between the RFP and building codes, the more stringent, and of those, the most current directive(s) or regulation(s) shall apply. Dates are provided where available and are listed to provide a starting point to determine the most "current" date for each directive, regulation, and guideline. Note: Codes listed below are not intended to be an all-inclusive list but a general list of commonly used codes.

<table>
<thead>
<tr>
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<tr>
<td>AFR 88-15</td>
<td>Criteria for Air Force Construction</td>
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<tr>
<td>IPC</td>
<td>International Plumbing Code</td>
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<tr>
<td>AHRI 1010</td>
<td>Self-Contained, Mechanically Refrigerated Drinking Water Coolers</td>
</tr>
<tr>
<td>ANSI A117.1</td>
<td>Accessible and Usable Buildings and Facilities</td>
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<tr>
<td>ANSI Z21.10.3</td>
<td>Gas Water Heaters</td>
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<td>ASHRAE 90.1</td>
<td>Energy Standard for Buildings Except Low-Rise Residential Buildings</td>
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<tr>
<td>ASME A112.19</td>
<td>Standard for Plumbing Fixtures</td>
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<td>ASTM B53</td>
<td>Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless</td>
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<td>ASTM B88</td>
<td>Standard Specification for Seamless Copper Water Tube</td>
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<tr>
<td>ASTM C547</td>
<td>Standard Specification for Mineral Fiber Pipe Insulation</td>
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<td>ASTM C552</td>
<td>Standard Specification for Cellular Glass Thermal Insulation</td>
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<tr>
<td>ASTM D1785</td>
<td>Standard Specification for Poly Vinyl Chloride (PVC) Plastic Pipe</td>
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APPLICABLE REFERENCES: PLUMBING

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<td>ASTM D2665</td>
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<td>Plastic Drain, Waste, and Vent Pipe and Fittings</td>
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<tr>
<td>CISPI 310</td>
<td>Standard for Couplings</td>
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<td>Solar Rating and Certification Corporation</td>
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<tr>
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<td>US Army Corps of Engineers, Mobile District Design Manual</td>
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11.2 GENERAL DESIGN REQUIREMENTS

All plumbing work shall be in accordance with Plumbing system shall be designed and installed in accordance with the International Plumbing Code (IPC), latest edition, codes and regulations unless otherwise stated and as specified hereinafter. All water piping subject to freezing shall be completely capable of draining and suitably protected. Water piping shall be provided with pressure regulator set at pressure required to adequately serve all fixtures within the facility. A natural gas-fired instantaneous water heater shall be used to meet hot water demand. Floor drains shall be provided in janitor closets, mechanical rooms, and restrooms and any other spaces required by Room Data Sheets. Floor drain piping in mechanical rooms shall be three (3) inch minimum. All floor drain traps shall be fitted with trap primers. Water coolers shall be provided in locations as indicated on drawings and/or Room Data Sheets.

Inspection and testing of the plumbing system shall be performed as prescribed in the IPC. The plumbing system shall conform to the applicable rules of the International Building Code, governing venting of plumbing fixtures, sizing of waste, vents, drains, and water systems. A reduced pressure zone type backflow preventer shall be provided in an accessible area exterior of the building. Fixture count shall be per International Building Code and UFC 3-420-01. All piping shall be labeled; colors coded, titled, and indicate direction of flow. All shutoff/isolation valves and water hammer arresters shall be accessible from the floor level and be labeled. If installed above hard ceilings, access doors shall be provided. UFGS Section 22 00 00 PLUMBING, GENERAL PURPOSE shall be the basis for the plumbing system specifications.

All piping shall be concealed, properly supported with allowances for expansion and contraction. Interior water distribution piping shall not be buried under concrete floors. Interior hot and cold water piping systems shall be insulated. Water piping systems (including sprinkler piping) shall not be routed or located where subjected to freezing and shall be located within the insulated building envelope. Heat tracing (to prevent freezing) of interior piping systems shall not be allowed. Individual quarter-turn...
shutoff or stop valves shall be provided on water supply lines to all plumbing fixtures. Individual stops shall also be furnished at all equipment connections such as dishwashers, vending machines, icemakers, etc. Isolation shutoff valves shall be provided for each toilet room group to allow isolation shutoff for maintenance purposes while continuing service to the remainder of the restrooms. Consolidate fixture vents through one common vent whenever possible. All vent penetrations through the roof shall be made through a roof jack designed for use with the roofing system furnished and color-matched to the roof. Aboveground piping shall run parallel with the lines of the building and in accordance with UFGS Section 22 00 00 PLUMBING, GENERAL PURPOSE, unless otherwise indicated.

Provide one (1) exterior wall hydrant every one hundred (100) feet around the entire facility. All wall hydrants provided shall be non-freeze type.

All sewer lines exiting facility shall be provided with exterior double-grade clean-out.

11.3 DOMESTIC HOT AND COLD WATER SYSTEMS

11.3.1 Design Criteria

Domestic hot and cold water shall be provided to plumbing fixtures in toilet rooms, service sinks, kitchen sinks and other fixtures requiring potable water. Potable water systems shall comply with NSF 61. Domestic potable water shall be isolated from mechanical feed water systems and other systems subject to contamination using reduced pressure backflow preventers. Provide a floor drain at each indoor reduced pressure backflow preventer location and hard pipe overflow drain to floor drain with 1 inch air gap. Backflow preventers shall be located at one (1) foot to three (3) feet above finished floor.

Domestic water to serve the facility shall be provided by tying into the existing underground domestic water system and routing the new main domestic water supply line into the building. The domestic water entrance shall include an indoor backflow preventer and a water meter. Domestic cold water shall then be distributed throughout the facility to serve the various plumbing fixtures defined herein.

The piping system shall be sized in accordance with the International Plumbing and Building Code by totaling the Supply Fixture Supply Units (FSUs) connected for each section of piping. Piping shall be sized to maintain a minimum pressure of 35 psig at the hydraulically most remote flush valve and 30 psig at the hydraulically most remote safety shower. Water velocity in the distribution system piping shall not exceed eight (8) feet per second and provisions shall be made to reduce any water hammer with water hammer arresters. Locate water hammer arrestors per PDI WH201.

Domestic hot water shall be provided via natural gas-fired domestic water heater with integral glass lined or nickel shield storage tank to serve the building. Water heater shall comply with the requirements of ANSI Z21.10.3. Domestic hot water shall be distributed throughout the building to serve various plumbing fixtures defined herein. Domestic hot water shall be maintained at remote fixtures (fixtures located more than 50 feet from the...
water heater) by an in-line pump that shall circulate hot water back to the water heater. Shut-off valves shall be installed in the supplies to each fixture. Shut-off valves shall be installed in branch lines to each toilet room, or other area with more than two fixtures. Water hammer arresters shall be installed on branch lines to absorb hydrostatic shock pressures that may occur in piping.

11.3.2 Solar Hot Water

Evaluate the feasibility of solar water heating to supplement the domestic hot water system by providing at least thirty (30) percent of the total demand. The base system shall be sized for thirty (30) percent of the demand, with solar heating to provide energy savings when conditions are conducive. Roof mounted solar water heating systems shall be designed to withstand wind loading, and the roof structure shall be designed accordingly.

Solar collectors shall be certified and rated in accordance with SRCC.

Hot water heating, storage and pumping equipment shall be located in mechanical rooms.

11.3.3 Materials of Construction

Above ground domestic water piping shall be copper, ASTM B88 type "L." Below grade piping shall be type M or K flexible copper. Shut-off valves shall be bronze ball valves for size two (2) inches and less and bronze gate for piping size greater than two (2) inches. Provide dielectric fittings between different materials.

Provide insulation for above grade domestic water piping. Minimum requirements: mineral fiber insulation conforming to ASTM C 547 or cellular glass conforming to ASTM C552. Provide insulation with vapor barrier, all-purpose jacket and PVC covers for fittings. Insulation thickness shall be as recommended by the manufacturer for the application per ASHRAE 90.

Prior to use, the distribution system shall be sanitized with a hypochlorite solution or other similar solution.

11.4 NON-POTABLE WATER SYSTEMS

Reduced pressure backflow preventers shall be installed on make-up water supplies to hydronic water, or other process water equipment. Also provide reduced pressure backflow preventers on any make-up water system that contains chemical treatment additives or any other system that has the potential for contamination of the main water supply system. Cup drains shall be provided for reduced pressure backflow assemblies’ overflow and shall be hard piped to a nearby floor drain.

Piping materials shall be copper, ASTM B88, type "L" or Schedule 40 black steel, ASTM A53 unless they are not compatible with the fluid being conveyed. Piping materials for corrosive fluids shall be suitable for use with the fluid. Backflow preventer assemblies shall conform to ASSE requirements for the type used.
Provide full thermal insulation and pipe identification system for non-potable piping systems. Pipe insulation shall be provided per UFGS 22 00 00.

11.5 SANITARY DRAINAGE, WASTE AND VENT SYSTEMS

The sanitary system shall collect waste from plumbing fixtures in toilet rooms, showers, service sinks, floor drains and other fixtures that discharge to the sanitary sewer and transport the wastes to the base-wide sanitary sewer system. The system shall be designed and sized in accordance with the requirements of the International Plumbing and Building Code. Each fixture trap shall be vented and connected to common vents, which extend and terminate above the roof not less than fifteen (15) feet from outside air intakes.

Materials of Construction: Underground waste and vent piping shall be Schedule forty (40) PVC. Aboveground waste and vent piping shall be PVC or service weight cast iron with hubless connectors. Hubless connectors shall conform to CISPI 310. PVC piping will not be allowed in spaces used as HVAC air plenums. PVC pipe shall be ASTM D1785 and ASTM D2665 stamped pipe.

All sanitary drainage, waste and vent piping shall be located either below floor slabs, above ceilings, in pipe chases, or in wall cavities as required. Complete accessibility shall be available to all cleanouts in the piping system.

Provide cooling coil condensate drain piping from each cooling coil to the sanitary drainage system. Condensate drain piping shall be ASTM B 88 type L hard drawn copper.

11.6 NATURAL GAS SYSTEMS

Natural Gas shall be connected to the existing underground gas system, and shall be routed to a new gas meter and pressure reducing station located adjacent to the building. Meter to be provided by contractor and tied into Base-wide EMCS or Utility/Energy Monitoring system. Polyethylene pipe shall be utilized in accordance with Base Excellence planning guide with pre-manufactured anodeless risers to eliminate the need for cathodic protection requirement on the gas service.

Natural gas shall be provided to all equipment requiring natural gas. Concealed piping or piping which is not easily accessible shall have welded connections. Gas line connections to each item of equipment shall have a shut-off valve, dirt leg, and pressure regulator. Piping within building shall be low pressure piping (less than two (2) psig). Natural gas piping shall be schedule 40 steel with screwed fittings.

Piping of natural gas systems shall conform to the requirements of NFPA 54, National Fuel Gas Code.

11.7 PLUMBING FIXTURES

Fixtures shall be commercial grade and be provided complete with fittings and trim. Fixtures shall be water conservation type in and compliance with the EPAct 2005 and the IPC. All shutoff valves shall be metal construction.
Plastic valves are not acceptable. All fixtures, fittings, and trim in a project shall be from the same manufacturer and shall have the same finish. Fixtures for use by the physically handicapped shall conform to ANSI A117.1. Plumbing fixtures and specialties shall be supplied in sufficient quantity to meet or exceed the requirement of the Code. Wall hydrants, hose bibs, spigots and service sinks shall have integral vacuum breakers. Floor drains shall be cast iron with deep trap and automatic primer. Use square type drain in areas to receive tile. Fixture descriptions shall be as described by ASME A112.19. See architectural drawings for quantity of lavatories, water closets, urinals, kitchen sinks, mop sinks, and electric water coolers.

11.7.1 Materials

All vitreous china plumbing fixtures shall conform to ANSI A112.19.2M, Vitreous China Plumbing Fixtures. Stainless steel fixtures shall be in accordance with ANSI A112.19.3M, Stainless Steel Plumbing Fixtures (residential design).

In general, all faucets shall be cast brass body, polished or brushed chrome finish. Operation shall be manual two lever or single lever mixing type with ceramic washer. Water flow shall be no more than 0.25 gpm from any lavatory faucet.

11.7.2 Flush Valve Type Water Closets

Provide ASME A112.19.2M, white vitreous china, wall-mounted, siphon jet, water conservation type not to exceed 1.28 gallons per flush, white solid plastic elongated open-front seat. Provide ASME A112.19.5 trim.

11.7.3 ABA Flush Valve Type Water Closets

Provide same as above, except mounting height to top of seat shall be seventeen (17) to nineteen (19) inches above finished floor and flush valve shall be mounted eleven and one-half (11-1/2) inches above fixture rim to clear grab bars.

11.7.4 Flush Valve Type Urinals

Provide ASME A112.19.2M, white vitreous china, wall-mounted, wall outlet, siphon jet, integral trap, extended side shields. Water flushing volume for urinals shall not exceed one (1) pint per flush. Provide ASME A112.19.5 trim and ASME 112.6.1M concealed chair carriers. All urinal banks shall be provided with wall cleanouts.

11.7.5 ABA Flush Valve Type Urinals

Provide same as above, except mount urinal with front rim a maximum of seventeen (17) inches above floor and flush valve handle a maximum of forty-four (44) inches above floor.
11.7.6 Counter Lavatories

Lavatory sinks shall be vitreous china drop in type for plastic laminate countertops and undermount sinks for solid surface countertops. Provide ASME 112.18.1M copper alloy centerset ABA-compliant faucets with aerator and perforated grid strainers, and flow limiting aerators to maintain a maximum flow rate of 0.5 gpm. All ABA-compliant lavatories shall have traps and supplies insulated with molded closed cell vinyl insulation.

11.7.7 Countertop Kitchen Sinks

Provide single or double compartment sinks as indicated on the drawings. Sinks to comply with ASME/ANSI A112.19.3M, and be constructed of twenty (20) gage stainless steel sink with integral mounting rim, minimum dimensions of fifteen (15) inches wide by fifteen (15) inches front to rear, single compartment with undersides coated with sound dampening material. Provide top-mounted ASME A112.18.1M copper alloy faucets, swing spout with aerator, and stainless steel drain outlet with cup strainer. Provide one and one-half (1-1/2) inch adjustable P-trap with drain piping to vertical vent stack.

11.7.8 Mop Sinks

Provide pre-cast terrazzo floor-mounted mop sink, twenty-four (24) inches by twenty-four (24) inches x twelve (12) inches shall be made of marble chips cast in white Portland cement to a compressive strength of not less than three thousand, six hundred twenty-five (3,625) PSI seven (7) days after casting. Provide brass body drains with nickel bronze strainers cast integral with terrazzo. Provide stainless steel rim guard for mop sink. Provide chrome-plated exposed hot and cold water faucets ASME A112.15.M wall-mounted copper alloy faucets, swing spout with three-fourths (3/4) inch hose connection, vacuum breaker, and pail hook.

11.7.9 Showers

Each shower unit shall have self-cleaning shower heads with a maximum flow rate of 1.8 GPM connected to concealed pipe connected to copper alloy pressure balance single control type mixing valve with front access integral screwdriver stops. Anchor the mixing valve and the pipe to each showerhead in wall to prevent movement. Showerheads shall be mounted not less than seventy-two (72) inches above finished floor. Provide ABA compliant shower enclosures as required with slide-bar, hand-held spray, grab bar and bench. Single lever thermostatic faucets shall be ABA-compliant for both types of showers.

11.7.10 Emergency Eyewash

Locate emergency shower/eyewash stations, complying with ANSI Z358.1, OSHA standard 1910.15(c), and UFC 3-420-01 to meet the requirements of applicable UFCs. Provide a wall-mounted self-cleaning, non-clogging 10 inch diameter stainless steel deluge shower head with elbow, one inch full-flow stay open ball valve with pull rod and 8 inch diameter ring or triangular handle, one inch interconnecting fittings. Provide a self-cleaning non-clogging eye and face wash with quick opening, full-flow valves, stainless steel eye and face...
wash receptor. Piping and fittings shall be galvanized steel and copper alloy control valves. Water heating is not required. Electric Water Cooler

Provide ARI 1010, wall-mounted bubbler bottle fill style with ASME A112.6.1M concealed chair carrier, air-cooled condensing unit, five (5) gallon per hour minimum capacity, stainless steel splash receptor, and all stainless steel cabinet. Provide twenty-seven (27) inches minimum knee clearance from front bottom of unit to floor and thirty-six (36) inch maximum spout height above floor. Provide push levers, push bars, or touch pads (one (1) on each side or one on front and both sides of cabinet) to control bubblers. Recess water coolers to maintain full corridor width. All water coolers shall be certified to meet ANSI/NSF 61, Section 9 and ABA.

11.7.11 Backflow Preventers

Provide reduced pressure principle type. Furnish proof that each make, model/design, and size of backflow preventer being furnished for the project is approved by and has a current "Certificate of Approval" from the Foundation for Cross-Connection Control and Hydraulic Research (FCCCHR)-USC. Listing of the particular make, model/design, and size in the current FCCCHR-USC shall be acceptable as the required proof. Provide freeze protection for aboveground exterior applications. Provide metal traffic bollards and architectural screening.

11.7.12 Non-Freeze Wall Hydrants

Freeze-proof wall hydrants shall be provided on the exterior of the facility at intervals of one hundred (100) feet and one in the utility yard. Provide ASSE 1019, cast bronze, with locking shield and key, one (1) inch external thread inlet, three-fourths (3/4) inch external hose thread outlet with automatic draining vacuum breaker. Hydrant shall be of sufficient length to extend through walls and place the valve seat inside the building or in the crawl space.

11.7.13 Hose Bibbs

Provide angle type copper alloy hose bibbs with lockshield and removable handwheel. Inlet shall have internal threads. Outlet shall have vacuum breaker with three-fourths (3/4) inch external hose threads. Provide a hose bibb in each mechanical room and as required in Room Data Sheets.

11.7.14 Water Hammer Arrestors

Provide PDI WH201, engineered mechanical type sized and installed to safeguard the water distribution system against destructive water hammer hazard and noise. Air chambers are not acceptable.

11.7.15 Floor Drains

Floor drains shall be flush strainer type with deep seal traps. Floor drains shall be cast iron body. All floor drain traps shall be automatically primed by single trap primers or where appropriate, distribution unit type trap primers.
11.7.16 Water Heater and Storage Tanks
Water heater shall be natural gas fired condensing storage tank type.

11.8 SPECIFICATIONS

The Contractor shall edit and submit the following UFGS (as a minimum):

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>33 51 01.00 10</td>
<td>Gas Piping Systems</td>
</tr>
<tr>
<td>22 00 00</td>
<td>Plumbing, General Purpose</td>
</tr>
<tr>
<td>23 30.00 10</td>
<td>Solar Water Heating Equipment</td>
</tr>
</tbody>
</table>

12.0 FIRE PROTECTION / FIRE DETECTION SYSTEM

12.1 CODES AND REFERENCES

The facility shall comply with the following: Where there is a conflict between the RFP and building codes, the more stringent, and of those, the most current directive(s) or regulation(s) shall apply. Dates are provided where available and are listed to provide a starting point to determine the most "current" date for each directive, regulation, and guideline. Note: Codes listed below are not intended to be an all-inclusive list but a general list of commonly used codes.

<table>
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<tr>
<th>Code</th>
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<tr>
<td>AFM 32-1084</td>
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<tr>
<td>NFPA 10</td>
<td>Standard for Installation of Portable Extinguishers</td>
</tr>
<tr>
<td>NFPA 13</td>
<td>Installation of Sprinkler Systems</td>
</tr>
<tr>
<td>NFPA 24</td>
<td>Standard for the Installation of the Private Fire Service Mains and Their Appurtenances</td>
</tr>
<tr>
<td>NFPA 70</td>
<td>National Electric Code</td>
</tr>
<tr>
<td>NFPA 72</td>
<td>National Fire Alarm and Signaling Code</td>
</tr>
<tr>
<td>NFPA 90A</td>
<td>Standard for Installation of Air Conditioning &amp; Ventilation Systems</td>
</tr>
<tr>
<td>NFPA 101</td>
<td>Life Safety Code</td>
</tr>
<tr>
<td>UFC 1-200-01</td>
<td>Design: General Building Requirements</td>
</tr>
<tr>
<td>UFC 3-600-01</td>
<td>Design: Fire Protection Engineering for Facilities, with Change 1</td>
</tr>
<tr>
<td>UFC 4-021-01</td>
<td>Design and O&amp;M: Mass Notification Systems</td>
</tr>
</tbody>
</table>

12.2 SYSTEM DESCRIPTION

Provide automatic wet pipe sprinkler system throughout the facility. All systems shall be electronically supervised with tamper switches on all major valves and provide a signal to the fire department. Provide separate supervised flow switch for each floor if more than one (1). Signal shall be compatible with the present equipment of the fire department and designed in accordance with applicable NFPA codes. Sprinkler heads shall be centered in
the ceiling tile. All sprinkler pipes, braces and hangers, etc., shall be designed to meet seismic requirements as stated in the Structural Section.

12.3 QUALIFICATIONS

The contractor shall employ the services of a qualified fire protection engineer to oversee the design and installation of fire suppression and fire alarm systems.

Per UFC 3-600-01, a qualified fire protection engineer (QFPE) is an individual who is a registered professional engineer (P.E.) who has passed the fire protection engineering written examination administered by the National Council of Examiners for Engineering and Surveying (NCEES) and has relevant fire protection engineering experience.

12.4 DESIGN

Design of sprinkled facilities shall be in accordance with UFC 3-600-01, except where NFPA 13 criteria have been substituted and as specified hereinafter. All contract requirements of UFC 3-600-01 that exceed the minimum requirements of NFPA 13 shall be incorporated into the design. The Contractor’s design shall be prepared and sealed by a registered Fire Protection Engineer or a registered Professional Engineer with a fire protection background and who has had at least five (5) years’ experience in fire protection/detection design. Qualifications shall be submitted to the COR for approval.

In communications rooms, all sprinkler heads shall be protected from damage with wire guards. No water piping shall be allowed to be routed above equipment, and any equipment located above or in these rooms shall have a drip pan hung below the pipe throughout the space.

Submit input data for the computer program used to design the sprinkler system to the COR.

Contractor shall provide adequate water flow and pressure for the interior and exterior (hose stream) demand for fire protection. Minimum residual pressure for outside fire protection (hose stream demand) is 20 psi. Design water distribution system to provide water for interior and exterior fire protection in accordance with UNIFIED FACILITIES CRITERIA (UFC 3-600-01) and NFPA 24, Private Fire Service Mains and Their Appurtenances. UFC 3-600-01 is available at http://www.wbdg.org/ccb/DOD/UFC/ufc_3_600_01.pdf.

Fire mains shall be designed to supply the quantities at sufficient pressures for the fire protection system required by Paragraph "Fire Protection" of this document. Hose stream demand shall be in accordance with UFC 3 600-01. Minimum pressure requirement for the sprinkler system shall be determined during design. The sprinkler system shall be connected to the potable water system and a backflow preventer shall be provided in accordance with EGLIN APB requirements. Locate the backflow preventer inside of the building. Fire mains shall be designed to supply the quantities at sufficient pressures for the fire protection system required by Paragraph "Fire Protection" of this document. Hose stream demand shall be as shown in Table 4-1 of UFC 3-600-01. Minimum pressure requirement for the sprinkler system shall be
determined during design. The sprinkler system shall be connected to the potable water system.

12.5 SITE SPECIFIC REQUIREMENTS FOR FIRE PROTECTION WATER

The Contractor shall connect the fire protection water to the existing water distribution system at the site. Based on preliminary calculations and historical hydrant flow test data (see below), a fire pump is required to deliver water of sufficient quantity and/or pressure to the fire suppression system. However, this shall be verified by the Contractor.

FIRE FLOW TEST DATA
(see Appendix)

Static Pressure: 41 psig
Residual Pressure: 34 psig
Flow: 969 gpm

The Contractor shall be responsible for conducting a new hydrant flow test in accordance with NFPA 291 prior to the first interim design submission. The flow test shall be conducted under the direct of the on-site supervision by the Contractor’s Fire Protection Engineer of Record.

12.6 SPECIFICATIONS

The Contractor shall edit and submit the following UFGS (as a minimum):

21 13 13.00 10 Wet Pipe Sprinkler System, Fire Protection
21 30 00 Fire Pumps

12.7 FIRE DETECTION AND ALARM SYSTEM/MASS NOTIFICATION SYSTEM

12.7.1 CODES AND STANDARDS AND CRITERIA

The facility shall comply with the following: Where there is a conflict between the RFP and building codes, the more stringent, and of those, the most current directive(s) or regulation(s) shall apply. Dates are provided where available and are listed to provide a starting point to determine the most “current” date for each directive, regulation, and guideline. Note: Guidelines are recommendations.

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<tr>
<td>NFPA 70</td>
<td>National Electric Code, especially Article 513 “Aircraft Hangars” and Article 516 “Spray Application, Dipping and Coating Processes”</td>
</tr>
<tr>
<td>NFPA 72</td>
<td>National Fire Alarm and Signaling Code</td>
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12.7.2 QUALIFICATIONS

12.7.2.1 Fire Alarm Design

A Registered Fire Protection Engineer shall be required for the fire alarm and detection design and specifications preparation for this contract.

12.7.2.2 Fire Alarm Installation

The installing Contractor shall provide the following: NICET Fire Alarm Technicians to perform the installation of the system. A NICET Level three (3) Fire Alarm Technician shall supervise the installation of the fire alarm system. A NICET Level two (2) or higher Fire Alarm Technician shall install and terminate fire alarm devices, cabinets and panels. An electrician or NICET Level one (1) Fire Alarm Technician shall install conduit for the fire alarm system. The Fire Alarm technicians installing the equipment shall be factory trained in the installation, adjustment, testing, and operation of the equipment provided.

12.7.2.3 Fire Detection and Alarm System

The building shall be protected with a fire detection and alarm system and mass notification system installed in accordance with NFPA 72 and UFC 4-021-01. Fire detection and alarm systems shall be designed in accordance with UFC 3-600-01, NFPA 72, NFPA 20, NFPA 90A. The Mass Notification System shall be designed in accordance with UFC 4-021-01.

Provide a complete addressable, four (4)-wire supervised fire alarm and detection system. The complete fire alarm system shall meet requirements of NFPA 72, Table 6.7, Style 4 and Table 6.6.1, Style 7. All fire alarm control panels shall be addressable and have a class "A" supervised fire alarm circuit that provides a trouble signal and continues to operate as an alarm circuit after one fault has occurred in the wiring. All zones shall be able to transmit to the watch desk independent of any other zones. Multiple zones shall be able to transmit an alarm directly to the fire department and shall not "lock-out" other zones. Graphic annunciator shall be provided and location shall be coordinated with fire department.

All devices shall be addressable and comply with NFPA requirements.
All alarm and trouble signals shall be transmitted via a Monaco BT-XF radio transceiver to the base fire station. The radio transceiver shall be fully compatible with the Base existing central receiving station.

All fire alarm system acceptance tests shall be performed in the presence of the Base Fire Department, to demonstrate operation of all newly installed or relocated fire alarm devices.

The fire alarm/mass notification system control panel shall be located in a conditioned electrical room within the building with a remote control panel near the facility entrance.

12.7.2.4 Fire Alarm Main Panel

The fire alarm panel shall be fully addressable with programmable alphanumeric displays. The panel shall be modular type installed in steel cabinet with hinged door and cylinder lock.

The fire alarm control panel shall have a dry set of contacts for each zone, trouble dry contacts, and fire alarm dry contacts. Provide spare boards for alarm panels, main board, zone boards, and motherboard. Provide drawings and schematics of fire alarm panels, recommended spare parts list, and special tools/test equipment required.

The fire alarm control panel shall be located in main electrical room and location shall be coordinated with fire department. The fire alarm panel shall be easily accessible by the Fire Department.

12.7.2.5 Remote Annunciator

Provide a remote annunciator that has an alphanumeric display with Alarm acknowledge, and alarm silence. The remote annunciator shall be located as directed by the Base Fire Department.

12.7.2.6 Manual Pull Stations

Addressable manual fire alarm stations shall conform to the applicable requirements of UL38. Manual stations shall be connected into signal line circuit. Manual pull station shall be mounted in accordance with ABA requirements. Pull stations shall be double action type and red in color. Stations requiring the breaking of glass or plastic panels for operations are not acceptable.

12.7.2.7 Occupant Notification

Occupant notification for fire alarm shall be a combination of strobes and horn/strobes with white faceplates marked “FIRE” shall be provided throughout all common and public areas of the building including lobbies, corridors, conference rooms, mechanical/electrical rooms, and restrooms in accordance with NFPA 72, ABA, and UFAS. Occupant notification shall be activated upon any fire alarm signal initiated by a manual pull station, sprinkler water flow switch, or common area smoke or heat detector. Any fire alarm signal
shall automatically release magnetically locked doors and door hold-open devices throughout the building to facilitate egress.

12.7.2.8 Knox Box

Provide and install a Side Hinged Knox Box Model 3200 without tamper switch outside main entrance to store access keys and codes for entry.

12.7.3 MASS NOTIFICATION SYSTEM

The mass notification system functionality shall be provided throughout the building and shall be combined with the fire alarm system in accordance with UFC 4-021-01. The speaker/strobes shall be spaced throughout all common, public, and handicapped rooms to provide voice intelligibility. The mass notification system shall be modeled during design to verify voice articulation requirements are being met. Audibility intelligibility testing of the voice evacuation notification system shall be accomplished in accordance with NFPA 72 for voice evacuation systems, IEC 60628-16, ASA S3.2 and UFC 4-021-01. The minimum acceptable voice intelligibility score shall comply with UFC 4-021-01. The system shall be compatible with Monaco D-21 protocol.

12.7.3.1 Mass Notification System Main Panel

The mass notification main panel shall meet the requirements of UFC 4-021-01

12.7.4 STORAGE BATTERY

Integral, dedicated storage batteries shall be provided for each system. The batteries shall be sized to meet the requirements of NFPA 72. In addition, the batteries shall meet the requirements of UFC-4-021-01

12.7.8 FIRE DETECTION AND ALARM/MASS NOTIFICATION SYSTEMS SPECIFICATIONS

The Contractor shall edit and submit the following UFGS (as a minimum):

28 31 76 Interior Fire Alarm and Mass Notification System

13.0 ELECTRICAL SYSTEMS

13.1 CODES AND STANDARDS

The facility shall comply with the following: Where there is a conflict between the RFP and building codes, the more stringent, and of those, the most current directive(s) or regulation(s) shall apply. Dates are provided where available and are listed to provide a starting point to determine the most “current” date for each directive, regulation, and guideline. Note: Guidelines are recommendations.

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<td>Electric Power Systems</td>
</tr>
<tr>
<td>API 32-1065</td>
<td>Grounding Systems</td>
</tr>
</tbody>
</table>
13.2 GENERAL

Provide electric service and distribution equipment, interior and exterior lighting and control, emergency lighting, telephone systems, and access control systems in accordance with NFPA 70, National Electrical Code; UFC requirements listed above including UFC 4-730-10; national and local codes; and the installation design requirements. All service equipment must be Underwriters Laboratories (UL) listed. The exact location of outlets, lighting fixtures, equipment including but not limited to the following specialized equipment: air compressor systems, motorized bay doors and wiring shall be governed by structural conditions and obstructions, and shall be repositioned as required during construction at no additional cost to the Government. Where it is necessary for outlets or connections to be at specific locations, details shall be provided showing exact measurements. Coordinate all design so that interference between piping, architectural and structural work shall be avoided.

The Fire Station shall include site electrical utilities, interior distribution systems; according to UFC documents and the latest Eglin APF design requirements Appendix I1 thru I3. Site Electrical Utilities shall include underground and overhead power distribution, stand-by generator
system distribution, secondary electrical systems, and exterior site lighting.

The interior electrical systems shall include service entrance and distribution equipment, surge protective devices (SPD), wiring devices, raceways, conductors, interior lighting systems, and building mounted lightning protection systems. All Electrical Systems shall be designed for a complete and operation facility.

The Communications and security systems shall include telecommunications systems and electronic security systems fully compatible with UFC, industry, and Eglin AFB, Fl. requirements. Details provided in Chapter 14.

In addition to the criteria identified above, comply with the following facility specific design requirements and local Eglin AFB, Fl. design requirements.

13.2.1 Coordination

Electrical work including any outage requirements for connections to existing electrical system shall be coordinated through the Contracting Officer.

13.2.2 Digging Permits

Digging permits shall be obtained from Eglin AFB, Fl. and coordinated through the Contracting Officer.

13.2.3 PCB Standards

Electrical equipment supplied, shall be supplied without Polychlorinated Biphenyl (PCB)’s.

13.3 DESIGN REQUIREMENTS

13.3.1 Drawings

Electrical system layouts shall be generally diagrammatic and unless specifically required, the location of outlets and equipment shall be approximate. The exact location of outlets, lighting fixtures, equipment and wiring shall be governed by structural conditions and obstructions, and shall be repositioned as required during construction at no additional cost to the Government. Provide all drawings and documentation required to install, operate, and maintain the building’s electrical systems. Include the following:

Drawing Index: Provide and keep current throughout the life of the project a drawing list with current revision number for each drawing.

Building Services Power and Lighting Plan Drawings: Provide plan drawings showing all lighting, exit signs, emergency lighting, convenience outlets, specialty outlets, and power to all building service and HVAC, plumbing, and equipment. The building services power and lighting plans shall show circuits and device type for all indicated lighting and devices.

Power One-Line Drawings: Provide a power one-line diagram showing the distribution of power as a single line representation including feeder cables, switchgear with protective devices and rating, power systems, panelboards, inverters, emergency systems, and motor control systems. Riser and one-line diagrams shall show vertical and electrical relationships and
therefore need not include all required equipment, devices, and accessories. Riser diagrams shall indicate all switchboards, transformers, panelboards, generator, and other electrical distribution equipment. Switchboards shall be represented in one-line diagram format and schedule format. Switchboard main and feeder breaker trip settings and frame sizes shall be indicated. Riser diagrams shall be included for all signal level systems. The riser diagram shall indicate individual devices with symbols indicating room location and special required feature of the device (i.e. mounting location).

Grounding Drawings: Provide grounding drawings detailing all ground rod placements, ties to building steel, major electrical equipment, generator, and exterior process equipment and storage tanks. Include installation details of components, connections, and test grounding stations. Plans shall also indicate the coordination and tie points for the down conductors of the lightning protection system.

Power and Lighting Panel Schedules: Provide power and lighting panel schedules for lighting and instrument power panels. Panel schedules shall show in tabular and schematic format the electrical connections in the distribution boards.

Lighting Fixture Schedules and/or Details: Feeder, mechanical equipment connection, lighting, and panelboard schedules. Distribution panelboard, switchboard, and branch circuit panelboard schedules shall be included in the electrical drawings. The schedules shall include all circuit identification with load type and room number and connected load per phase. Connected load shall be totaled and demand factor calculated. Circuit size shall be indicated on the schedule. Panelboard information shall include bus ampacity, interrupting current rating, voltage, source fed from, location, pole quantity, panelboard type (main lug only vs. main circuit breaker), main circuit breaker size (if applicable), branch over-current protection device size, and branch circuit breaker pole quantity. If applicable include service entrance rating and indicate if panelboard has two hundred (200) percent neutral. If applicable, Motor control center (MCC) schedules shall indicate MCC bus ampacity, short circuit rating, voltage, circuit identification, starter type, starter size, feeder size, local motor disconnect if required, and motor horsepower. Switchboard main and feeder breaker trip settings and frame sizes shall be indicated on the schedule. The Contractor shall provide a lighting fixture schedule in drawing package.

Installation Details and Schematics: Provide details and schematics as required to clearly identify installation conditions and/or special building systems. Details shall be included to indicate the Contractors intent to satisfy specification requirements and to aid in the building of the facility. Details shall include the following, but not be limited to interior lighting, exterior light pole installations and transformer pad installations.

Communications Systems: Provide risers for voice and data systems, access control and security systems, CATV, CCTV, and public address system.

13.3.2 Studies and Calculations
Provide computer modeling of the electrical distribution system in SKM PTW software or equivalent shall be required. The model shall include all distribution equipment, all distribution and step down transformers, all
feeders, motor short circuit contribution above 20HP and emergency
generators. The model shall provide voltage drop calculation, load flow
calculation, demand load calculation, short circuit fault calculation, design
basis coordination study, and design basis arc flash study.

13.3.3 Load Calculations and Electrical Load Summary
Include connected loads, demand loads, and diversity factors for each
panelboard, switchboard, etc. in the electrical distribution system. Include
25 percent spare capacity when sizing feeders, main service switchboard(s),
transformers, distribution panel boards, and HVAC. Load calculations shall
include the power required for base bid and any/all options.

13.3.4 Short Circuit Calculations and Protective Coordination Study

Include load flow analysis, a fault current analysis, and circuit breaker
protective device coordination study. Analyses shall be prepared for the
entire electrical system to demonstrate that the proposed equipment meets the
calculated values, coordination, and protection. All equipment protective
devices shall be properly coordinated to provide selective tripping. Series
rated protective equipment and or devices shall not be allowed. Contact the
local utility providing power to the facility and obtain available fault
current values at the point of delivery. This includes three phase, line to
ground faults and X/R ratio used by utility to calculate fault currents.
Where it is impractical to obtain utility values, an infinite primary bus
method may be used for these calculations if permitted by contracting
officer.

13.3.5 Voltage Drop Calculations

Calculations shall demonstrate the worst-case voltage drop for the main
electrical service, distribution panels, branch circuit panels, and any other
devices/equipment indicated on the one-line diagram. The voltage drop values
shall not exceed the values outlined in UFC 3-501-01.

13.3.6 Arc Flash Hazard Analysis
Include all electrical systems per requirements set forth in the current
version of National Fire Protection Association (NFPA) 70E - "Standards for
Electrical Safety in the Workplace." The calculations shall be performed
according to the Institute of Electrical and Electronics Engineers (IEEE)
Standard 1584, the IEEE Guide for Performing Arc-Flash Calculations. The
flash protection boundary and the incident energy shall be calculated at
significant locations in the electrical distribution system (switchboards,
switchgear, motor-control-centers, panelboards, etc.) where work could be
performed on energized parts. Equipment shall be labeled in accordance with
the analysis per NEC 110.16.

13.3.7 Lighting Calculations
Computer modeling of the Interior and Exterior lighting systems in AGI-32 or
equivalent shall be required. The model shall include design basis lighting
fixture illumination analysis, day-lighting analysis, and egress lighting
analysis in point-to-point format. Include design basis light fixture
manufacturers data. Provide a table showing a calculation summary for each
room that shows average light level and maximum to minimum ratio.
13.3.8 Lightning Protection

A facility risk analysis per NFPA 780 for the Lightning Protection System shall be provided.

13.4 TEMPORARY POWER

The Contractor may temporarily connect to existing electrical power as required to accomplish the work. Contractor shall provide temporary electrical service as part of design package. All temporary wiring shall be in accordance with NFPA 70. All temporary outlets shall be Ground-Fault Circuit Interrupter (GFCI) protected. Connection to existing electrical systems shall be coordinated with the Contracting Officer CHELCO.

13.5 EXTERIOR PRIMARY POWER

All primary power design and requirements shall meet UFC 3-501-01 and related documents including UFC 3-550-01 and CHELCO design requirements. The primary power distribution shall consist of an extension of the Eglin AFB, FL primary distribution system designed to provide reliable power for the facility. Primary circuits shall originate from those already identified existing overhead point of connection, and extend underground to the new service pad mounted transformer. The existing underground primary circuit exiting the site and extending under the runway shall be maintained throughout construction. A primary junction shall be installed ahead of the new transformer to serve both the fire station and the existing circuit. Coordinate location of primary tie-in point with Contracting Officer and Base Civil Engineering.

Primary underground distribution shall employ concrete encased PVC ductbank with a minimum of one spare conduit of the same size as the largest conduit in duct, all Base standard ductbank and primary power requirements shall also be met beneath all road and parking lot crossings. All other areas shall follow the CHELCO standard of direct buried conduit for each individual circuit conductor. Primary cable shall typically be a UL Listed, 15kV shielded, single aluminum conductor with concentric neutral, jacketed cable with 133% EPR insulation; primary power cable requirements for CHELCO standards shall override. The primary is owned by a private electric utility, provide wire and terminations in accordance with their requirements.

Underground distribution shall terminate at a distribution transformer. The service transformer shall be located per UFC 3-600-01 requirements and in accordance with Base requirements.

13.5.1 Service Transformer

The building service transformer shall be a distribution class, three-phase, delta primary, wye secondary, pad mounted. Transformer shall be in accordance with ANSI C57.12.00, C57.12.26, C57.12.22, C57.12.90 and C57.12.25. The service transformer shall be provided with primary disconnect switch at the transformer. In addition, the transformer shall be NEMA TP-1 energy-efficient rated. The transformer rating shall be as required by UFC 3-501-01. The primary cabinet shall be dead front with load-break elbow terminations, load-break oil immersed switches and oil immersed current limiting fuses with external elbow type, primary surge arrestors on one side of the loop feed. The transformer secondary compartment shall be live front. The neutral
connections shall be solidly grounded. Transformers shall be furnished with standard accessories including off-load taps, oil fill/sample valves, temperature and pressure gages, padlock fittings, etc., as specified. Coordinate with Base specific requirements.

13.6 FACILITY POWER

Service entrance conductors shall extend from the transformer, in new concrete encased PVC conduit, to a service entrance rated transfer switch serving a main switchboard located in the main electrical room. The switchboard shall be UL Listed for service entrance (SE) and shall be equipped with low voltage molded case circuit breakers and an electronic power meter with associated current transformers. A Surge Protection Device (SPD) shall be included in the main switchboard. The switchboard main circuit breaker shall be equipped with integral ground fault protection to comply with NFPA 70. Feeder breakers sized 400A and larger shall be electronic trip type per UFC requirement. The facility service voltage shall be 480Y/277 volt to support large mechanical loads and lighting loads. Dry type 208Y/120 volt step down transformers shall be used to supply power for small power equipment and plug loads. Panelboards service non-linear loads shall be K-4 rated and loads evaluated to determine if K-13 rating is necessary. All panels serving non-linear loads shall include two hundred (200) percent rated neutrals buses and two hundred (200) percent rated feeders. All transformer windings shall be copper, all buses shall be copper, and all conductors shall be copper. All conduits shall be metallic except as allowable for underground and under slab use. The Base electrical requirements shall also be incorporated into the design.

Secondary Service
Service entrance conductors shall extend from the transformer, in concrete encased PVC conduit, to a service entrance rated main switchboard located in the main electrical room.

13.6.1 Metering
Power at the facility shall be metered by means of an Ethernet based metering system. Provide a digital multi-function, power monitor, capable of displaying all typical electrical parameters (voltage, current, power factor, power, etc). Provide an Elster combination kW-Hr and kW demand meter, meter shall include Wireless transceiver hardware. The meter and wireless transceiver hardware shall be compatible with Sensus Flexnet system which is currently being utilized by Eglin AFB. Provide a 13 point terminal meter can with voltage and current test switches. An approved equivalent metering system by another manufacturer shall be fully compatible and interface with the existing base wide utility meter monitoring/reading system for connecting to the Base EMCS/SCADA system.

13.6.2 Switchboards
The switchboard shall be UL Listed for service entrance (SE) and shall be dead-front, floor-mounted, freestanding, hinge-front metal-enclosed type with copper bus equipped with low voltage molded case circuit breakers and an electronic power meter with associated current transformers. A Surge Protection Device shall be included in the main switchboard. The switchboard main circuit breaker shall be equipped with integral ground fault protection to comply with NFPA 70. Feeder breakers sized 400A and larger shall be electronic trip type.
13.6.3 Panelboards
Distribution and branch circuit panels shall be fully rated for the available fault current, and furnished with a main circuit breaker (unless fed from an upstream panel breaker in the same room). Provide panels with full-sized, bolt-on, branch breakers, copper main busses, insulated copper neutral bus and bonded equipment grounding bug. Provide a minimum of 10 percent spare circuit breakers and 25 percent space for future used in each panel. The Contractor shall provide and install printed panel labels for future modification. Dedicated panels for telecommunications/computer loads shall have a surge suppressor.

13.6.4 Nonlinear Loads
Provide K-factor rated transformer and two hundred (200) percent rated neutral buses in the dedicated isolated ground bus computer panels to accommodate non-linear loads. K-4 rated transformers shall be used to feed between fifty (50) percent and seventy five (75) non-linear loads. K-13 rated transformers shall be used to feed between 75 percent and one hundred (100) percent non-linear load. Provide isolated-ground receptacles to supply power to non-linear loads. Do not share neutrals for any non-linear loads.

13.6.5 Transformers, 600-Volt or Less Primary
The facility shall be served from a pad mounted transformer located in the utility yard. Dry type four hundred eighty (480) volt to 208Y/120 volt, three (3) phase step down transformers shall be used to supply power for small power equipment and plug loads. All transformer windings shall be copper, all buses shall be copper, and all conductors shall be copper. All conduits shall be metallic except as allowable for underground and under slab use.

K-Rated Transformers: Transformers serving non-linear loads shall be provided as described in 13.6.4 Nonlinear loads. K-4 rated and loads evaluated to determine if K-13 rating is necessary. All panels serving non-linear loads shall include two hundred (200) percent rated neutrals buses and 100 percent rated feeders. All transformer windings shall be copper, all buses shall be copper, and all conductors shall be copper. All conduits shall be metallic except as allowable for underground and under slab use.

13.6.6 Conduits and Conductors
Wiring shall consist of six hundred (600) volt insulated single conductor type THWN, THHN, or THW conforming to UL 83, installed in raceways consisting of electrical metallic tubing, or rigid galvanized steel conduit (RGS). Insulation type shall be suitable for the application according to the NEC, Flexible metallic conduit shall be provided to vibrating equipment where required. All conductors shall be copper; the minimum branch circuit size shall be No. twelve (12) American Wire Gage (AWG). Conduits and raceways shall be routed high to allow for loading and shelving clearances.

13.6.7 Emergency Power
The Fire Station shall be supplied with stand-by power from a permanently installed diesel standby generator. The generator shall feed a service rated automatic transfer switch which will be connected to a switchboard to fully back up the Fire Station in the event that normal power is lost. The
emergency generator shall provide a minimum of 48 hours at full load for 100% of the building.

13.6.8 Uninterrupted Power Supply (UPS) Systems

Rack mounted Uninterrupted Power Supply (UPS) shall be provided and sized to carry the required loads at the Fire Station to fully support equipment. At a minimum the UPS shall support:
All Dispatch Equipment
Alarm Systems
Intrusion Detection Systems
Data Automation
911 Call center equipment
Westnet System
Access Control
CCTV

The UPS battery backup systems shall be rated for 15 minutes continuous output power.

13.6.9 Grounding

Grounding shall be provided in accordance with NFPA 70, NEC, IEEE and UFC requirements. Grounding systems for this facility shall include the electrical system service entrance ground, equipment grounding, and other auxiliary systems grounding such that all systems and components maintain low potential differences. Copper ground conductors from the main communications room to the main electrical service ground shall also be provided. Facility grounding system shall be installed in accordance with requirements in UFC and National Electric. Facility grounding system shall be tested and systems showing over 25 ohms of resistance shall be reported to contracting officer. All ground rods shall be copper-clad steel, 3/4 inch diameter and 10 feet in length, sectional type for a total of 60’ per each ground rod.

13.6.10 Wiring

Wiring shall be copper conductors. All wiring shall be installed in conduit or electrical metallic tubing as allowed by the National Electrical Code. Wiring system shall consist of insulated single conductors installed in raceways as follows: Galvanized rigid steel conduit or IMC in concrete, masonry and areas subject to moisture; Electric metallic tubing (EMT) in concealed areas and exposed where not subject to physical damage; and Plastic conduit (Type eighty (80) PVC) in the ground and (Type forty (40) PVC) below concrete slabs. Wire shall be concealed within the walls in all areas except electrical, mechanical, and communication rooms. Conduit shall be labeled with source and destination. Empty conduit shall have nylon pull rope installed in it with 10 feet of pull rope coiled at each end. A ground conductor shall be installed with all feeders and with all branch circuit wiring to receptacle and equipment. Conductors shall be a minimum size of twelve (12) AWG.

13.6.11 Receptacles

In all area locations adjacent to a water source, at all exterior building locations, and all other locations per NFPA 70 (NEC), provide Ground Fault
Circuit Interrupter (NEMA 5-20R-GFI) devices for all receptacles. Receptacles within the bay area shall be commercial grade and spaced at a maximum of 12’ apart along the exterior walls. Additional receptacles shall be provided to support special equipment as needed.

13.6.12 Warning Signs and Safety Labels
Provide and install all warning signs and safety labels required for the installation, operation, and maintenance of the building’s electrical systems per NFPA 70E.

13.6.13 Name Plates and Identification Tags
Contractors to provide and install all nameplates and identification tags required for the installation, operation, and maintenance of the building’s electrical systems. All conductors shall be color-coded; colored tape may be used on conductors NO. six (6) and larger at all panelboards, switchboards, motor control centers, manholes, handholes, terminations and junction boxes.

13.6.14 Equipment
The Contractor shall provide electrical service to all equipment and devices requiring electrical power. The Contractor shall coordinate with the user to determine the power requirement and connection types for all equipment and devices provided by the user. The Contractor shall coordinate all equipment and furniture provided in the FF&E package.

Systems Furniture and Open Office Spaces Power
The Contractor shall provide power distribution to adequately accommodate all workstations or potential workstations within the area. The electrical designer shall confirm systems or modular furniture requirements during the design of the facility. The Contractor shall provide all building power conductors, conduits, base connections, and power connections in order to interface with the systems furniture or workstation spaces to be provided and the Contractor shall provide the required power capacity at each systems furniture workstation or group of stations.
All modular furniture power shall be fed from wall with appropriate connections except the places not feasible shall use an electrical duct system built into the floor. The Contractor shall provide a minimum of one power base (or floor connection shall be used in places where wall connection is not feasible) connection for every two workstations or spaces where workstations are proposed. Provide a minimum of two quadraplex receptacles at each workstation. Unless more conductors are required by the specific systems furniture to be provided, the Contractor shall provide a minimum of 5 wire system (three (3) phase conductors, one (1) 200% rated neutral and one (1) ground conductor) to each power base or power floor connection (shall be confirmed by Contractor). Power base connections shall be located at the end of workstations, rather than behind them, to the maximum extent possible. Data/Power floor connections are allowed for use with modular furniture or in open office spaces for this project.

13.6.15 Motors
Motors above one-half (1/2) horsepower shall be two hundred eight (208) volts or four hundred eighty (480) volts, three (3)-phase, one-half (1/2) horsepower and smaller motors may be rated at one hundred twenty (120) volts single phase. Provide protection against single phasing when a phase loss
occurs for all three phase motors. Provide high efficiency motors for those motors operating over 750 hours per year or as direct by the UFDs. Unless otherwise specified, all motors shall be continuous-duty classification based on a forty (40) degree C ambient temperature reference. Polyphase motors shall be squirrel-cage type, having normal-starting-torque and low-starting current characteristics, unless other characteristics are specified in other sections of these specifications or shown on contract drawings. The Contractor shall be responsible for selecting the actual horsepower rating and other motor requirements necessary for the applications indicated. When electrically driven equipment furnished under other sections of these specifications materially differs from the design, the Contractor shall make the necessary adjustments to the wiring; disconnect devices and branch-circuit protection to accommodate the equipment actually installed.

13.6.15.1 Motor Control

Each motor or group of motors requiring a single control and not controlled from a motor-control center shall be provided with a suitable controller and devices that shall perform the functions as specified for the respective motors. Each motor of one-eighth (1/8) horsepower or larger shall be provided with thermal-overload protection device shall be provided either integral with the motor or controller, or shall be mounted in a separate enclosure. Unless otherwise specified, the protective device shall be of the manually reset type. Single or double pole tumbler switches specifically designed for alternating-current operation only may be used as manual controllers for single-phase motors having a current rating not in excess of eighty (80) percent of the switch rating.

Automatic Control devices such as thermostats float or pressure switches may control the starting and stopping of motors directly, provided the devices used are designed for that purpose and have an adequate horsepower rating. When the automatic-control device does not have such a rating, a magnetic starter shall be used, with the automatic-control device actuating the pilot-control circuit. New pilot lights shall be a LED type with a replaceable lamp unit. Connections to the selector switch shall be such that only the normal automatic regulatory control devices shall be bypassed when the switch is in the Manual position; all safety control devices, such as low- or high-pressure cutout, high temperature cutouts, and motor-overload protective devices, shall be connected in the motor-control circuit in both the manual and the Automatic positions of the selector switch.

13.6.15.2 Variable Frequency Drives

Factory assembled variable frequency drive control systems will be provided for the pumps and fans which are variable volume systems. All fan and pump VFD’s will be from the same manufacturer. Each VFD will include motor starter, motor disconnects and controls as required for a complete system. Units will be UL listed and will comply with the National Electrical Code. VFD will include the following accessories: disconnect switch, control circuit transformer with primary and secondary fuses, manual bypass, system hand-off-auto switch, system initialize light, run light, failure alarm, LCD digital display and control interface for remote monitoring of VFD functions and alarms from the DDC system described under the mechanical narrative. VFD’s shall be of twelve (12) pulse design and include a three (3) percent
line reactor, or VFD’s shall include a low pass harmonic filter designed to reduce the total harmonic current distortion by twelve (12) percent or less.

13.7 LIGHTING DESIGN

13.7.1 Interior Lighting
The lighting design for both interior and exterior lighting shall be in accordance with UFC 3-530-01, and IESNA standards. Lighting design shall incorporate the latest techniques of energy savings applied to lighting systems. High efficiency LED fixtures shall be provided. LED driver inrush currents shall be in accordance with NEMA 410. Incandescent bulbs are prohibited.

The utility areas (electrical, mechanical, janitor closet, TRs, etc.) having unfinished or exposed structural ceilings shall be provided with pendant type LED industrial luminaries with wire guards.

LED lighting shall utilize recessed indirect fixtures in office areas. Living and office area lighting shall be fully dimmable and provided with at least two zones of control to accommodate A/V presentation systems lighting controls. Task lighting shall be provided as part of the FF&E package for individual work spaces in personal offices and in open offices.

Recessed or surface-mounted fixtures shall provide lighting in areas with gypsum board ceilings. Pendant type LED fixtures shall be provided in the apparatus bay area with a wire guard. Light locations within the apparatus bay area shall be coordinated with equipment and provide a minimum of 15 feet of clearance for vehicles.

General lighting in office areas shall be LED with low temperature energy efficient drivers.

Lighting Control for interior spaces shall be as follows and in accordance with UFC 3-530-01. Provide occupancy sensors in living spaces, offices spaces, storage spaces, and restrooms. Provide all individual workstations with task lighting to supplement the ambient light of the office space. Task lighting shall be provided as part of the FF&E package. Lighting control system shall automatically reduce lighting levels when space is unoccupied or whenever natural light is available. Lighting fixtures shall have addressable ballasts or 0-10 volt drivers. Lighting control devices and components shall be an addressable system. Provide a building wide addressable lighting control system. The Westnet Notification System shall be tied into the lighting control system and control the lights during an alert response.

13.7.2 Emergency, Exit, and Signal Lighting

Emergency lighting shall be provided as required by the Life Safety Code. Emergency lighting shall consist of either central power inverter or battery backup ballasts for egress path fixtures and in large open areas requiring emergency egress lighting in accordance with NFPA 101 and UFC criteria. Exit signs (LED as required by UFC 3-600-01) shall be located according to code and provided with integral battery backup or central inverter connection.
Illumination levels shall be designed in accordance with UFC 3-520-01. The lighting systems shall be as required to meet the USGBC LEED requirements.

The path of egress shall be marked with LED type exit signs. Interior emergency lighting shall be provided by integral battery ballasts or served by a central inverter system. The emergency and egress lighting shall comply with NFPA 101.

Provide bay doors with a signaling system to indicate fully raised doors. A red/green indicator should be located on the driver’s side at 72 in. (1800 mm) above finished floor. Lights shall be located on both exterior and interior wall of bay door. Provide exterior signaling lights with visor so that the lights will be visible during the day.

13.7.3 Exterior Illumination
Lighting levels shall be in accordance with the Illuminating Engineering Society (IESNA) Lighting Handbook and UFC 3-530-01; where conflicts exist, UFC 3-530-01 shall govern. All walkway lighting shall be provided utilizing bollard type luminaries.

Exterior lighting shall be LED type and shall be controlled by central astronomic time clock with ON-OFF offset feature and lighting contactors. The lighting contactor enclosures shall be equipped with ON-OFF-AUTO selector switch for time clock override. Orient exterior fixture to minimize glare on approach ways. Exterior lighting shall not exceed 80% of the lighting power densities for exterior areas and 50% for building façade and landscape features as defined in ASHRAE/IESNA Standard 90.1-2010, Exterior Lighting Section, without amendments. Lighting shall conform to requirements of zone LZ3 as defined in IESNA RP-33. Lighting and fixture types shall conform to Patrick Air Force Base design guide to minimize adverse impact on the sea turtles, both adults and hatchings.

Obstruction lighting shall be provided on the roof of the facility per PAA Advisory Circulars. Obstruction lights shall be 120V L-810 type with incandescent lamps per ETL 11-29 and shall be connected to the emergency lighting system.

13.8 LIGHTNING PROTECTION
A lightning protection system shall be provided for the facility and shall comply with NFPA 780, UL 96A, and MIL-HDBK 1004/6 Lightning Protection. Air terminals shall be provided on roof and be interconnected with roof conductors. Down conductors from the roof to ground shall be concealed within the building structure and adjacent to structural members where possible, in PVC conduit and connected to the facility counterpoise. The facility structural steel shall be interconnected and may be used as the lightning protection system down conductor in conformance with NFPA 780 and AFM 88-9 requirements in places where copper down conductors are not practical. A minimum of four down conductors, one at each corner of the building shall be provided. The entire lightning protection system shall be certified and given a UL Master Label.

13.9 Electrical Specifications
The Contractor shall edit and submit the following UFGS (as a minimum):
26 00 00.00 20 Basic Electrical Materials and Methods
26 05 00.00 40 Common Work Results for Electrical
26 08 00 Apparatus Inspection and Testing
26 09 23.00 40 Lighting Control Devices
26 12 19.00 40 Pad-Mounted, Liquid-Filled, Medium-Voltage Transformers
26 13 00.00 20 SF6/High-Firepoint Fluids Insulated Pad-Mounted Switchgear
26 20 00 Interior Distribution System
26 23 00.00 40 Switchboards and Switchgear
26 24 16.00 40 Panelboards
26 24 19.00 40 Motor Control Centers
26 28 01.00 10 Coordinated Power System Protection
26 29 23 Variable Frequency Drive Systems Under 600 Volts
26 33 53.00 20 Uninterruptible Power Supply (UPS)
26 41 01.00 10 Lightning Protection System
26 42 14.00 10 Cathodic Protection System (Sacrificial Anode)
26 51 00.00 40 Interior Lighting
26 56 00.00 20 Exterior Lighting
27 05 14.00 10 Cable Television Premises Distribution System
27 05 29.00 10 Protective Distribution System (PDS) for SIPRNet Communication Systems
27 10 00 Building Telecommunications Cabling System
27 54 00.00 20 Community Antenna Television (CATV) Systems
28 20 01.00 10 Electronic Security System
28 31 76 Interior Fire Alarm and Mass Notification System
33 70 02.00 10 Electrical Distribution System, Underground

14.0 COMMUNICATIONS AND SECURITY SYSTEM

14.1 TELECOMMUNICATIONS QUALIFICATIONS/COMMUNICATIONS SYSTEMS
Communications Systems Engineering and Design shall be performed by a BICSI Registered Communications Distribution Designer (RCDD). The shop drawings shall be Stamped and Signed by the "RCDD" certifying compliance with the applicable EIA/TIA standards as required.

14.2 Codes, Standards, and Design Criteria
The facility shall comply with the following: Where there is a conflict between the RFP and building codes, the more stringent, and of those, the most current directive(s) or regulation(s) shall apply. Dates are provided where available and are listed to provide a starting point to determine the most "current" date for each directive, regulation, and guideline. Note: Guidelines are recommendations.
14.3 GENERAL OVERVIEW

The new telecommunications system shall include, but not be limited to, exterior telecommunications connectivity, interior data and voice infrastructure, cabling, cable tray, terminations and complete telecommunications room build-out including racks, backboards, grounding, ladder tray, etc.

14.3.1 Outside Plant

Outside plant (OSP) network shall include provision of new communications ductbank system from the existing system to the new facility main communications room. Refer to sheet TU-101 for approximate routing. Field verify all routing, conduit lengths, existing utilities, and connection points prior to installation.

A. The OSP ductbank shall consist of a minimum of four (4) concrete encased four (4) inch conduits with a four (4) pack one (1) inch fabric type innerducts installed in each duct. Ductbank shall extend to existing ductbank which then routes to building 1315.

B. Provide new 4-4” ductbank from street R/W near 1315 into bldg. 1315 telecom service termination location. OSP copper pair (voice) and
single mode fiber optic cables (data) shall be extended from Base network tie-in point in bldg. 1315 to the new facility to support building functions.

C. Provide thirty-six (36) strand fiber optic OSP cable] for the new facility from building 1315.

D. Provide One hundred (100) pair OSP copper cable from facility to existing pedestal. Refer to site plan for location. Coordinate with base comm for connection

E. Provide new 2-2" direct buried U/G infrastructure to Base fence line at HH 1204 for connection to Okaloosa County (FL) fiber optic line routed down State Route 85. Extend fiber in existing infrastructure across SR85 into HH 1202. Coordinate exact fence crossing and interconnects with Okaloosa (Florida) county personnel and Eglin APF base communications group. Single mode fiber optic cables (data) shall be extended from county connection point to new facility to support ECC/911 functions. Provide Twelve (12) strand fiber optic OSP cable from the new facility to this point of connection on SR85.

F. Provide 2-2" conduits outside building for non-governmental /Commercial ISP and Cable TV services. Coordinate exact point of connection with Eglin base communications group and the service providers.

14.3.2 Telecommunication Rooms

Multiple communications rooms shall be provided for the facility. Refer to conceptual floorplans for locations. Each communications room shall be equipped with three-fourths (3/4) inch plywood backboards, nineteen (19)-inch equipment racks for locating data/voice patch panels with Cat-6 RJ-45 ports, and fiber optic patch panels for termination for fiber optic cables, network equipment, and other facility and ECC/911 equipment as required. Provide rooms for spare equipment space and growth.

The communications equipment rooms shall be conditioned spaces and equipped with grounding and dedicated power receptacles. The main communications room shall be equipped with entrance protection for incoming OSP copper cables. Telecommunications main grounding busbar (TMGB), Telecommunications grounding busbar (TGB) and telecommunications bonding backbone (TBB) shall be provided in accordance with J-STD-607-C standards.

The Main telecommunications equipment room shall include provisions for all OSP entrance facilities as well as all facility NIPRNET (Unclassified) communications equipment and telephone patch panels and backboard equipment.

Provide one IT/Communications room which shall include infrastructure for a Commercial internet service provider network and data connections. This network shall not interface with the Base/NIPRNET data network.

Provide one Fire/ECC/911 IT room to support all ECC functions for the 911/ECC center. Equipment to include in this room shall include 911 equipment,
Monaco radio equipment, Motorola radio equipment, and all Westnet facility equipment. Horizontal cabling serving the ECC space shall be provided to this room. This room shall also include building CCTV and Building access control equipment. This room shall be located within the ECC/911 area and be provided with UPS and Generator power and grounding in compliance with all UFC and NFPA requirements for emergency Communications system requirements.

A security equipment room shall be provided in the ECC to support Advantor IDS/Duress equipment and future relocated Advantor servers. Room shall be located within the ECC/911 space and built like a typical telecommunications room with overhead cable management, racks, backboards, emergency power, grounding, etc. Eglin Security Forces will relocate headend unit from bldg. 615. Coordinate power requirements with security forces and Advantor.

All small IT/AV closet shall be provided adjacent to the training room for housing AV equipment. Provide cooling and power and required.

Provide one office space as an alternate command port The room shall be designed to meet construction standards in accordance with API 31-101 and UFC 4-010-05. The room shall be certified to the level of classification needed for mission operations and shall be provided with card key access control as necessary for logging each entry. There shall be one SIPRNET drop located in this room. SIPRNET Drop shall be routed to a wall-mounted lockable data cabinet which will include a GPOI managed network switch and TACLANE. Due to the 24/7/365 nature of the facility, there shall be no Protected Distribution System or Intrusion detection system equipment required to support SIPRNET for this facility. Security Forces shall inspect the SIPRNET room prior to installation of drywall. In addition, provide 3-3 port NIPR drops in this room.

14.3.3 Telecommunications infrastructure

Telecommunications infrastructure includes wired jacks throughout the facility with multiple jacks at each workstation or desk. NIPR and telephone jacks shall be provided for all administrative spaces and rooms per UFC and user requirements. In addition, a separate cabling plant shall be provided for commercial Internet service. Commercial ISP connections shall be provided in each dorm space, day use space, Fitness center, hoteling space, conference/training space, and chiefs offices. NIPR outlets shall be terminated in the building’s main telecom room. Commercial ISP outlets shall be terminated in a separate IT/TR room. Wall jacks shall be located as needed to support furniture, printing and copy areas. Telecomm wiring shall be routed in a combination of conduit and cable tray and terminated at the appropriate telecom room. Each telecommunications room shall have a grounding bus and dedicated ground conductor tied to the facility grounding system loop. The communications grounding shall result in no more than ten (10) ohms to earth ground per TIA-607 standard. Quadraplex receptacles with dedicated circuits shall be provided on at least two (2) walls of each telecommunications room with a dedicated quadraplex at the base of each rack.

Cabling infrastructure for the ECC/911 dispatch workstations shall include sixteen (16) cat 6 connections from EACH dispatch workstation terminated to the Fire/IT telecom room in the ECC/911 space. These cables will be used to
support data, voice, 911 consoles, Advantor workstation, Westnet communications, Monaco workstations, and radio infrastructure to each dispatch workstation.

All cabling with the 911/ECC shall be a raised floor environment for cable routing. Provide cable trays or other cable supports means to manage cables under flooring. Provide cable pass-thrus in floor as required for cable routing.

Combination voice/data jacks shall be provided throughout the facility at locations designated by Base, applicable UFC’s, and as required to provide outlet coverage to facilitate equipment and personnel relocations without adding additional jacks. Each communication outlet shall include following jacks: two (2) category six (6), RJ45 (T568A) data jacks and one (1) category six (6), RJ45 voice jack.

Additional data outlets will be provided in the lobby, break rooms, etc. for use with GFGI flat panel displays for use with the alerting/digital signage systems. Locations shall include:

A. ECC/911 Alerting system displays (4 locations)
B. Fitness room
C. Dining
D. Day use area
E. Chief office

Provide one NCIC workstation outlet in the dispatch area. Coordinate with user for exact location and coordinate state NCIC data service into building for workstation.

Provide wall-mounted cabinet in IT room for building EMCS systems. Provide with dedicated power outlet.

14.3.4 Telecommunications Racks and Cabinets

Separate, floor standing equipment cabinets shall be provided for each system. These equipment racks shall contain patch panels and wire management systems to support all jacks and outlets plus spares.

a. Floor Mounted Cabinet: Eighty-four (84) inch floor mounted nineteen (19) inch equipment racks shall be black anodized aluminum relay racks with uprights to mount equipment. Side walls and lockable front and rear doors. Uprights shall be three (3) inch deep channel. Base standard is Great Lakes GL790ES-2442MS

b. Cable Guides: Cable guides shall be specifically manufactured for the purpose of routing cables, wires and patch cords horizontally and vertical along equipment racks.

c. Cables and Power: Shall be top exit for the frames and cabinets.

d. A/V (Audio/Video) Equipment: Power requirement shall be coordinated with manufacturer and model to determine outlet type and load.
14.3.5 Miscellaneous Electronic Radio Security Communications Systems

14.3.5.1 Intrusion Detection/Duress Alarm System

Intrusion Detection System; the facility is occupied 24/7/365 therefore no intrusion detection systems are required.

Panic/Duress alarm buttons shall be provided for at the ECC/911 dispatch stations and in the alternate command post room. Provide conduit infrastructure only for GPGI installed Advantor system.

14.3.5.2 Entry Control and Electronic Security System

Provide complete infrastructure including conduit, backboxes, coordination, and design of system in the base bid in accordance with and in locations described in UFC 4-730-10 and noted below. As a bid option, provide complete Electronic Security Systems. Provide all infrastructures including all equipment, cabling and power required for a complete system. Install all active electronics equipment and field devices such as access keypads, biometric readers, keypads, balanced magnetic switches, request to exit motion sensors and push buttons, data gathering panels, badging workstations and entry control system software/equipment for a complete system. Provide all final testing and start up. Provide card readers at the following locations at a minimum. Review final locations and sequence of operations with user during design phase.

- Exterior entrances (all)
- Telecom rooms (all)
- ECC/911 interior entrance (Biometric and CR)
- ECC/911 exterior entrances (Biometric and CR)
- Interior lobby door into non-public, day-use corridor
- All apparatus bay exterior door (keypad and CR)

14.3.5.3 Closed Circuit Television System (CCTV)

Provide complete infrastructure including conduit, backboxes, coordination, and design of system in the base bid in accordance with and in locations described in UFC 4-730-10 and noted below. As a bid option, provide complete system including all cameras, cabling, video servers, video storage and equipment. The closed-circuit television system shall consist of a video collection network to include cameras, monitors, network electronics, video monitors, workstations, network video recorders, and any ancillary components required to meet the required system configuration and operation. CCTV television system infrastructure shall support for Power-Over-Ethernet utilizing category six (6) cables. The cameras shall provide adequate coverage of the apparatus bay and the facility’s main entrance and additional locations noted below. Provide a minimum of 3MP color day/night cameras and 30 days storage of 15FPS video.
Provide cameras at the following locations at a minimum. Review final locations with user during design phase.

a. Apparatus bay, exterior and interior  
b. ECC/911 entrance  
c. Exterior entrances  
d. EOC lobby (interior)  
e. Main Lobby

14.3.6 Public Address (PA)/Intercom System

Provide a public-address system as described in UFC 4-730-10. Provide PA coverage in all areas including apparatus bays and ECC/911. Provide ECC/911 areas as separate zone with local volume control.

14.3.7 Community Antenna Television (CATV) System

Provide all infrastructures including all cabling and power required for the cable TV system. Underground conduit shall be extended from closest local CATV service provider service point near facility to new main communications entrance room. A plywood backboard shall be provided in the main communications room dedicated to cable television equipment furnished by CATV service provider. RG6 coaxial cable shall be provided from each television outlet to CATV enclosure in main communications entrance room and cables shall be terminated at both ends with F-type connectors. CATV service provider shall provide entrance cabling to main communications room. Contractor shall provide amplifiers and splitters required to maintain signal to each TV. Provide CATV outlets at the following locations at a minimum:

- Chiefs offices
- Dorm rooms
- Day-use room
- Fitness room
- Training room
- Conference rooms
- Lobby
- ECC/911 workstations

14.3.8 Monaco Radio System

Relocate existing Monaco radio receivers from existing location to new facility. Coordinate downtime and relocation with base personnel.

14.3.9 Motorola Radio System

Relocate existing Motorola LMR radio receivers from existing location to new facility. Coordinate downtime and relocation with base personnel.

14.3.10 Advantor IDS workstation

Relocate existing Advantor workstation from existing location to new facility. Coordinate downtime and relocation with base security forces.
14.3.11 Intercom Systems

Provide intercom system at the EOC lobby for communications into dispatch area. Intercom may be integral to the “bank-Teller” pass-thru specified elsewhere.

Provide video intercom from each dispatch workstation from ECC/911 entrance door, integrate with access control system for remote release from each workstation.

14.4 ELECTRONIC SYSTEMS SPECIFICATIONS

The Contractor shall edit and submit the following UFGS (as a minimum):

- 27 05 14.00 10 Cable Television Premise Distribution System
- 27 05 28.36 40 Cable trays for communications systems
- 27 10 00 Building Telecommunications Cabling System
- 27 13 23.00 40 Communications Optical Backbone Cabling
- 27 51 16 Radio and Public Address Systems
- 27 51 23.10 Intercommunications Systems
- 28 20 01.00 10 Electronic Security System
- 28 23 23.00 10 Closed Circuit Television Systems
- 33 82 00 Telecommunications Outside Plant (OSP)

14.5 Audio-Visual System

14.5.1 General Requirements

The contractor shall include the supporting infrastructure for Audio/Visual presentation equipment for A/V presentation, Video Teleconferencing Center (VTC) capabilities, visual displays, sound systems, etc. The A/V presentation system infrastructure will include but not be limited to conduits with pull wires, junction boxes, and associated electrical power outlets for A/V equipment/devices, strengthened walls and adequate supports. The A/V system cabling, active electronic equipment and devices, and installations will be Government Furnished Government Installed (GFGI). The contractor shall coordinate with government to provide compatible infrastructure and ensure fully functional system. The VTC capabilities are required for chief’s office, fitness center, training room, and conference room.

14.5.2 A/V Presentation and Teleconferencing Requirement

A/V presentation and VTC capabilities shall be provided in the chief’s office, training room, and conference room. A typical system will include at least one (1) wall mounted LCD display screen, wall mounted pan-tilt-zoom (PTZ) VTC camera(s), wall/ceiling mounted audio speakers, conference table mounted desktop microphones, conference table mounted desk type VTC operator console and VTC equipment credenza (cabinet) on floor in one of the corner of the room to house VTC switches and audio/video control equipment. The Contractor shall provide duplex power receptacles on a dedicated circuit for VTC equipment credenza and associated field devices as required. The Contractor shall provide minimum one (1) inch conduits with pull-wire and boxes between VTC equipment credenza to LCD display, VTC camera, audio speakers, and desk type operator console. The Contractor shall provide fully
dimmable lighting system with controls in VTC capable rooms. The Contractor shall include VTC infrastructure in their design drawings for construction and coordinate actual VTC system equipment with Government during design.

14.5.3 Fitness Center Requirement

Provide infrastructure and design for an A/V system for a sound and video system for the Fitness center. The system shall consist of wireless audio receivers for TV audio, Bluetooth and hardwire inputs from personal devices for overhead sound systems. And hardwire connections of personal devices into fitness center displays. The Contractor shall provide minimum one (1) inch conduits with pull-wire and boxes between input locations, equipment credenza, LCD displays, and audio speakers. The Contractor shall include infrastructure in their design drawings for construction and coordinate actual system equipment with Government during design.

14.6 Response Systems

14.6.1 Alert Response Notification System

System shall be equal to and 100% compatible with the existing Westnet system installed on campus. No equals will be accepted and a sole-source justification is available. Fire Chief or appointed personnel shall have final say on all planned for and installed devices prior to final turnover. Design submittals shall be provided during the design phase direct from Westnet to the user for final and interim approval.

The Contractor shall provide an Alert Response Notification System for the entire building. System shall be provided turn-key and shall include all equipment, cabling, conduit infrastructure, field devices, and integration of other components and systems. The notification system shall include at a minimum, a tone generator, kitchen gas shutoff valves, apparatus bay exhaust system, indication lighting in each space, night-vision illumination, entertainment systems muting, distributed audio system including ambient noise level monitoring with notification speakers in each space, message display screens in common spaces. The system shall be integrated with the lighting control system and the fire alarm system. The system shall also be connected to the central dispatch center via the communication network with remote control of the system from the dispatch center.

In addition, existing Westnet equipment, located in the existing ECC bldg. shall be located as part of the new facility build. This equipment includes media converters, PBX controllers, servers, and radio transmitters. Coordinate downtime and relocation with the customer.

Central dispatch shall initiate an alert response event. The lights shall slowly come on, an alert notification tone shall start low and slowly gets louder, the alert notification lights (colored LED) come one, the message display screens show the event details. The natural gas supply shall be shutoff in the kitchen. The apparatus bay exhaust system shall start. The system shall also capable of being initiated from the Chief's Office. The Alert Response System shall be compatible and fully functional with the existing/relocated Monaco main dispatch system.
The alert response notification system shall include a connection to the crash phone from the air traffic control tower. The alert response from the crash phone shall include connection to the notification lights and speakers.

The system shall be equipped with a full time UPS supporting both the Fire Station Control System and the associated base radio with a minimum of three hours of continuous operation upon loss of normal power.

System support infrastructure shall include select backboxes, conduit, cabling, power, surge suppression, grounding, control interfaces and other incidentals necessary to provide a complete and operational system integrated with all ancillary systems and devices (lights, gas valve, door control, etc).

14.6.2 Apparatus Bay Door Control System

The Contractor shall provide an apparatus bay door control system for each apparatus bay door including door controls and door bay signaling system to indicate fully raised door. The control system shall include a wireless remote control device which allows the doors to be opened from the apparatus equipment. The control system shall also include the ability to be controlled remotely from main dispatch. Remote control of the door shall only have the capability of opening the doors.

A red/green indicator shall be located on the driver's side at 72 inches (1800 mm) above finished floor. Lights shall be located on both exterior and interior wall of bay door. Provide exterior signaling lights with visor so that the lights will be visible during the day.

An apparatus bay door control system shall be integrated with the Westnet system and also have a local open/close door controller located adjacent to the door for each apparatus bay door.

14.6.3 Apparatus Barrier Gate Control System

The Contractor shall provide an apparatus barrier gate control at the gate entering the flight line. The control system shall include a wireless remote control device which allows the gate to be opened from the apparatus equipment. The control system shall also include the ability to be controlled remotely from main dispatch. Power and control wiring shall be provided from the gate to the fire station.
15.0  CATHODIC PROTECTION

15.1  CODES AND STANDARDS AND CRITERIA

The facility shall comply with the following: Where there is a conflict between the RFP and building codes, the more stringent, and of those, the most current directive(s) or regulation(s) shall apply. Dates are provided where available and are listed to provide a starting point to determine the most "current" date for each directive, regulation, and guideline. Note: Guidelines are recommendations.

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<thead>
<tr>
<th>CODE</th>
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<tr>
<td>ETL 1110-3-474</td>
<td>Engineering and Design, Cathodic Protection</td>
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<tr>
<td>UFC 3-570-06</td>
<td>Operation and Maintenance: Cathodic Protection Systems</td>
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15.2  GENERAL

Metal in soil or submerged in water shall be protected from corrosion to prevent waste or contamination. Contractor shall conduct a survey of the existing cathodic protection system or systems in the vicinity of the new facilities to insure that interference does not occur as a result of multiple cathodic protection systems. If any conflicts between existing cathodic protection systems and/or other facilities and the new cathodic protection system(s) are found, the Contractor shall properly coordinate and provide appropriate remedial solutions. All new metallic water lines; fire protection lines; gas lines; and force main lines shall be protected. The Contractor shall relocate any existing cathodic protection test stations or other cathodic protection equipment located in areas conflicting with construction of the new facilities. Any existing cathodic protection system equipment that has to be moved shall be relocated to a grassed area.

15.3  CATHODIC PROTECTION AND COATINGS

For all metal facilities located in the atmosphere, soil, or water electrolytes, corrosion control shall be provided. Cathodic protection shall be provided for metals in soils or water. Coatings are normally provided as corrosion protection in the atmosphere. As a minimum, for this project, cathodic protection is required on all metallic piping (and other metallic structures listed, including all ductile iron components) and on all metallic components of plastic pipelines of the following systems: water lines; gas lines; force main lines; and fire protection lines. Additionally, all pressurized steel, cast iron, and ductile iron piping under floor slab shall be provided with both cathodic protection and bonded coatings. The cathodic protection systems provided on the metallic structures listed above shall be either impressed current or galvanic type systems as determined by the following requirements:

a. The pertinent design data as gathered by the “corrosion expert” (defined below), including but not limited to soil resistivity, material selection, coating selection, current requirements, anode selection, ability to isolate from foreign structures, etc.
as necessary to meet the minimum potential criteria defined below;

b. Full compliance with one or more of the properly edited and subsequently approved applicable guide specifications;

c. Short runs (less than approximately one thousand (1,000 feet) of all metallic pipelines (including ductile iron) that can be adequately and justifiably protected with a galvanic cathodic protection systems, nonmetallic pipelines with metallic components, metallic components of other described structures requiring cathodic protection shall, as a minimum, comply with all the requirements of Unified Facilities Guide Specification (UFGS) section 26 42 14.00 (unless gathered data requires the use of an impressed current system), as listed below;

d. Protection of all metallic pipelines shall, as a minimum, be protected with an impressed current cathodic protection system in full compliance with a properly edited and government approved Unified Facilities Guide Specification (UFGS) section 26 42 17.00.

15.4 QUALIFICATIONS AND REQUIRED SITE VISITS

All Cathodic Protection field work, analysis, design, testing, inspection, and commissioning shall be accomplished by or under direct supervision of a Corrosion Expert. “Corrosion Expert” refers to a person, who by thorough knowledge of the physical sciences and the principles of engineering and mathematics, acquired by professional education and related practical experience, is qualified to engage in the practice of corrosion control of buried or submerged metallic surfaces. Such a person must be accredited or certified by the NACE International (formerly the National Association of Corrosion Engineers (NACE) as a NACE Accredited Corrosion Specialist or a NACE Certified Cathodic Protection (CP) Specialist (highest currently existing NACE level in this category) or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metallic piping systems, if such certification or licensing includes five (5) year’s experience in corrosion control on underground metallic surfaces and submerged metallic surfaces of the type under this contract. The certification or registration documentation for the Corrosion Expert must be submitted to the government for approval. The Corrosion Expert shall make at least three (3) visits to the project site. The first of these visits shall include obtaining soil and water resistivity data, pH data, and other data necessary for design; acknowledging the type of pipeline coatings to be used; and reporting to the Contractor the type of cathodic protection required. Once the Corrosion Expert’s cathodic protection design submittals are approved and the materials delivered, the Corrosion Expert shall revisit the site to ensure the Contractor understands installation practices and laying out the components. The third visit shall involve testing the installed cathodic protection systems and training applicable personnel on proper maintenance techniques. The Corrosion Expert shall supervise installation and testing of all cathodic protection.
Additionally, services of a NACE International Certified Coating Inspector shall be ascertained. The NACE Certified Coating Inspector shall closely coordinate with the Cathodic Protection Specialist described in the preceding paragraph in order to assure that the proper coating system is selected for application on the installed pipelines or other structures in order to provide a completely compatible and operable total corrosion control system consisting of both coatings and cathodic protection. The NACE Certified Coating Inspector shall assure, by personal observation and inspection, that all surfaces are properly prepared and that only qualified coating Contractors are utilized to properly apply all coatings. The Coating Inspector shall assure that the use of unbonded coatings (such as PE encasement on ductile iron piping) is not allowed; the use of such unbonded coatings is strictly prohibited in this project. The NACE Certified Coating Inspector shall perform a complete coating inspection of all applied coatings prior to backfilling, in accordance with the applicable NACE coating standards. The qualifications documentation of the coating inspector must be submitted to the government for approval.

15.5 CRITERIA FOR PROTECTION

Criteria for determining the adequacy of protection on a buried structure shall be in accordance with the criteria as describe below and as defined in the following NACE International Publication: NACE RP0169, CONTROL OF EXTERNAL CORROSION ON UNDERGROUND OR SUBMERGED METALLIC PIPING SYSTEMS. The cathodic protection system shall meet the minimum criteria described in the first subparagraph below (criteria indicated in the second subparagraph may be utilized as an alternative procedure if the first criteria procedure has failed and if submitted to and approved by the Contracting Officer’s representative prior to testing). The minimum criteria for steel, ductile iron and cast iron structures are as described below:

A negative voltage of at least minus eight hundred fifty (850) millivolts as measured between the structure or specified underground metallic component and a saturated copper-copper sulphate reference electrode contacting the earth (or electrolyte) directly over the structure. Determination of this voltage shall be made with the cathodic protection system in operation and after it has been in operation for a minimum of seventy-two (72) hours. Voltage drops shall be considered for valid interpretation of this voltage measurement. A minimum of minus eight hundred fifty (850) millivolts “instant off” potential between the structure being tested and the reference cell shall be achieved over ninety-five (95) percent of the area of the structure. Adequate number of measurements shall be obtained over the entire structure, pipe, or other metallic component to verify and record achievement of minus eight hundred fifty (850) millivolts “instant off”. This potential shall be obtained over ninety-five (95) percent of the total metallic area without the "instant off“ potential exceeding one thousand, one hundred (1,100) millivolts.

A minimum polarization voltage shift of one hundred (100) millivolts as measured between the structure and a saturated copper-copper sulphate reference electrode contacting the earth directly over the structure. This polarization voltage shift shall be determined by interrupting the protective current and measuring the polarization decay. When the protective current is interrupted, an immediate voltage shift will occur. The voltage reading, after the immediate shift (this reading shall be defined herein as being the
same reading as the “instant off” reading described in the immediate paragraph above and this term will be utilized below), shall be used as the base reading from which to measure polarization decay. Measurements achieving one hundred (100) millivolts decay shall be made over ninety-five (95) percent of the metallic surface. Alternatively, the “instant off” measurements can be compared to the native readings taken prior to energizing of the cathodic protection system and in the exact same locations. For comparison of “instant off” to native readings, the same number of measurements in corresponding locations must be taken. If the “instant off” reading is compared to the corresponding native reading in the same location, it must be a minimum of one hundred (100) mV more negative with respect to the copper/copper-sulfate reference cell than the native reading. The Corrosion Expert must assure that a complete set of native readings are taken prior to energizing the cathodic protection system at all of the same locations as the “on” and “instant off” measurements are taken, which is a mandatory requirement in order to utilize this specific measurement procedure. The “instant off” measurements shall be made after the system has been in operation for a minimum of seventy-two (72) hours.

15.6 COATING

A minimum coating thickness of forty (40) mils is required on all underground metal. A good bonded coating for all ductile iron piping and other metallic piping must be provided (unbonded coatings, such as PE encasement, are not allowed). Allowable coating types shall be as listed in the applicable specification section.

15.7 SYSTEM DESIGN

In addition to the design and submittal requirements required by the Mobile District Design Manual and elsewhere in these contract documents (e.g., see Section 01 10 12, regarding submittal requirements of Exterior Electronic Systems), as a minimum, the following submittals shall be submitted to the government for approval and for review by Engineering Division, Corps of Engineers, Mobile District: complete Operating and Maintenance (O&M) Instructions as described in the applicable cathodic protection guide specifications; descriptive and technical literature of all cathodic protection materials and equipment; drawings and details; evidence of qualifications of the Corrosion Expert; and tests and measurements data and procedures. Additionally all other submittals included in the applicable guide specifications shall be submitted to the government for approval.

The Contractor shall provide a complete design for acceptance and approval prior to purchase of any of the equipment included herein. The Contractor shall provide calculations; manufacturer's cut-sheets; a complete list of materials; drawings showing location where each anode, test cabinet, test station, rectifier, and other material is to be used; complete design drawings and shop drawings to support this design; and indicate the intentions of the Contractor's final product.

Each submerged metallic surface or buried metallic structure to be protected in this contract shall have design calculations, a drawing detail of the proposed cathodic protection system design showing all pertinent information.
Each new metallic pipeline connecting to an existing metallic pipeline shall be electrically isolated from the existing pipeline by the installation of an insulating flange. New metallic pipeline passing through concrete slabs, walls, and floors shall have an insulating material between the pipe and concrete in order to provide isolation (this can be accomplished by passing the metallic pipe through a PVC sleeve). Insulating flanges shall also be installed in new metallic pipelines extending above grade or where they extend above floor slabs; the flanges are to be located above grade.

The Contractor shall coordinate his work with any existing cathodic protection systems in the area of the new facilities in the project. Any existing cathodic protection system equipment that has to be moved due to conflicts shall be relocated to areas approved by the COR.

Detailed drawings shall be provided showing location of rectifiers (if an impressed current system is deemed necessary), anodes, insulated fittings, test stations, permanent reference cells, and bonding. Locations shall be referenced to two permanent facilities or marker points.

All potential tests shall be made at two and one-half (2-1/2) feet intervals witnessed by the COR. Submittals shall identify test locations on a separate drawing showing all metal to be protected and all cathodic protection equipment. However, a minimum of three (3) tests shall be made at each metallic component in the piping system. Test points, equipment, and protected metal shall be easily distinguished and identified on the drawings.

15.8 CATHODIC PROTECTION SPECIFICATIONS

The Contractor shall edit and submit the following UFGS (as a minimum):

26 42 14.00 10 Cathodic Protection System (Sacrificial Anode)

16.0 ENVIRONMENTAL CONSIDERATIONS

** Contractor shall comply with the BRAC Mitigation and Monitoring Plan for the 7th SFG (A) for all construction activities.

16.1 Applicable Criteria

AFI 32-1053 Pest Management Program
40 CFR 68 Chemical Accident Prevention Provisions
40 CFR 152 - 186 Pesticide Programs
40 CFR 260 Hazardous Waste Management System: General
40 CFR 261 Identification and Listing of Hazardous Waste
40 CFR 262 Standards Applicable to Generators of Hazardous Waste
40 CFR 279 Standards for the Management of Used Oil
40 CFR 302 Designation, Reportable Quantities, and Notification
40 CFR 355 Emergency Planning and Notification
49 CFR 171 - 178 Hazardous Materials Regulations
16.2 Environmental Protection

The Contractor shall be instructed to prevent environmental pollution and damage as the result of construction operations. Environmental pollution and damage is defined as 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 man; or degrade the utility of the environment for aesthetic, cultural and/or historical purposes. The control of environmental pollution and damage requires consideration of air, water, and land resources; and includes management of visual aesthetics; noise; solid, chemical, and liquid waste; radiant energy and radioactive materials; as well as other pollutants.

16.3 Existing Hazardous Materials

There is no building demolition as a part of this contract; therefore the contractor should not encounter existing hazardous materials such as asbestos, lead paint, PCB containing ballasts, mercury containing bulbs, or ionization type smoke detectors.

16.4 Installation Restoration Program

There are no current installation restoration program concerns within the footprint of this project.

16.5 Hazardous Materials

Hazardous material shall be stored in lockers specifically made for storage of hazardous materials. MSDSs for all hazardous materials brought on base shall be submitted to the COR. An initial inventory and a monthly usage of hazardous materials shall be submitted to COR quarterly during construction.

16.6 Contractor Generated Hazardous Waste

The Contractor shall comply with all provisions of 40 CFR 260 through 281 regarding the generation, storage, and disposal of hazardous waste. If the applicable, the Contractor shall submit a hazardous waste management plan to the COR for approval by 96 CEG/CEVCE. The Contractor shall not commence any work until this approval is obtained. The Contractor shall stop all work in the event 96 CEG/CEVCE identifies noncompliance with federal and state regulations and shall correct any discrepancies immediately within 2 hours of notification by 96 CEG/CEVCE. All hazardous waste shall be labeled and an inventory management system will be initiated to insure timely removal and proper disposal. No on-base disposal will be allowed. All drums will be labeled with a hazardous waste label. The label shall include the proper DOT shipping name, UN or NA, EPA waste number, generator information, and accumulation start date. The label shall be placed on the side of the drum. All drums used to store hazardous waste shall be nonleaking and safe to handle. Contractor shall be responsible for overpacking drums that are rusted, dented, or leaking. Drums and/or overpacks shall be provided by the Contractor. All drums shall be “new” DOT approved containers. The storage location for the hazardous waste drums shall be approved by the 96 CEG/CEVCE.
prior to the generation of hazardous waste. The Contractor shall document inspection of drums for leaks on a daily basis or if not working in the area daily, then a weekly inspection will suffice. A copy of the inspection checklist shall be forwarded to 96 CEG/CEVCE every Friday. Hazardous waste transportation and disposal shall be coordinated through 96 CEG/CEVCE. The Contractor shall be responsible for transportation and disposal of all hazardous waste at an EPA approved treatment, storage, disposal facility (TSDF). The transportation and disposal facilities shall be approved by 96 CEG/CEVCE prior to their use. Manifests shall be signed only by 96 CEG/CEVCE. Drums shall be disposed of within 90 days of placing the first drop in the container. The Contractor shall reimburse the Government for any remediation undertaken to clean up releases by the Contractor and for any civil or criminal fines or penalties for any environmental infraction caused by the Contractor.

16.7 Asbestos Materials and Lead Based Paints

The Contractor shall not use materials containing Asbestos or Lead Based Paints in the construction of this facility. Upon completion of the construction, the Contractor shall submit two copies of a Certified Letter to the Contracting Officer's Representative (COR) stating that no lead based paints of materials containing asbestos were used in the construction of the new facility.
1. **DESIGN RESPONSIBILITY**

The Contractor shall furnish and be responsible for a complete set of design documents for the facility as described in Specification Section 01 10 10 DESIGN REQUIREMENTS.

2. **DESIGN SUBMITTAL**

The Contractor shall submit its design in different phases and different stages to the Government for review. The number and requirements of each design submittal are listed below. The number and contents of the design submittals shall be reflected in the Contractor’s progress charts. All comments for each submittal shall have been annotated and incorporated into the design before approval is granted.

2.1 **TECHNICAL SPECIFICATIONS**

Utilize Unified Facilities Guide Specifications (UFGS) in the Specsintact format. Utilize complete project specifications to cover the full scope of work. Delete references to materials that are not allowed or that are not intended to be provided. Government standards will not be referenced in the specifications; instead, provide any specific requirement of the standard in the specification as applicable.

Operations and maintenance (O&M) portions of UFGS shall be edited by the respective Designers of Record in the design phase. O&M requirements in the UFGS shall not be edited out. Submittals, operating procedures, schematics, as-built drawings, manuals, software, and computer hardware required in the UFGS for system operation incorporated in the design phase are critical to the operation of the new facility on completion.

All operations and maintenance (O&M) manuals shall be compiled into one binder with a separate sections tabbed and with a cover sheet for each UFGS section with O&M requirements.

2.1.1 **Fast Tracking:** The contractor may at his option, "fast track" the design and construction of site work, exterior utilities, and the building foundation. These items may be initially designed to the 100% Unreviewed stage, and submitted with the 50% Design Submittal. The drawings must exhibit a completed understanding of the final design and indicate all items to be installed on this site and below the building slab including all utilities. An Intermediate Backcheck Submittal shall be provided for Fast-Tracked items for review and approval by the Government, so that a Partial Notice To Proceed (NTP) can be issued to the contractor for that portion of the work. In the event the site is “Fast tracked”, no permits shall be submitted until after the first design submittal review has occurred.

2.1.2 **Design Submittals:** Items of work not Fast-Tracking shall be submitted in a maximum of three complete packages at the 50%, 100% Un-Reviewed, and Final Design stages as outlined in the following paragraphs.
Partial design submissions of various portions of the project other than those identified for fast-tracking will not be allowed.

2.2 PERMITTING

The Contractor is responsible for identifying and obtaining all necessary permits and licenses prior to the start of construction.

3. GOVERNMENT APPROVED SUBMITTALS

The approval of submittals by the Contracting Officer's Representative shall not be construed as a complete check, but will indicate only that the design is in conformance with the contract requirements. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor is responsible for the design and construction of all work.

4. DESIGN SCHEDULE

Within 21 days after Notice to Proceed, the Contractor shall submit, for approval, a complete design schedule with all submittals and review times indicated by calendar dates. The schedule shall be updated monthly with copies furnished to the Contracting Officer. No progress payments will be made without an approved schedule. Any additional changes which the Contractor may wish to make to number or composition of design submittals shall be made 30 days prior to the expected submittal date. The Contractor shall allow 21 days for the Government review period if submittal dates are met. If a scheduled design submittal date is not met without notifying the Contracting Officer in writing one (1) week in advance, 28 days shall be allowed for the Government review period. If a submittal date is not going to be met, the Contractor shall notify the Contracting Officer, in writing, one (1) week prior to the scheduled submittal date. Failure to do so will increase the Government review time by seven (7) days. See Paragraph: "SUBMITTAL REVIEW".

5. PROGRESS CHARTS

The Contractor shall prepare and submit a progress chart to the Contracting Officer. The progress chart shall show, as a percentage of the total design price, the various items included in the contract and the order in which the Contractor proposes to carry on the work, with dates on which he will start the features of the work and the contemplated dates for completing same. Significant milestones such as review submittals shall be shown. The Contractor shall assign sufficient technical, supervisory and administrative personnel to insure the prosecution of the work in accordance with the progress schedule. The Contractor shall correct the progress schedule at the end of each month and shall deliver three copies to the Contracting Officer. Inasmuch as monthly partial payments to the Contractor are based to a large extent on the progress schedule, the monthly corrections should be realistically made to the best ability of the Contractor.

6. STAGES AND CONTENTS OF DESIGN SUBMITTALS

Information provided below is intended to supplement the COE Mobile District Design Manual (latest edition) requirements. The COE Mobile District Design Manual is available on the internet at:

6.1  STRUCTURAL INTERIOR DESIGN DESCRIPTION

6.1.1  The Structural Interior Design includes selection, specification and installation of all the building related finishes, materials and colors. The design philosophy shall be interpreted using the Room Finish Schedule and the SID Narrative in Section 01 10 10. All SID materials, finishes and colors shall be reviewed by the Government for compliance with the RFP. All SID submittals will run concurrent with the Architectural submittals.

6.1.2  Predefinition Conference: The Contractor shall lead a predefinition conference at Eglin Air Force Base within 10 days of the 50% Submittal and Government personnel shall attend it. The purpose of the predefinition conference is to present and discuss the SID color scheme for the project. Actual exterior and interior materials, finishes and colors are to be provided for review and comment. The Contractor may provide colored exterior elevations/perspectives of the SID color scheme to assist in the discussion of the SID. At the end of the predefinition conference, the Government will decide the necessary adjustments needed to the SID and this information will be used by the Contractor to further develop the project.

6.2  FURNITURE FIXTURE AND EQUIPMENT DESCRIPTION

The Furniture Fixture and Equipment (FFE) includes the design and specification of all moveable furnishings for all the areas occupied and unoccupied, as indicated in the 01 10 10 Design Criteria. The FFE Basis of Design is completely designed and presented in the Appendices. The FFE is to be fully coordinated with the SID, architectural layout and building engineered system designs to ensure a fully integrated project that is developed to meet User/project requirements.

6.3  FURNITURE FIXTURE AND EQUIPMENT REQUIREMENTS

6.3.1  The design of the FFE shall be concurrent with the related building design and fully coordinated with the building systems design for power, voice, data and mechanical devices such as thermostats, fire protection devices, fire pull boxes, sprinkler heads, etc. The Design Build Contractor will be responsible for insuring all the building systems devices are correctly placed so that the FFE is fully coordinated for access. The FFE shall also be fully coordinated with the Customer’s equipment requirements.

6.3.2  Contractor’s Interior Designer shall be required to conduct in-depth customer interviews to determine any additional or revised requirements to the full design Basis of the Design FFE for the building. Based on customer in-put, the FFE shall include space planning with comprehensive furniture placement plans, selection of all furniture and furnishings with all associated fabrics and finishes and development of illustrated furniture order forms to allow accurate procurement from sources that have current General Services Administrative (GSA) Federal Supply Schedule (FSS) contracts for the specified items. The FFE for movable furnishings shall demonstrate complete coordination with every aspect of the building related designs and finishes.

6.3.3  The FFE shall be formatted as indicated in Chapter 10 Interior Design of the 2007 Mobile District Design Manual.
6.3.4 If the bid option is awarded, all movable furnishings shall be purchased by the Contractor from sources that have current General Services Administration Federal Supply contracts, in accordance with the Federal Acquisition Regulations (FAR) Part 8 Required Sources of Supply and FAR Part 51. In addition to the cost of the moveable furnishings, all of the Contractor’s administrative costs associated with procurement and coordination and all labor cost associated with receiving, staging, installation (including hardwire, voice and data connections if required), adjustments/leveling, trash removal/disposal, and touch-ups shall be included in the total price of the FFE.

6.3.5 All Contractor services involving moveable furnishings shall be completed within the specified construction contract completion date for the building.

6.3.6 The final cost for the moveable furniture as specified in the FFE shall not exceed the Bid Option. The final cost estimate shall include pricing in accordance with the following line items:

a. Totals of all the FFE items proposed by the Contractor.
b. Freight costs if not included in the price of an item.
c. Removal, storage, reinstallation and installation costs of any and all FFE (moveable furniture items).
d. 6.5% Local Sales tax as applicable.

6.4 QUALITY STANDARDS FOR FFE ITEMS

The Complete Furniture, Fixtures and Equipment (FFE) design package is included as an appendix to this document. This shall be used as the Basis of Design. Items selected and currently listed on a GSA contract have been determined to be the quality level acceptable by the Government. FFE items not currently on a GSA contract have no basis for determining quality and cost and will not be acceptable for this project. The following best value determination checklist shall be edited and used to evaluate an alternate GSA contract source proposed for substitutions in the FFE package to justify the FFE selections.

BEST VALUE DETERMINATION CHECKLIST

a) Special features, which are required in effective program performance that are not provided by a comparable item.
b) Trade-in considerations
c) Probable life of the item selected as compared with a comparable item
d) Warranty considerations
e) Maintenance availability
f) Past performance (i.e. experience)
g) Environmental and energy efficiency considerations
h) Comfort/suitability of the item
i) Delivery time
j) Administrative costs
k) Training needed or provided
l) Technical qualifications
m) Compatibility with existing furniture and products in the same areas.
n) Other: compatibility with existing building finishes.

6.5 COMPLIANCE VERIFICATION
Compliance with the FFE Description and FFE Requirements shall be determined by the government review of the design, drawings, specifications and construction submittals.

Criteria in the Design Criteria and Design After Award submittal sections apply. Submittal shall be as indicated in Chapter 10 Interior Design of the 2007 Mobile District Design Manual.

6.6 FURNITURE FIXTURE AND EQUIPMENT IMPLEMENTATION SCHEDULE

After acceptance of the FFE package, the Contractor shall submit a FFE Implementation Schedule with set benchmark dates for the procurement and installation of the FFE. The Contractor shall fully coordinate the construction schedule with the FFE Implementation Schedule.

6.7 FURNITURE FIXTURE AND EQUIPMENT INSTALLATION REQUIREMENTS

All modular furniture workstations and FFE items shall be installed in accordance with the manufacturer’s instruction and by the manufacturer’s certified installer to insure the warranty is not void. All FFE items shall be level and aligned so that all items are complete, usable and in working order. All FFE items are to be touched up, dusted and left in clean condition.

6.8 50% SUBMITTAL

6.8.1 Paving, Grading and Drainage:

a. Provide drawings, narrative and supporting documentation incorporating work as shown for an interim submittal in the Mobile District Design Manual. Identify all required permits.

b. Provide marked-up specifications supporting work in this category.

6.8.2 Underground Utilities and Irrigation System:

a. Water Supply and Sanitary Sewer:

(1) Unless directed otherwise in Section 01 10 10 Design Requirements, the Contractor shall follow the applicable guidance and directions contained in the Mobile District Design Manual relative to the presentation of data and the submittal documents. See Chapter 8, entitled Water, Wastewater, and Environmental Protection.

(2) The submittal shall contain the design narrative and design calculations for the water and wastewater systems relating to this project. Include an analysis showing the required size of all components of the water supply and distribution system. The design narrative for wastewater systems shall show calculations for sewage flows, pipe sizes, and capacities. The narrative shall discuss anticipated permit requirements for water and wastewater features. Identify any deviation in the design from what was originally proposed and provide reasons and justifications for the deviation.
(3) Fire protection drawings and design analysis shall be 100% complete by the 50% submittal.

(4) The Contractor shall perform a fire protection design analysis in accordance with UFC 3-600-01. The Contractor shall provide the services of a qualified fire protection engineer who shall be an integral part of the design team, shall be involved in all aspects of the design as it relates to fire protection, and shall certify design compliance with UFC 3-600-01, in accordance with UFC 3-600-01.

(5) The narrative shall furnish Outline Specifications consisting of the number and title of the UFGS that the Contractor expects will be included in the final design. The Contractor shall use the UFGS Guide Specification. The outline specification shall briefly describe the item.

(6) The Drawings shall show, in plan, the anticipated water distribution and sewage conveyance systems and layout.

(7) Standard details shall also be included.

(8) The Contractor is encouraged to include manufacturer's catalog cuts and descriptive information in the submittal. (Manufacturer's trade names or equivalent are allowable on the drawings and in the specifications.)

b. Environmental:

The Contractor shall edit UFGS 01 57 20.00 10, Environmental Protection. The Contractor shall provide a list of all permits that are required to be obtained and any associated fees. The Contractor shall ensure that required environmental permits are obtained prior to start of construction and/or installing or operating any new or modified equipment or processes. In addition to Environmental Permits, based upon information provided by the BCE, the Contractor will determine when Installation specific permits are required, such as digging, communications, and security.

6.8.3 Landscape Work:

a. Provide drawings, narrative, and supporting documentation incorporating work as shown for an interim submittal in the Mobile District Design Manual.

b. Provide marked-up specifications supporting work in this category.

6.8.4 Geotechnical Investigation and Design:

a. Provide Geotechnical Report, narrative, and supporting documentation incorporating work as shown for an interim submittal in the Mobile District Design Manual.

b. Provide marked-up specifications supporting work in this category.

6.8.5 Architectural Design:
a. Provide drawings, design analysis, and supporting documentation incorporating work as shown in the Mobile District Design Manual.

b. Provide detail drawings (Building Sections, Elevations, etc.) details of Windows, Doors, Rails, Walls, Wall Bracing, Wall Bracing Associated with STC Assemblies, Partitions, Wall blocking for Accessories, Shelving and Cabinets, and Door Thresholds. Identify any deviation in the design from what was originally proposed and provide reasons and justifications for the deviation.

c. The Contractor shall furnish marked up Specifications supporting work in this category. The Contractor shall use the UFGS Guide Specification. For specific items not covered by a UFGS Guide Specification, the Contractor may use an industry specification or manufacturer's specification.

d. Provide building code analysis and a Life Safety Analysis include occupancy classification, distances for dead end corridors, common path, and travel distances, building type, fire rated assemblies, occupancy separation walls, etc. Provide life safety plan.

6.8.6 Structural Interior and Comprehensive Interior Design:

The Contractor shall submit five (5) complete sets of the initial SID package. All SID proposals shall be reviewed and approved by the Government. The Government shall return the SID packages to the Contractor after the review for updating and incorporating the review comments. Each submittal shall follow this method of review until the Government approves the completed SID package. The Submittals shall be side marked and distributed as follows: 1. EN-DA-Mobile District Office; 2. CD-GE 3. Installation; 4. User; and 5. Base Contracting

6.8.7 Structural:

a. Provide a 50% Structural design review package to include the following items.

(1) 50% Design Analysis: The Design Analysis shall include the following items:

(a) References

List all references used in the design including UFC, industry standards, and project specific criteria provided during the design interview phase.

(b) Design Loads

Design load values to be used in the design shall be identified, including roof and floor loads, wind loads, lateral earth pressure loads, seismic loads, etc., as applicable.

(c) Lateral Stability

Describe the method of providing lateral stability for the proposed structural system to resist seismic, wind, and other lateral loads.

Section 01 10 12 - 7
Include sufficient calculations to verify the adequacy of the proposed lateral load resisting system.

(d) Floor Vibrations

Describe the results of the analysis of the floor framing system to resist any human or machine induced floor vibrations. Describe project specific floor vibration criteria requirements such as any vibration sensitive equipment and the proposed acceptance criteria for human comfort.

(e) Fire Resistance

Describe the fire resistance requirements of the structure and the proposed materials and systems to be used.

(f) Antiterrorism/Force Protection (AT/FP)

AT/FP provisions which affect the structural design of the project will be identified and briefly described.

(g) Structural Calculations

Provide calculations for principle roof, floor, and foundation members as applicable, for the structural system proposed. Provide typical calculations for the lateral load resisting system design. Design analysis shall include calculations demonstrating that the floor system is acceptable for any project specific vibration acceptance criteria. Provide typical calculations of window opening framing supports indicating the AT/FP deflection and connection criteria have been met. Provide all necessary calculations to show how the progressive collapse requirements have been met.

(2) 50% Structural Drawings: Submitted drawings shall include the following:

(a) General Notes

Drawings will contain a set of general notes indicating design live, wind, seismic, crane, and vehicle loading. Provide references used in the structural design, and applicable material strengths. The general notes will be developed to reflect the interim level of design.

(b) Foundation and Framing Plans

Framing plans are required for roof, floors, and foundations, as applicable, to indicate layout of principal members. The foundation plan will show main footings, piles, and grade beams where applicable. Slab-on-grade crack control joint locations shall be indicated on plans and appropriate joint details shall be provided. Formed concrete slab construction joint locations shall be indicated on plans and appropriate joint details shall be provided.
Composite steel deck plans in excess of 60 feet in length shall indicate the location of slab contraction joint locations and appropriate joint details shall be provided. Masonry wall control joint locations shall be shown on the structural and architectural plans. Wall joints shall be carefully coordinated between the structural and architectural plans. Masonry walls supported directly by thickened slabs shall insure that the slab crack control joints are located directly below the wall crack control joint. Framing plans shall indicate locations of vertical and horizontal bracing system elements.

(c) Framing Elevations

Provide framing elevations at all vertical bracing locations. Provide, as a minimum, partial exterior wall elevations detailing framing required around window and door openings required to resist AT/FP specified loads.

(d) Sections and Details

Provide sufficient sections and details through roof, floor, and foundation members to indicate materials and type of construction proposed. Typical applicable masonry construction details shall be provided.

(e) Schedules

Where beam, column, and footing schedules are used, they will be filled in sufficiently to indicate principal member sizes. Typical bar bending diagrams shall be included if applicable.

(3) Specifications

Provide all necessary redlined marked up specifications to allow reviewers to evaluate choices made by the project structural engineer of record.

6.8.8 Heating, Ventilating and Air Conditioning (HVAC):

a. Provide a 50% HVAC design review package to include the following items.

(1) 50% Design Analysis: The Design Analysis shall include the following items:

(a) Detailed calculations for the following: heating loads, cooling loads, piping, ductwork, equipment sizing, etc. Computer calculations shall include print out of input and output data.

(b) EISA 2007 and EPAct 2005 calculations shall be included. Contractor shall provide Life Cycle Cost Analysis required by ETL 08-13.

(c) Equipment selection: Equipment selection shall be based on manufacturers whose equipment meets project requirements for
The design analysis shall include catalog cuts of all major equipment (e.g., air handlers, coils, chillers, condensing units, boilers, pumps, fans, unit heaters, etc.) manufacturer, model number, dimensions, capacities, and electrical requirements. The project design is not complete until the designer is assured that there is sufficient physical space in areas where equipment is to be located to install and to maintain the selected equipment.

(d) Include any other information or calculations to verify that the design complies with applicable criteria codes or standards and is satisfactory for intended purposes.

(e) Explanatory notes shall be included in the design analysis covering all rationale for design which would not be obvious to an engineer reviewing the analysis. Methods of air conditioning and controls for air conditioning systems shall generally be confined to those in common use in the industry.

(f) Specifications: Marked-up specifications shall be submitted.

(2) 50% Drawings: The drawings shall show all information given on the concept drawings but in greater detail. The drawings should include, but not be limited to, the following items as applicable:

(a) Show all ductwork and piping, with sizes and flow rates, where necessary for balancing purposes. Indicate the ductwork pressures in accordance with SMACNA standards. Include all accessories and appurtenances.

(b) Show elementary ladder diagrams and temperature control schematics indicating remote sensors, panel mounted controllers, and thermostats. Sequence of operation shall be included.

(c) Show layout and details of the final version of all HVAC systems. The location, arrangement, capacity, and space requirements of all equipment shall be indicated. Selected zones of air distribution shall be sufficiently completed to indicate the solution of the design for the remainder of the system and the precautions taken to coordinate the design with the architectural, structural, and electrical phases of construction. Equipment room layouts shall be sufficiently complete to show piping and duct layouts and access for maintenance. Since equipment rooms represent the most congested areas for both equipment and piping, the following guidelines should be followed when drawings are being prepared.

(i) Pipe fittings and accessory details shall be shown.

(ii) All duct and fittings in congested areas and mechanical rooms shall be drawn to scale using double-line layouts. In a VAV system, ducts between the AHU and VAV boxes shall be double-lined and ducts downstream of the VAV
boxes may be single lined. All other ducts with a dimension greater than 10” shall be shown double-lined.

(iii) All equipment shall be outlined to scale, and maintenance or removal space shall be indicated by dashed lines,

(iv) Removal and replacement space must be considered for the largest and heaviest equipment when a drawing is made.

(v) In other HVAC plans, sections, and details, these same guidelines shall apply.

(d) The final form of all equipment schedules shall be shown with preliminary equipment data filled in.

6.8.9 Plumbing:

a. List all references used in the design including Government design documents and industry standards.

b. Provide justifications and brief descriptions of the types of plumbing fixtures, piping materials and equipment proposed for use. Provide Life Cycle Cost Analysis for solar water heating and justification.

c. Provide detailed calculations for the sizing of the following systems:

   Domestic cold water piping
   Domestic hot water piping
   Waste and Vent
   Water heating system
   Natural gas distribution
   Roof Drainage System

d. Provide pipe layouts and risers for each plumbing system listed above. Included equipment and fixture schedules with description, capacities, locations, connection sizes, and other information as required.

e. The design analysis, submitted for review shall consist of the following:

   (1) Design Narrative to include applicable design assumptions, sizing methods chosen, and why.
   (2) Design Calculations.
   (3) Drawings.
   (4) Catalog cuts of equipment such as water heaters, backflow preventers, and plumbing Fixtures.

f. Drawings shall be complete with legends, floor plans, schedules, section, details and risers diagrams.

g. Prepare detailed calculations for systems such as sizing of domestic hot water heater and piping; natural gas piping.

h. Indicate locations and general arrangement of plumbing fixtures and major equipment.
i. Include plan and isometric riser diagrams of all areas including hot water, cold water, storm drain, waste and vent piping. Piping layouts and risers should also include natural gas and meter as required, and other specialty systems as applicable.

j. Include equipment and fixture schedules with descriptions, capacities, locations, connection sizes and other information as required.

k. Include technical specifications of materials and methods.

6.8.10 Fire Suppression System:

a. The fire protection engineer qualifications shall be submitted to and approved by the Contracting Officer certifying that the design engineer is a registered fire protection engineer or a registered professional engineer with a fire protection background and at least four years experience in fire protection/detection design.

b. Certificates shall be furnished to certify that the sprinkler system designed for the buildings in this project complies with the material and fabrication requirements of this specification.

c. The design analysis shall consist of the design narrative, design calculations, and drawings as specified in the Design Criteria such as the fire protection and life safety drawings.

d. Drawings shall not be smaller than the scale used for architectural floor plans. Drawings shall provide the information required by NFPA 13 and any additional requirements as stated in the Design Criteria. The drawings shall be submitted for review.

e. Drawings will detail method of attaching waterproofing membranes to sleeves passing through walls or floors that are subject to a static head of water.

f. Maintain fire resistive integrity as tested per ASTM E 814.

g. Locate or detail the following items on the contract drawings as applicable:

(1) Control valve locations.
(2) Type of sprinkler heads to be used.
(3) Required flagged pipe or mechanical grooved coupling connection locations and symbols.
(4) Wall and floor pipe penetration locations and details.
(5) Post indicator valve location.
(6) Pipe runs requiring freeze protection location and length to be protected.
(7) Fire department connections and water flow indicators locations and symbols.
(8) Mounting location for local water flow alarm facilities.
(9) Point of interconnection between alarm signal circuit and source of power will be indicated on the appropriate riser diagram.
h. Submit mark-up technical specifications of materials and methods.

i. Project Fire Protection Engineer shall review 100% design submittal (drawings and specifications) and certify in writing that the design is in full compliance with UFC 3-600-01 and all applicable criteria.

6.8.11 Interior Electrical System:

a. Narrative: In narrative, address the following to allow verification that the design complies with the requirements of the project. The design analysis shall include all calculations required to support design decisions and estimates at this stage of design. The analysis shall include specific criteria furnished, conference minutes, and cost analyses of all systems considered.

(1) Indicate electrical characteristics (voltage, phases, and number of wires) for the electrical system.

(2) Provide a description of lighting systems(s) to be used for all areas, referencing calculations. Also, include tabulation showing the following:

(a) Rooms name and number.
(b) Lighting intensity for each room. State the basis for selection such as ASHRAE 90.1, UFC 3-530-01, etc.
(c) Identify the type of fixture by manufacturers catalog cut.

(3) State the type of wiring system to be used, such as insulated conductors installed in rigid metal conduit, insulated conductors installed in electrical metallic tubing, etc. and location of proposed use.

(4) Describe any special areas of design, such as equipment, receptacles, handicap requirements, seismic requirements, etc.

(5) Define any hazardous classified locations by class, division, and group as defined by the National Electrical Code. Indicate the types of equipment to be used in these areas. State the reasons for the area(s) being hazardous classified locations.

(6) Provide a lightning risk analysis and describe the lightning protection system to be installed.

(7) Describe the type of grounding system planned.

(8) Describe the basic characteristics of panelboards, switchboards, motor control centers, and other major pieces of electrical equipment being provided. Short circuit and voltage drop calculations at all equipment with protective devices included shall be provided. Indicate equipment interrupting ratings and short circuit withstand ratings based on these calculations.

(9) Describe the electrical metering equipment to be provided.
(10) Provide a statement that no duct or liquid piping shall pass over and/or through any electrical space and/or room as defined by the National Electrical Code Article 110.

(11) Provide marked-up specifications supporting work in this category.

b. Drawings: In drawings, provide the following to allow verification that the design complies with the requirements of the project. Some detailed checks will be made. Complete and independent checking of the design shall be accomplished by the Contractor. The Contractor is fully responsible for the design. The design shall be complete and accurate. It shall be thoroughly checked for errors and conflicts (both within and between disciplines).

1. The power riser or one-line diagram shall be essentially complete except for finalization of conduit and wire sizes.

2. Panelboards, switchboards, motor control centers, and all other utilization equipment shall be located on the floor plans. Schedules for applicable equipment shall be provided. The schedules shall include all pertinent information to fully describe the equipment. Elevations for free standing equipment shall be provided but need not be entirely finalized. Details of the layouts for electrical room and closets shall be shown.

3. Branch circuits, lighting fixtures, receptacles, and switches, shall be shown with number of conductors indicated.

4. A completed fixture schedule shall be included on the drawings.

6.8.12 Exterior Electrical Distribution System:

a. Narrative: In narrative, address the following to allow verification that the design complies with the requirements of the project. The design analysis shall include all calculations required to support design decisions and estimates at this stage of design. The analysis shall include specific criteria furnished, conference minutes, and cost analyses of all systems considered.

1. Clearly describe the electrical distribution system and state the changes to be made to the existing system to accommodate this project.

2. State the electrical characteristics of power supply from the service point to the main service equipment (voltage, phase, number, and size of conductors).

3. Indicate the type, number, voltage rating, impedance, connections, and kVA rating of all transformers provided whether Contractor provided or Government furnished (existing).

4. State the type of conductor and location of proposed use and provide a justification for its use.

5. Include a statement describing the criteria used for the exterior design such as primary and secondary voltage drop. Describe the
physical characteristics of circuits. Provide the short circuit current available at the site and state the source of this value.

(6) Describe all exterior lighting. Provide types of fixture, pole heights, and proposed intensities. IES point to point calculations shall be submitted to support the selected lighting system.

(7) Provide marked-up specifications supporting work in this category.

b. Drawings: In drawings, provide the following to allow verification that the design complies with the requirements of the project. Some detailed checks will be made. Complete and independent checking of the design shall be accomplished by the Contractor. The Contractor is fully responsible for the design. The design shall be complete and accurate. It shall be thoroughly checked for errors and conflicts (both within and between disciplines). The electronic systems drawing information may be placed on the electrical drawings or on separate electronic systems drawings.

(1) All of the exterior electrical design drawings shall be completed with all conductors (underground) with all pertinent component details. Details shall include but are not limited to ductbanks, transformer location, transformer data (kVA, impedance, voltage, phase, etc.), conductor type and size, etc.

(2) Show removals and relocations, if any.

6.8.13 Interior Electronic Systems:

a. Narrative: In narrative, address the following to allow verification that the design complies with the requirements of the project. The design analysis shall include all calculations required to support design decisions and estimates at this stage of design. The analysis shall include specific criteria furnished, conference minutes, and cost analyses of all systems considered.

(1) Provide a descriptive narrative for all the electronic systems that are required for the project.

Telecommunication/Data Systems
Fire Detection and Alarm/Mass Notification System
Cable TV Systems
Surveillance System (CCTV)

(2) Provide marked-up specifications supporting work in this category.

b. Drawings: In drawings, provide the following to allow verification that the design complies with the requirements of the project. Some detailed checks will be made. Complete and independent checking of the design shall be accomplished by the Contractor. The Contractor is fully responsible for the design but shall seek input from 96 CS for Eglin specific standards. The design shall be complete and accurate. It shall be thoroughly checked for errors and conflicts (both within and between disciplines). The electronic systems drawing information
may be placed on the electrical drawings or on separate electronic systems drawings.

(1) Provide riser diagrams for all electronic systems. Riser shall show the location of the various components and interconnections with other systems.

(2) Show location of all devices and equipment for electronic system on floor plans. Show location of devices to be interconnected.

(3) Provide details of telephone outlets, telephone backboard arrangement, and other pertinent items required by criteria.

6.8.14 Exterior Electronic Systems:

a. Narrative: In narrative, address the following to allow verification that the design complies with the requirements of the project. The design analysis shall include all calculations required to support design decisions and estimates at this stage of design. The analysis shall include specific criteria furnished, conference minutes, and cost analyses of all systems considered.

(1) Describe the extent of the exterior work. (Including but not limited to Fiber or Copper)

(2) Provide the name of the licensed corrosion engineer or NACE specialist. Provide the following for cathodic protection systems:

   (a) Clearly define areas of structures or components in soil or water to be protected.

   (b) Type system recommended, comparison of systems, cost estimates showing all equipment alternatives.

   (c) Calculations on all systems that are considered showing all information and descriptions.

(3) Provide marked-up specifications supporting work in this category.

b. Drawings: In drawings, provide the following to allow verification that the design complies with the requirements of the project. Some detailed checks will be made. Complete and independent checking of the design shall be accomplished by the Contractor. The Contractor is fully responsible for the design. The design shall be complete and accurate. It shall be thoroughly checked for errors and conflicts (both within and between disciplines). The electronic systems drawing information may be placed on the electrical drawings or on separate electronic systems drawings.

(1) Cathodic protection system should be complete. Drawing shall indicate all structures or components to be protected and all cathodic protection components in relation to the protected structure. This includes showing sacrificial and impressed current anodes, rectifiers, isolation (dielectric) bonding, and
any other data needed to define the scope and area of the cathodic protection system.

6.8.15 Antiterrorism/Force Protection:

a. Provide narrative and supporting documentation discussing methods of incorporating requirements of UFC 4-010-01 and UFC 4-023-03 into project.

b. Antiterrorism/Force Protection requirements shall be included in applicable disciplines’ drawings, design analysis, and calculations to a level of completion described by the applicable discipline.

6.8.16 Sustainable Design:

a. Using the Guiding Principal Compliance of the US Green Building Council or Green Building Initiative, the Contractor shall submit a sustainable design narrative that includes a "Summary Table" of points earned at this phase of the project. The narrative supporting the point shown in the "Summary Table" shall briefly describe the feature used to obtain the point and how the point is or will be earned. For each point earned that requires calculations and documentation provide this information to level of design at this phase. Provide references to drawings and specifications for location of applicable features. Use the Air Force Sustainable Design Report: DD/CD as guidance in developing this requirement.

6.9 100% UNREVIEWED SUBMITTAL

6.9.1 Paving, Grading, and Drainage:

a. Provide drawings, specifications, narrative, annotated comments, and supporting documentation revised to comply with comments resulting from 50% submittal. Include copies of all required permit applications.

6.9.2 Underground Utilities:

a. Provide drawings, specifications, narrative, annotated comments, and supporting documentation revised to comply with comments resulting from 50% submittal. Include copies of all required permit applications.

(1) Water Supply and Sanitary Sewer: 100% unreviewed submittal shall be a refinement and completion of the preliminary submittal. Key points in the 100% unreviewed submittal include:

(a) The Contractor shall incorporate all earlier accepted comments into the design package.

(b) Drawings shall be completed and ready for implementation by construction forces.

(c) The submittal shall include all construction details and standard drawings.

(d) Specifications shall be edited and complete, including submittal register.
(e) Sanitary sewer profile.

(2) Environmental: The Contractor shall edit UFGS Specification Section 01 57 20.00 10,, Environmental Protection. Where environmental permits are required, the Contractor shall prepare technical documentation for the permit application and submit the permit application(s) including payment of all fees to the Contracting Officer's Representative. All payment checks should be made out to Florida Department of Environmental Protection. The Contracting Officer's Representative shall forward all permit applications and fees to the Air Force 96 CEG/CEVC for review. The Air Force will sign the applications and forward them to the appropriate regulatory authority.

6.9.3 Landscape Work:

a. Provide drawings, specifications, narrative, annotated comments, and supporting documentation revised to comply with comments resulting from 50% submittal.

6.9.4 Geotechnical Investigation and Design:

a. Provide Geotechnical Report, specifications, narrative, annotated comments, and supporting documentation revised to comply with comments resulting from 50% submittal.

6.9.5 Architectural Design:

b. Provide drawings, specifications, narrative, annotated comments, and supporting documentation revised to comply with comments resulting from 50% submittal.

6.9.6 Structural Interior Design:

a. The Contractor shall submit five (5) complete sets of the approved and final SID/CID package. Once the Contractor has submitted the SID/CID and the Government has approved the submittal, all materials, finishes, colors, textures and pattern submitted and approved for this project are then considered as part of the contract and the Contractor shall furnish and install all approved SID finishes and items. No deviations will be considered once the SID has been approved.

6.9.7 Structural:

a. Provide a 100% Structural design review package to include the following items.

(1) 100% Design Analysis: The Design Analysis shall include all items in the interim design analysis and any revisions required as a result of review of the interim Design Submittal. As a minimum include the following items:

(a) References
Provide a complete list all references used in the design including UFC, industry standards, and project specific criteria provided during the design interview phase.

(b) Design Loads

Final design load values used in the design shall be identified, including roof and floor loads, wind loads, lateral earth pressure loads, seismic loads, etc., as applicable.

(c) Lateral Stability

Describe the actual method of providing lateral stability for the structural system to resist seismic, wind, and other lateral loads. Include all calculations required to verify the adequacy of the lateral load resisting system in the final Structural Design Calculations.

(d) Fire Resistance

Describe the fire resistance requirements of the structure and the actual materials and systems to be used.

(e) Antiterrorism/Force Protection (AT/FP)

AT/FP provisions which affect the structural design of the project will be identified and briefly described.

(f) Structural Calculations

Provide complete calculations for all roof, floor, and foundation members of the final structural system. Incorporate all changes or revisions to the calculations as a result of review of the interim Design Submittal. Provide complete calculations for the lateral load resisting system design. Provide calculations demonstrating that the floor system is acceptable for any project specific vibration acceptance criteria. Provide complete calculations of window opening framing supports indicating the AT/FP deflection and connection criteria have been met. Provide complete calculations to show how the progressive collapse requirements have been met.

(2) 100% Structural Drawings: Comments made on the Interim Submittal shall be incorporated into the drawings for the 100% submittal. Structural drawings shall be carefully checked to insure coordination with architectural, civil/site, mechanical, and electrical drawings. Drawings shall be checked for consistency with the final specifications. Submitted drawings shall include the following:

(a) General Notes

Drawings will contain a complete final set of general notes indicating design live, wind, seismic, crane, and vehicle loading. Provide references used in the structural design, and all applicable material strengths.
(b) Foundation and Framing Plans

Complete final framing plans are required for roof, floors, and foundations, as applicable, to indicate final layout and required elevation of all structural members. All floor and roof openings will be shown on the appropriate plans. Framing plans should indicate tie force connections associated with Progressive Collapse requirements. Framing plans should indicate locations of vertical and horizontal bracing system elements.

(c) Framing Elevations

Provide framing elevations at all vertical bracing locations. Provide, as a minimum, partial exterior wall elevations detailing framing required around window and door openings required to resist AT/FP specified loads.

(d) Sections and Details

Provide complete sections and details through roof, floor, and foundation members to indicate materials and type of construction proposed. Provide details and sections of all floor and roof openings.

(3) Specifications

Specification sections will incorporate all comments from previous interim submittals. All redlines will be removed from the specification sections and the specifications shall be checked for brackets, section references, and publication references.

6.9.8 Heating, Ventilating and Air Conditioning (HVAC):

a. The final HVAC design review package shall be submitted by the Contractor for Government review to include the final design analysis, specifications, annotated comments, and drawings of the HVAC systems showing the completed designs revised to comply with comments resulting from 50% submittal.

6.9.9 Plumbing:

a. The final plumbing design review package shall be submitted by the Contractor for Government review to include the final design analysis, specifications, annotated comments, and drawings of the plumbing systems showing the completed designs revised to comply with comments resulting from 50% submittal.

6.9.10 Fire Protection:

a. Submit the complete 100% unreviewed final submittal revised to comply with comments resulting from 50% submittal.

6.9.11 Interior Electrical System:
a. The drawings shall be thoroughly checked for discrepancies, for compatibility between drawing and specifications, and for compatibility between disciplines.

b. Completed short circuit calculations and a coordination analysis with time current curves and arc flash data for the entire electrical system shall be provided. All equipment shall be identified by manufacturer's name and catalog number.

c. Complete voltage drop calculations shall be provided. The voltage drop calculations shall use the same single line diagram as the short circuit calculations and shall show drops at the same locations as short circuit currents are shown.

d. Lighting calculations (lumen method for interior and point-to-point for exterior) shall be provided for all rooms and spaces and all exterior locations requiring illumination.

e. All details shall be completed at this stage. Congested areas where there can be interferences with various systems shall be thoroughly detailed by expanded scale drawings.

f. The drawings shall be thoroughly checked for discrepancies, for compatibility between drawing and specifications, and for compatibility between disciplines.

6.9.12 Exterior Electrical Distribution System:

a. The final design review package revised to incorporate 50% review comments shall be submitted by the Contractor for Government review to include the final design analysis, specifications, annotated comments, and drawings showing the completed designs.

6.9.13 Interior Electronic Systems:

a. The final design review package revised to incorporate 50% review comments shall be submitted by the Contractor for Government review to include the final design analysis, specifications, annotated comments, and drawings showing the completed designs.

6.9.14 Exterior Electronic Systems:

a. The final design review package revised to incorporate 50% review comments shall be submitted by the Contractor for Government review to include the final design analysis, specifications, annotated comments, and drawings showing the completed designs.

6.9.15 Antiterrorism/Force Protection:

a. Provide narrative and supporting documentation discussing methods of incorporating requirements of UFC 4-010-01 and UFC 4-023-03 into project.

b. Antiterrorism/Force Protection requirements shall be included in applicable disciplines' drawings, design analysis, calculations, and specifications, revised to comply with comments resulting from 50%
submittal, to a level of completion described by the applicable discipline.

6.9.16 Sustainable Design:

a. 100% Sustainable Design Narrative. Provide updates to the sustainable design narratives, "Summary Table" of points and supporting calculations and documentation. Highlight any changes and describe the reason for the change. Provide references to drawings and specifications for location of applicable features. Use the Air Force Sustainable Design Report: DD/CD as guidance in developing this requirement.

6.10 FINAL SUBMITTAL

Completed Drawings, Specifications and supporting documentation for all disciplines per COE Design Manual with all comments incorporated.

7. QUANTITY OF SUBMITTAL ITEMS

The documents which the Contractor shall submit to the Government for each submittal are listed and generally described below. At the Final submittal, the Contractor shall also submit one full size set of blackline paper plot drawings and one original hard copy set of the specifications to MDO. At the final submittal, the Contractor shall also submit 2 CD's each with a complete set of drawings, design analysis, specifications, and rendering.

8. MAILING OF SUBMITTALS

All submittals to the Government during design shall be mailed using overnight mailing service. The addresses to where each copy shall be mailed are listed below. Each submittal shall have a transmittal letter accompanying it which indicates the date, design percentage, type of submittal, list of items submitted, transmittal number and point of contact with telephone number.
## 8.1 ADDRESSES FOR SUBMITTAL DISTRIBUTION

<table>
<thead>
<tr>
<th>AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A.</strong> US Army Corps of Engineers - Mobile District</td>
</tr>
<tr>
<td>Attn: CESAM-EN-DA, Carlos Gant</td>
</tr>
<tr>
<td>Mail: P.O. Box 2288, Mobile, AL 36628-0001</td>
</tr>
<tr>
<td>FedEx: 109 St. Joseph Street Mobile, AL 36602</td>
</tr>
<tr>
<td>Phone: 251-694-4659; Email: <a href="mailto:carlos.r.gant@usace.army.mil">carlos.r.gant@usace.army.mil</a></td>
</tr>
<tr>
<td><strong>B.</strong> US Army Corps of Engineers - Mobile District</td>
</tr>
<tr>
<td>Attn: CESAM-EN-D, Gary Whigham</td>
</tr>
<tr>
<td>Mail: P.O. Box 2288, Mobile, AL 36628-0001</td>
</tr>
<tr>
<td>FedEx: 109 St. Joseph Street Mobile, AL 36602</td>
</tr>
<tr>
<td>Phone: 251-690-2669; Email: <a href="mailto:gary.w.whigham@usace.army.mil">gary.w.whigham@usace.army.mil</a></td>
</tr>
<tr>
<td><strong>C.</strong> US Army Corps of Engineers - Mobile District</td>
</tr>
<tr>
<td>Attn: CESAM-PM-AF, Robert Schodlbauer</td>
</tr>
<tr>
<td>Mail: P.O. Box 2288, Mobile, AL 36628-0001</td>
</tr>
<tr>
<td>FedEx: 109 St. Joseph Street Mobile, AL 36602</td>
</tr>
<tr>
<td>Phone: 251-694-4474; Email: <a href="mailto:robert.a.schodlbauer@usace.army.mil">robert.a.schodlbauer@usace.army.mil</a></td>
</tr>
<tr>
<td><strong>D.</strong> US Army Corps of Engineers - Eglin Resident Office</td>
</tr>
<tr>
<td>ATTN: CESAM-CD-GE (Kelli Williams)</td>
</tr>
<tr>
<td>Mail: PO BOX 2049</td>
</tr>
<tr>
<td>FedEx: Bldg 632 Inverness Road, Eglin AFB, FL 32542</td>
</tr>
<tr>
<td>Phone: 850-882-7025; Email: <a href="mailto:kelli.m.williams@usace.army.mil">kelli.m.williams@usace.army.mil</a></td>
</tr>
<tr>
<td><strong>E.</strong> US Army Corps of Engineers - Gulf Coast Area Office</td>
</tr>
<tr>
<td>ATTN: CESAM-CD-GA, Andy Adams</td>
</tr>
<tr>
<td>Building 632 Inverness Road Eglin AFB, FL 32542</td>
</tr>
<tr>
<td>Phone: 850-883-2002; Email: <a href="mailto:j.andy.adams@usace.army.mil">j.andy.adams@usace.army.mil</a></td>
</tr>
<tr>
<td><strong>F.</strong> Eglin AFB BCE 96 CEG/CENM</td>
</tr>
<tr>
<td>ATTN: Rick Stokes/Otto Ford</td>
</tr>
<tr>
<td>Building 632 Room 134, Inverness Road, Eglin AFB, FL 32542</td>
</tr>
<tr>
<td>Phone: 850-883-1356; Email: <a href="mailto:richard.stokes.9@us.af.mil">richard.stokes.9@us.af.mil</a> / <a href="mailto:otto.ford.2@us.af.mil">otto.ford.2@us.af.mil</a></td>
</tr>
<tr>
<td><strong>G.</strong> AFCEC/CPMA Attn: Mr. Shubha Chakravarty</td>
</tr>
<tr>
<td>2261 Hughes Avenue, Ste 155, Lackland AFB, TX 78236-9853</td>
</tr>
<tr>
<td>Phone: (210)395-1449; Email: <a href="mailto:shubhashis.chakravarty@us.af.mil">shubhashis.chakravarty@us.af.mil</a></td>
</tr>
<tr>
<td><strong>H.</strong> 96th CES/CEF ATTN: Mark Giuliano</td>
</tr>
<tr>
<td>501 N. Barrancas Avenue, Eglin AFB, FL 32542</td>
</tr>
<tr>
<td>Email: <a href="mailto:mark.giuliano@us.af.mil">mark.giuliano@us.af.mil</a></td>
</tr>
<tr>
<td><strong>I.</strong> Commissioning Agent (TBD)</td>
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8.2 SUBMITTAL DISTRIBUTION

The following table lists the number of copies of design submittal requirements for this project:

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<tr>
<td>Furniture, Fixtures, and Equipment Binder</td>
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<tr>
<td>All of the above on CD in Searchable Adobe pdf Format</td>
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<tr>
<td>Furniture, Fixtures, and Equipment Binder</td>
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</tr>
<tr>
<td>All of the above on CD in Searchable Adobe pdf Format along with Bound CADD files and Specintact (.sec) files</td>
<td>6  1  1  2  2  8  1  1  1  1</td>
</tr>
</tbody>
</table>

* Design Analysis includes: Design Analysis / Criteria / Requirements / Narratives / Calculations / Construction Time Analysis / List of Specifications / Identify Permit Requirements / Equipment Cut Sheets / Annotated Review Comments / Meeting Minutes.

** Make additional submittals as required by other sections of this RFP that are not included in this Submittal Register.
9. SUBMITTAL REVIEWS

For each design review submittal, the Contractor will be furnished comments from personnel of the Mobile District and from other concerned agencies involved in the review process. The review will be for conformance with the technical requirements of the solicitation. The Government will take twenty-one (21) days to review and comment on each unreviewed design submittal including the 100% unreviewed submittal. Contractor shall allow fourteen (14) days for a backcheck of Final Submittal comments prior to a release for construction can be issued. The last two weeks of the calendar year shall not be considered when scheduling review times or meeting times. If the Contractor disagrees technically with any comment or comments and does not intend to comply with the comment, he shall clearly outline, with ample justification, the reasons for noncompliance within five (5) days after receipt of these comments in order that the comment can be resolved. The disposition of all comments shall be furnished in writing within 5 working days after the review meeting. The Contractor is cautioned in that if he believes the action required by any comment exceeds the requirements of this contract, that he should take no action and notify the Contracting Officer’s Representative (COR) in writing immediately.

Review comments will be written using Design Review and Checking System (DrChecks). DrChecks is an Internet based computer program. DrChecks is free of charge. Comments will be written in DrChecks. The Contractor shall annotate the comments using DrChecks and the Government will backcheck the comments. For more information on DrChecks, go to https://www.projnet.org/projnet/binKornHome/index.cfm.

All DrChecks review comments must be closed out by the reviewer before the construction notice to proceed can be issued.

Review conferences will be held for each design submittal at Eglin AFB, FL. The Contractor shall bring the personnel that developed the design submittal to the review conference. These conferences will take place the week after the twenty-one (21) day review period. The Contractor shall be responsible for writing and distributing Minutes on each submittal review meeting within 7 calendar days of the meeting. Time for design submittal reviews and conferences will be included in the Contractor’s schedule. Distribution shall be to the offices shown under paragraph 8, Mailing of Submittals.

If a design submittal is over one (1) day late in accordance with the latest design schedule and the Contractor has not given the COR a one (1) week written notice that the submittal will be late, the Government review period will be extended 7 days. The review conference will be held the week after the extended review period.

During the design review process, comments will be made on the design submittals that will change the drawings and specifications. The Government will make no additional payments to the Contractor for the incorporation of comments. Review comments are considered part of the design/build process.

If the COR requests a design change after the Design Complete Submittal drawings and specifications have been submitted, then this shall be considered a change and proper payment will be made by the COR.

If a design submittal is not of the quality level required for the stage of
design submitted, the Government has the right to return the submittal to the Contractor so the design quality can be increased, and request a resubmittal. The review time will begin when the submittal received is of the quality level required for the stage of design submitted by the Government. Returned incomplete submittals will not be the basis of a claim by the Contractor for additional time or money.

10. PAYMENT DURING DESIGN

Payments, as authorized by the Authorized COR, will be made monthly for the amount and value of the work and services performed by the Contractor. This estimate will be verified by the Contracting Officer utilizing the progress charts or the CONTRACTOR-PREPARED NETWORK ANALYSIS SYSTEM submitted by the Contractor and independent analyses of progress. See Contract Clause entitled PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS for additional information.

11. DESIGN ANALYSIS

11.1 Media and Format: The design analysis shall be presented on 8-1/2" x 11" paper except that larger sheets may be used when required for graphs or other special calculation forms. All sheets shall be reproducible form. The material may be typewritten, hand lettered, handwritten, or a combination thereof, provided it is legible. Side margins shall be 1-inch minimum to permit side binding and head to head printing. Bottom margins shall be 1 1/4 inches, with page numbers centered 1-inch from the bottom.

11.2 Organization: The several parts and sheets of the design analysis shall be given a sequential binding number and bound under a cover indicating the name of the facility and project number, if applicable. The title page shall carry the designation of the submittal being made. The complete design analysis presented for final review with the final drawings and specifications shall carry the designation "FINAL DESIGN ANALYSIS" on the title page.

11.3 Design Calculations: Design calculations are a part of the design analysis. When they are voluminous, they shall be bound separately from the narrative part of the design analysis. The design calculations shall be presented in a clean and legible form incorporating a title page and index for each volume. A table of contents, which shall be an index of the indices, shall be furnished when there is more than one volume. The source of loading conditions, supplementary sketches, graphs, formulae, and references shall be identified. Assumptions and conclusions shall be explained. Calculation sheets shall carry the names or initials of the computer and the checker and the dates of calculations and checking. No portion of the calculations shall be computed and checked by the same person.

11.4 Automatic Data Processing Systems (ADPS): When ADPS are used to perform design calculations, the design analysis shall include descriptions of the computer programs used and copies of the ADPS input data and output summaries. When the computer output is large, it may be divided into volumes at logical division points. Each set of computer printouts shall be preceded by an index and by a description of the computation performed. If several sets of computations are submitted, they shall be accompanied by a general table of contents in addition to the individual indices. Preparation of the descriptions which must accompany each set of ADPS printouts shall include the following:
a. Explain the design method, including assumptions, theories, and formulae.

b. Include applicable diagrams, adequately identified.

c. State exactly the computation performed by the computer.

d. Provide all necessary explanations of the computer printout format, symbols, and abbreviations.

e. Use adequate and consistent notation.

f. Provide sufficient information to permit manual checks of the results.

12. DRAWINGS

12.1 General: All drawings shall be Computer-Aided Design and Drafting (CADD) in AutoCad, latest edition. The Contractor shall prepare the drawings in such a manner that the Corps of Engineers could construct the facility without any additional assistance from the Contractor. Drawings shall be complete. Unnecessary work such as duplicate views, notes and lettering, and repetition of details shall not be permitted. Standard details not applicable to the project shall not be shown. Details of standard products or items which are adequately covered by specifications shall not be included on the drawings. Drawings shall be detailed such that conformance with the RFP can be checked and to the extent that shop drawings can be checked. Shop drawings shall not be used as design drawings. The Contractor shall use standard Corps of Engineers title blocks and borders on all drawings at all submittal stages. Standard drawing sheet formats and title blocks, and file and drawing CADD file names will be furnished to the Contractor by the Government. The Contractor shall incorporate the drawing, file, and contract numbers on individual drawing sheets at the earliest submittal.

12.2 50%, 100%, and Final Submittals: Drawing submittals shall be half size 11" x 17" blue/black lines or plots.

The building drawings shall consist of 1/8" scale minimum floor plans. Elevations shall be drawn to a 1/8" scale minimum. The scale of other visual information shall be as required. Building wall sections shall be drawn at a minimum of 1/4" scale. The site and exterior utility drawings shall use a minimum scale of 1"=30' unless otherwise indicated. Additionally, the overall site plan for this project shall be on one drawing sheet. Minimum text size on half size drawings is 1/8".

13. SPECIFICATIONS

The Contractor shall submit marked-up specifications at the 50% submittal, and final specifications at the 100% unreviewed and final submittals. The specifications shall be Unified Guide Specifications (UFGS). These specifications are available on the Internet at:

http://www.wbdg.org/ccb/

The specifications shall be detailed enough such that another product meeting the specification could be substituted and it would not adversely impact the
14. **SUBMITTAL REGISTER**

The Contractor shall develop submittal requirements required during construction as part of the design phase of the contract. This shall be done by the Contractor's Designer of Record by producing a Contractor Submittal Register at each submittal during design. A submittal register shall be prepared for each section of the specifications for the submittal requirements of that section. The Contractor's Designer of Record shall be responsible for listing all required submittals necessary to insure the project requirements are complied with. The Register shall identify submittal items such as shop drawings, manufacturer's literature, certificates of compliance, material samples, guarantees, test results, etc. that the Contractor shall submit for review and/or approval action during the life of the construction contract. See specifications Section 01330 SUBMITTAL PROCEDURES (DESIGN BUILD) for submittal and submittal register definitions and procedures.

15. **DESIGNER OF RECORD**

The Contractor shall identify and have on his staff a Designer of Record to develop submittal requirements during design and be responsible for each submittal identified in the Contractor Submittal Register. A Designer of Record may be responsible for more than one submittal. All areas of work shall be accounted for by a listed Designer of Record. Designer of Record shall approve all submittals they are responsible for prior to submittal to the Government.

--END OF SECTION--
SECTION 01 32 01.00 10
PROJECT SCHEDULE
02/15

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.

AACE INTERNATIONAL (AACE)
AACE 29R-03 (2011) Forensic Schedule Analysis

U.S. ARMY CORPS OF ENGINEERS (USACE)

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance to Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

- Project Scheduler Qualifications; G, RO
- Preliminary Project Schedule; G, RO
- Initial Project Schedule; G, RO
- Periodic Schedule Update; G, RO

1.3 PROJECT SCHEDULER QUALIFICATIONS

Designate an authorized representative to be responsible for the preparation of the schedule and all required updating and production of reports. The authorized representative must have a minimum of 2-years experience scheduling construction projects similar in size and nature to this project with scheduling software that meets the requirements of this specification. Representative must have a comprehensive knowledge of CPM scheduling principles and application.

PART 2   PRODUCTS

2.1 SOFTWARE

The scheduling software utilized to produce and update the schedules
required herein must be capable of meeting all requirements of this specification.

2.1.1 Government Default Software

The Government intends to use Primavera P6.

2.1.2 Contractor Software

Scheduling software used by the contractor must be commercially available from the software vendor for purchase with vendor software support agreements available. The software routine used to create the required sdef file must be created and supported by the software manufacturer.

2.1.2.1 Primavera

If Primavera P6 is selected for use, provide the "xer" export file in a version of P6 importable by the Government system.

2.1.2.2 Other Than Primavera

If the contractor chooses software other than Primavera P6, that is compliant with this specification, provide for the Government's use two licenses, two computers, and training for two Government employees in the use of the software. These computers will be stand-alone and not connected to Government network. Computers and licenses will be returned at project completion.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Prepare for approval a Project Schedule, as specified herein, pursuant to FAR Clause 52.236-15, SCHEDULE FOR CONSTRUCTION CONTRACTS. Show in the schedule the proposed sequence to perform the work and dates contemplated for starting and completing all schedule activities. The scheduling of the entire project is required. The scheduling of design and construction is the responsibility of the Contractor. Contractor management personnel must actively participate in its development. Designers, Subcontractors and suppliers working on the project must also contribute in developing and maintaining an accurate Project Schedule. Provide a schedule that is a forward planning as well as a project monitoring tool. Use the Critical Path Method (CPM) of network calculation to generate all Project Schedules. Prepare each Project Schedule using the Precedence Diagram Method (PDM).

3.2 BASIS FOR PAYMENT AND COST LOADING

The schedule is the basis for determining contract earnings during each update period and therefore the amount of each progress payment. The aggregate value of all activities coded to a contract CLIN must equal the value of the CLIN.

3.2.1 Activity Cost Loading

Activity cost loading must be reasonable and without front-end loading. Provide additional documentation to demonstrate reasonableness if requested by the Contracting Officer.
3.2.2 Withholdings / Payment Rejection

Failure to meet the requirements of this specification may result in the disapproval of the preliminary, initial or periodic schedule updates and subsequent rejection of payment requests until compliance is met.

In the event that the Contracting Officer directs schedule revisions and those revisions have not been included in subsequent Project Schedule revisions or updates, the Contracting Officer may withhold 10 percent of pay request amount from each payment period until such revisions to the project schedule have been made.

3.3 PROJECT SCHEDULE DETAILED REQUIREMENTS

3.3.1 Level of Detail Required

Develop the Project Schedule to the appropriate level of detail to address major milestones and to allow for satisfactory project planning and execution. Failure to develop the Project Schedule to an appropriate level of detail will result in its disapproval. The Contracting Officer will consider, but is not limited to, the following characteristics and requirements to determine appropriate level of detail:

3.3.2 Activity Durations

Reasonable activity durations are those that allow the progress of ongoing activities to be accurately determined between update periods. Less than 2 percent of all non-procurement activities may have Original Durations (OD) greater than 20 work days or 30 calendar days.

3.3.3 Design and Permit Activities

Include design and permit activities with the necessary conferences and follow-up actions and design package submission dates. Include the design schedule in the project schedule, showing the sequence of events involved in carrying out the project design tasks within the specific contract period. Provide at a detailed level of scheduling sufficient to identify all major design tasks, including those that control the flow of work. Also include review and correction periods associated with each item.

3.3.4 Procurement Activities

Include activities associated with the critical submittals and their approvals, procurement, fabrication, and delivery of long lead materials, equipment, fabricated assemblies, and supplies. Long lead procurement activities are those with an anticipated procurement sequence of over 90 calendar days.

3.3.5 Mandatory Tasks

Include the following activities/tasks in the initial project schedule and all updates.

a. Submission, review and acceptance of SD-01 Preconstruction Submittals (individual activity for each).

b. Submission, review and acceptance of design packages.

c. Submission of mechanical/electrical/information systems layout drawings.
d. Long procurement activities
e. Submission and approval of O & M manuals.
f. Submission and approval of as-built drawings.
g. Submission and approval of DD1354 data and installed equipment lists.
h. Submission and approval of testing and air balance (TAB).
i. Submission of TAB specialist design review report.
j. Submission and approval of fire protection specialist.
k. Controls testing plan submission.
l. Controls testing.
m. Performance Verification testing.
n. Other systems testing, if required.
o. Contractor's pre-final inspection.
p. Correction of punch list from Contractor's pre-final inspection.
q. Government's pre-final inspection.
r. Correction of punch list from Government's pre-final inspection.
s. Final inspection.

3.3.6 Government Activities

Show Government and other agency activities that could impact progress. These activities include, but are not limited to: acceptance, design reviews, environmental permit approvals by State regulators, inspections, utility tie-in, Government Furnished Equipment (GFE) and Notice to Proceed (NTP) for phasing requirements as applicable.

3.3.7 Standard Activity Coding Dictionary

Use the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11. This exact structure is mandatory. Develop and assign all Activity Codes to activities as detailed herein. A template SDEF compatible schedule backup file is available on the QCS web site: http://rms.usace.army.mil.

The SDEF format is as follows:

<table>
<thead>
<tr>
<th>Field</th>
<th>Activity Code</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WRKP</td>
<td>3</td>
<td>Workers per day</td>
</tr>
<tr>
<td>2</td>
<td>RESP</td>
<td>4</td>
<td>Responsible party</td>
</tr>
</tbody>
</table>
3.3.7.1 Workers Per Day (WRKP)

Assign Workers per Day for all field construction or direct work activities, if directed by the Contracting Officer. Workers per day is based on the average number of workers expected each day to perform a task for the duration of that activity.

3.3.7.2 Responsible Party Coding (RESP)

Assign responsibility code for all activities to the Prime Contractor, Subcontractor(s) or Government agency(ies) responsible for performing the activity.

a. Activities coded with a Government Responsibility code include, but are not limited to: Government approvals, Government design reviews, environmental permit approvals by State regulators, Government Furnished Property/Equipment (GFP) and Notice to Proceed (NTP) for phasing requirements.

b. Activities cannot have more than one Responsibility Code. Examples of acceptable activity code values are: DOR (for the designer of record); ELEC (for the electrical subcontractor); MECH (for the mechanical subcontractor); and GOVT (for USACE).

3.3.7.3 Area of Work Coding (AREA)

Assign Work Area code to activities based upon the work area in which the activity occurs. Define work areas based on resource constraints or space constraints that would preclude a resource, such as a particular trade or craft work crew from working in more than one work area at a time due to restraints on resources or space. Examples of Work Area Coding include different areas within a floor of a building, different floors within a building, and different buildings within a complex of buildings. Activities cannot have more than one Work Area Code.

Not all activities are required to be Work Area coded. A lack of Work Area
coding indicates the activity is not resource or space constrained.

3.3.7.4 Modification Number (MODF)

Assign a Modification Number Code to any activity or sequence of activities added to the schedule as a result of a Contract Modification, when approved by Contracting Officer. Key all Code values to the Government's modification numbering system. An activity can have only one Modification Number Code.

3.3.7.5 Bid Item Coding (BIDI)

Assign a Bid Item Code to all activities using the Contract Line Item Schedule (CLIN) to which the activity belongs, even when an activity is not cost loaded. An activity can have only one BIDI Code.

3.3.7.6 Phase of Work Coding (PHAS)

Assign Phase of Work Code to all activities. Examples of phase of work are design phase, procurement phase, and construction phase. Each activity can have only one Phase of Work code.

a. Code proposed fast track design and construction phases proposed to allow filtering and organizing the schedule by fast track design and construction packages.

b. If the contract specifies phasing with separately defined performance periods, identify a Phase Code to allow filtering and organizing the schedule accordingly.

3.3.7.7 Category of Work Coding (CATW)

Assign a Category of Work Code to all activities. Category of Work Codes include, but are not limited to design, design submittal, design reviews, review conferences, permits, construction submittals, procurement, fabrication, weather sensitive installation, non-weather sensitive installation, start-up, and testing activities. Each activity can have no more than one Category of Work Code.

3.3.7.8 Feature of Work Coding (FOW)

Assign a Feature of Work Code to appropriate activities based on the Definable Feature of Work to which the activity belongs based on the approved QC plan.

Definable Feature of Work is defined in Section 01 45 00.00 10 QUALITY CONTROL. An activity can have only one Feature of Work Code.

3.3.8 Contract Milestones and Constraints

Milestone activities are to be used for significant project events including, but not limited to, project phasing, project start and end activities, or interim completion dates. The use of artificial float constraints such as "zero free float" or "zero total float" are prohibited.

Mandatory constraints that ignore or effect network logic are prohibited. No constrained dates are allowed in the schedule other than those specified herein. Submit additional constraints to the Contracting Officer for approval on a case by case basis.
3.3.8.1 Project Start Date Milestone and Constraint

The first activity in the project schedule must be a start milestone titled "NTP Acknowledged," which must have a "Start On" constraint date equal to the date that the NTP is acknowledged.

3.3.8.2 End Project Finish Milestone and Constraint

The last activity in the schedule must be a finish milestone titled "End Project."

Constrain the project schedule to the Contract Completion Date in such a way that if the schedule calculates an early finish, then the float calculation for "End Project" milestone reflects positive float on the longest path. If the project schedule calculates a late finish, then the "End Project" milestone float calculation reflects negative float on the longest path. The Government is under no obligation to accelerate Government activities to support a Contractor's early completion.

3.3.8.3 Interim Completion Dates and Constraints

Constrain contractually specified interim completion dates to show negative float when the calculated late finish date of the last activity in that phase is later than the specified interim completion date.

3.3.8.3.1 Start Phase

Use a start milestone as the first activity for a project phase. Call the start milestone "Start Phase X" where "X" refers to the phase of work.

3.3.8.3.2 End Phase

Use a finish milestone as the last activity for a project phase. Call the finish milestone "End Phase X" where "X" refers to the phase of work.

3.3.9 Calendars

Schedule activities on a Calendar to which the activity logically belongs. Develop calendars to accommodate any contract defined work period such as a 7-day calendar for Government Acceptance activities, concrete cure times, etc. Develop the default Calendar to match the physical work plan with non-work periods identified including weekends and holidays. Develop Seasonal Calendar(s) and assign to seasonally affected activities as applicable.

If an activity is weather sensitive it should be assigned to a calendar showing non-work days on a monthly basis, with the non-work days selected at random across the weeks of the calendar, using the anticipated days provided in the contract clause TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER. Assign non-work days over a seven-day week as weather records are compiled on seven-day weeks, which may cause some of the weather related non-work days to fall on weekends.

3.3.10 Open Ended Logic

Only two open ended activities are allowed: the first activity "NTP Acknowledged" may have no predecessor logic, and the last activity -"End Project" may have no successor logic.
Predecessor open ended logic may be allowed in a time impact analyses upon the Contracting Officer's approval.

3.3.11 Default Progress Data Disallowed

Actual Start and Finish dates must not automatically update with default mechanisms included in the scheduling software. Updating of the percent complete and the remaining duration of any activity must be independent functions. Disable program features that calculate one of these parameters from the other. Activity Actual Start (AS) and Actual Finish (AF) dates assigned during the updating process must match those dates provided in the Contractor Quality Control Reports. Failure to document the AS and AF dates in the Daily Quality Control report will result in disapproval of the Contractor's schedule.

3.3.12 Out-of-Sequence Progress

Activities that have progressed before all preceding logic has been satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case basis subject to approval by the Contracting Officer. Propose logic corrections to eliminate out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated project schedule. Address out of sequence progress or logic changes in the Narrative Report and in the periodic schedule update meetings.

3.3.13 Added and Deleted Activities

Do not delete activities from the project schedule or add new activities to the schedule without approval from the Contracting Officer. Activity ID and description changes are considered new activities and cannot be changed without Contracting Officer approval.

3.3.14 Original Durations

Activity Original Durations (OD) must be reasonable to perform the work item. OD changes are prohibited unless justification is provided and approved by the Contracting Officer.

3.3.15 Leads, Lags, and Start to Finish Relationships

Lags must be reasonable as determined by the Government and not used in place of realistic original durations, must not be in place to artificially absorb float, or to replace proper schedule logic.

a. Leads (negative lags) are prohibited.

b. Start to Finish (SF) relationships are prohibited.

3.3.16 Retained Logic

Schedule calculations must retain the logic between predecessors and successors ("retained logic" mode) even when the successor activity(s) starts and the predecessor activity(s) has not finished (out-of-sequence progress). Software features that in effect sever the tie between predecessor and successor activities when the successor has started and the predecessor logic is not satisfied ("progress override") are not be allowed.
3.3.17 Percent Complete

Update the percent complete for each activity started, based on the realistic assessment of earned value. Activities which are complete but for remaining minor punch list work and which do not restrain the initiation of successor activities may be declared 100 percent complete to allow for proper schedule management.

3.3.18 Remaining Duration

Update the remaining duration for each activity based on the number of estimated work days it will take to complete the activity. Remaining duration may not mathematically correlate with percentage found under paragraph entitled Percent Complete.

3.3.19 Cost Loading of Closeout Activities

Cost load the "Correction of punch list from Government pre-final inspection" activity(ies) not less than 1 percent of the present contract value. Activity(ies) may be declared 100 percent complete upon the Government's verification of completion and correction of all punch list work identified during Government pre-final inspection(s).

3.3.19.1 As-Built Drawings

If there is no separate contract line item (CLIN) for as-built drawings, cost load the "Submission and approval of as-built drawings" activity not less than $35,000 or 1 percent of the present contract value, which ever is greater, up to $200,000. Activity will be declared 100 percent complete upon the Government's approval.

3.3.19.2 O & M Manuals

Cost load the "Submission and approval of O & M manuals" activity not less than $20,000. Activity will be declared 100 percent complete upon the Government's approval of all O & M manuals.

3.3.20 Anticipated Adverse Weather

Paragraph applicable to contracts with clause entitled TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER. Reflect the number of anticipated adverse weather delays allocated to a weather sensitive activity in the activity's calendar.

3.3.21 Early Completion Schedule and the Right to Finish Early

An Early Completion Schedule is an Initial Project Schedule (IPS) that indicates all scope of the required contract work will be completed before the contractually required completion date.

a. No IPS indicating an Early Completion will be accepted without being fully resource-loaded (including crew sizes and manhours) and the Government agreeing that the schedule is reasonable and achievable.

b. The Government is under no obligation to accelerate work items it is responsible for to ensure that the early completion is met nor is it responsible to modify incremental funding (if applicable) for the project to meet the contractor's accelerated work.
3.4 PROJECT SCHEDULE SUBMISSIONS

Provide the submissions as described below. The data CD/DVD, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS. If the Contractor fails or refuses to furnish the information and schedule updates as set forth herein, then the Contractor will be deemed not to have provided an estimate upon which a progress payment can be made.

Review comments made by the Government on the schedule(s) do not relieve the Contractor from compliance with requirements of the Contract Documents.

3.4.1 Preliminary Project Schedule Submission

Within 15 calendar days after the NTP is acknowledged submit the Preliminary Project Schedule defining the planned operations detailed for the first 90 calendar days for approval. The approved Preliminary Project Schedule will be used for payment purposes not to exceed 90 calendar days after NTP. Completely cost load the Preliminary Project Schedule to balance the contract award CLINS shown on the Price Schedule. The Preliminary Project Schedule may be summary in nature for the remaining performance period. It must be early start and late finish constrained and logically tied as specified. The Preliminary Project Schedule forms the basis for the Initial Project Schedule specified herein and must include all of the required plan and program preparations, submissions and approvals identified in the contract (for example, Quality Control Plan, Safety Plan, and Environmental Protection Plan) as well as design activities, planned submissions of all early design packages, permitting activities, design review conference activities, and other non-construction activities intended to occur within the first 90 calendar days. Government acceptance of the associated design package(s) and all other specified Program and Plan approvals must occur prior to any planned construction activities. Activity code any activities that are summary in nature after the first 90 calendar days with Bid Item (CLIN) code (BIDI), Responsibility Code (RESP) and Feature of Work code (FOW).

3.4.2 Initial Project Schedule Submission

Submit the Initial Project Schedule for approval within 42 calendar days after notice to proceed is issued. The schedule must demonstrate a reasonable and realistic sequence of activities which represent all work through the entire contract performance period. Include in the design-build schedule detailed design and permitting activities, including but not limited to identification of individual design packages, design submission, reviews and conferences; permit submissions and any required Government actions; and long lead item acquisition prior to design completion. Also cover in the preliminary design-build schedule the entire construction effort with as much detail as is known at the time but, as a minimum, include all construction start and completion milestones, and detailed construction activities through the dry-in milestone, including all activity coding and cost loading. Include the remaining construction, including cost loading, but it may be scheduled summary in nature. As the design proceeds and design packages are developed, fully detail the remaining construction activities concurrent with the monthly schedule updating process. Constrain construction activities by Government acceptance of associated designs. When the design is complete, incorporate into the then approved schedule update all remaining detailed construction activities that are planned to occur after the dry-in milestone. If applicable, include in the design-build schedule detailed design and
permitting activities, including but not limited to identification of individual design packages, design submission, reviews and conferences, permit submissions and any required Government actions, and long lead item acquisition prior to design completion. Also cover in the preliminary design-build schedule the entire construction effort with as much detail as is known at the time but, as a minimum, include all construction start and completion milestones, and detailed construction activities through the dry-in milestone, including all activity coding and cost loading. Include the remaining construction, including cost loading, but it may be scheduled summary in nature. As the design proceeds and design packages are developed, fully detail the remaining construction activities. No payment will be made for work items not fully detailed in the Project Schedule.

3.4.2.1 Design Package Schedule Submission

With each design package submitted to the Government, submit a fragment schedule extracted from the then current Preliminary, Initial or Updated schedule which covers the activities associated with that Design Package including construction, procurement and permitting activities.

3.4.3 Periodic Schedule Updates

Update the Project Schedule on a regular basis, monthly at a minimum. Provide a draft Periodic Schedule Update for review at the schedule update meetings as prescribed in the paragraph PERIODIC SCHEDULE UPDATE MEETINGS. These updates will enable the Government to assess Contractor's progress. Update the schedule to include detailed construction activities as the design progresses, but not later than the submission of the final un-reviewed design submission for each separate design package. The Contracting Officer may require submission of detailed schedule activities for any distinct construction that is started prior to submission of a final design submission if such activity is authorized.

a. Update information including Actual Start Dates (AS), Actual Finish Dates (AF), Remaining Durations (RD), and Percent Complete is subject to the approval of the Government at the meeting.

b. AS and AF dates must match the date(s) reported on the Contractor's Quality Control Report for an activity start or finish.

3.5 SUBMISSION REQUIREMENTS

Submit the following items for the Preliminary Schedule, Initial Schedule, and every Periodic Schedule Update throughout the life of the project:

3.5.1 Data CD/DVDs

Provide two sets of data CD/DVDs containing the current project schedule and all previously submitted schedules in the format of the scheduling software (e.g. .xer). Also include on the data CD/DVDs the Narrative Report and all required Schedule Reports. Label each CD/DVD indicating the type of schedule (Preliminary, Initial, Update), full contract number, Data Date and file name. Each schedule must have a unique file name and use project specific settings.

3.5.2 Narrative Report

Provide a Narrative Report with each schedule submission. The Narrative Report is expected to communicate to the Government the thorough analysis
of the schedule output and the plans to compensate for any problems, either current or potential, which are revealed through that analysis. Include the following information as minimum in the Narrative Report:

a. Identify and discuss the work scheduled to start in the next update period.

b. A description of activities along the two most critical paths where the total float is less than or equal to 20 work days.

c. A description of current and anticipated problem areas or delaying factors and their impact and an explanation of corrective actions taken or required to be taken.

d. Identify and explain why activities based on their calculated late dates should have either started or finished during the update period but did not.

e. Identify and discuss all schedule changes by activity ID and activity name including what specifically was changed and why the change was needed. Include at a minimum new and deleted activities, logic changes, duration changes, calendar changes, lag changes, resource changes, and actual start and finish date changes.

f. Identify and discuss out-of-sequence work.

3.5.3 Schedule Reports

The format, filtering, organizing and sorting for each schedule report will be as directed by the Contracting Officer. Typically, reports contain Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, Total Float, Actual Start Date, Actual Finish Date, and Percent Complete. Provide the reports electronically in .pdf format. Provide 3 sets of hardcopy reports. The following lists typical reports that will be requested:

3.5.3.1 Activity Report

List of all activities sorted according to activity number.

3.5.3.2 Logic Report

List of detailed predecessor and successor activities for every activity in ascending order by activity number.

3.5.3.3 Total Float Report

A list of all incomplete activities sorted in ascending order of total float. List activities which have the same amount of total float in ascending order of Early Start Dates. Do not show completed activities on this report.

3.5.3.4 Earnings Report by CLIN

A compilation of the Total Earnings on the project from the NTP to the data date, which reflects the earnings of activities based on the agreements made in the schedule update meeting defined herein. Provided a complete schedule update has been furnished, this report serves as the basis of
determining progress payments. Group activities by CLIN number and sort by activity number. Provide a total CLIN percent earned value, CLIN percent complete, and project percent complete. The printed report must contain the following for each activity: the Activity Number, Activity Description, Original Budgeted Amount, Earnings to Date, Earnings this period, Total Quantity, Quantity to Date, and Percent Complete (based on cost).

3.5.3.5 Schedule Log

Provide a Scheduling/Leveling Report generated from the current project schedule being submitted.

3.5.4 Network Diagram

The Network Diagram is required for the Preliminary, Initial and Periodic Updates. Depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.4.1 Continuous Flow

Show a continuous flow from left to right with no arrows from right to left. Show the activity number, description, duration, and estimated earned value on the diagram.

3.5.4.2 Project Milestone Dates

Show dates on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.5.4.3 Critical Path

Show all activities on the critical path. The critical path is defined as the longest path.

3.5.4.4 Banding

Organize activities using the WBS or as otherwise directed to assist in the understanding of the activity sequence. Typically, this flow will group activities by major elements of work, category of work, work area and/or responsibility.

3.5.4.5 Cash Flow / Schedule Variance Control (SVC) Diagram

With each schedule submission, provide a SVC diagram showing 1) Cash Flow S-Curves indicating planned project cost based on projected early and late activity finish dates, and 2) Earned Value to-date.

3.6 PERIODIC SCHEDULE UPDATE

3.6.1 Periodic Schedule Update Meetings

Conduct periodic schedule update meetings for the purpose of reviewing the proposed Periodic Schedule Update, Narrative Report, Schedule Reports, and progress payment. Conduct meetings at least monthly within five days of the proposed schedule data date. Provide a computer with the scheduling software loaded and a projector which allows all meeting participants to view the proposed schedule during the meeting. The Contractor's authorized
scheduler must organize, group, sort, filter, perform schedule revisions as
needed and review functions as requested by the Contractor and/or
Government. The meeting is a working interactive exchange which allows
the Government and Contractor the opportunity to review the updated schedule on
a real time and interactive basis. The meeting will last no longer than 8
hours. Provide a draft of the proposed narrative report and schedule data
file to the Government a minimum of two workdays in advance of the
meeting. The Contractor's Project Manager and scheduler must attend the
meeting with the authorized representative of the Contracting Officer.
Superintendents, foremen and major subcontractors must attend the meeting
as required to discuss the project schedule and work. Following the
periodic schedule update meeting, make corrections to the draft
submission. Include only those changes approved by the Government in the
submission and invoice for payment.

3.6.2 Update Submission Following Progress Meeting

Submit the complete Periodic Schedule Update of the Project Schedule
containing all approved progress, revisions, and adjustments, pursuant to
paragraph SUBMISSION REQUIREMENTS not later than 4 work days after the
periodic schedule update meeting.

3.7 WEEKLY PROGRESS MEETINGS

Conduct a weekly meeting with the Government (or as otherwise mutually
agreed to) between the meetings described in paragraph entitled PERIODIC
SCHEDULE UPDATE MEETINGS for the purpose of jointly reviewing the actual
progress of the project as compared to the as planned progress and to
review planned activities for the upcoming two weeks. Use the current
approved schedule update for the purposes of this meeting and for the
production and review of reports. At the weekly progress meeting, address
the status of RFIs, RFPs and Submittals.

3.8 REQUESTS FOR TIME EXTENSIONS

Provide a justification of delay to the Contracting Officer in accordance
with the contract provisions and clauses for approval within 10 days of a
delay occurring. Also prepare a time impact analysis for each Government
request for proposal (RFP) to justify time extensions.

3.8.1 Justification of Delay

Provide a description of the event(s) that caused the delay and/or impact
to the work. As part of the description, identify all schedule activities
impacted. Show that the event that caused the delay/impact was the
responsibility of the Government. Provide a time impact analysis that
demonstrates the effects of the delay or impact on the project completion
date or interim completion date(s). Evaluate multiple impacts
chronologically; each with its own justification of delay. With multiple
impacts consider any concurrency of delay. A time extension and the
schedule fragment becomes part of the project schedule and all future
schedule updates upon approval by the Contracting Officer.

3.8.2 Time Impact Analysis (Prospective Analysis)

Prepare a time impact analysis for approval by the Contracting Officer
based on industry standard AACE 52R-06. Utilize a copy of the last
approved schedule prior to the first day of the impact or delay for the
time impact analysis. If Contracting Officer determines the time frame
between the last approved schedule and the first day of impact is too great, prepare an interim updated schedule to perform the time impact analysis. Unless approved by the Contracting Officer, no other changes may be incorporated into the schedule being used to justify the time impact.

3.8.3 Forensic Schedule Analysis (Retrospective Analysis)

Prepare an analysis for approval by the Contracting Officer based on industry standard AACE 29R-03.

3.8.4 Fragmentary Network (Fragnet)

Prepare a proposed fragnet for time impact analysis consisting of a sequence of new activities that are proposed to be added to the project schedule to demonstrate the influence of the delay or impact to the project's contractual dates. Clearly show how the proposed fragnet is to be tied into the project schedule including all predecessors and successors to the fragnet activities. The proposed fragnet must be approved by the Contracting Officer prior to incorporation into the project schedule.

3.8.5 Time Extension

The Contracting Officer must approve the Justification of Delay including the time impact analysis before a time extension will be granted. No time extension will be granted unless the delay consumes all available Project Float and extends the projected finish date ("End Project" milestone) beyond the Contract Completion Date. The time extension will be in calendar days.

Actual delays that are found to be caused by the Contractor's own actions, which result in a calculated schedule delay will not be a cause for an extension to the performance period, completion date, or any interim milestone date.

3.8.6 Impact to Early Completion Schedule

No extended overhead will be paid for delay prior to the original Contract Completion Date for an Early Completion IPS unless the Contractor actually performed work in accordance with that Early Completion Schedule. The Contractor must show that an early completion was achievable had it not been for the impact.

3.9 FAILURE TO ACHIEVE PROGRESS

Should the progress fall behind the approved project schedule for reasons other than those that are excusable within the terms of the contract, the Contracting Officer may require provision of a written recovery plan for approval. The plan must detail how progress will be made-up to include which activities will be accelerated by adding additional crews, longer work hours, extra work days, etc.

3.9.1 Artificially Improving Progress

Artificially improving progress by means such as, but not limited to, revising the schedule logic, modifying or adding constraints, shortening activity durations, or changing calendars in the project schedule is prohibited. Indicate assumptions made and the basis for any logic, constraint, duration and calendar changes used in the creation of the recovery plan. Any additional resources, manpower, or daily and weekly
work hour changes proposed in the recovery plan must be evident at the work site and documented in the daily report along with the Schedule Narrative Report.

3.9.2 Failure to Perform

Failure to perform work and maintain progress in accordance with the supplemental recovery plan may result in an interim and final unsatisfactory performance rating and/or may result in corrective action directed by the Contracting Officer pursuant to FAR 52.236-15 Schedules for Construction Contracts, FAR 52.249-10 Default (Fixed-Price Construction), and other contract provisions.

3.9.3 Recovery Schedule

Should the Contracting Officer find it necessary, submit a recovery schedule pursuant to FAR 52.236-15 Schedules for Construction Contracts.

3.10 OWNERSHIP OF FLOAT

Except for the provision given in the paragraph IMPACT TO EARLY COMPLETION SCHEDULE, float available in the schedule, at any time, may not be considered for the exclusive use of either the Government or the Contractor including activity and/or project float. Activity float is the number of work days that an activity can be delayed without causing a delay to the "End Project" finish milestone. Project float (if applicable) is the number of work days between the projected early finish and the contract completion date milestone.

3.11 TRANSFER OF SCHEDULE DATA INTO RMS/QCS

Import the schedule data into the Quality Control System (QCS) and export the QCS data to the Government. This data is considered to be additional supporting data in a form and detail required by the Contracting Officer pursuant to FAR 52.232-5 - Payments under Fixed-Price Construction Contracts. The receipt of a proper payment request pursuant to FAR 52.232-27 - Prompt Payment for Construction Contracts is contingent upon the Government receiving both acceptable and approvable hard copies and matching electronic export from QCS of the application for progress payment.

3.12 PRIMAVERA P6 MANDATORY REQUIREMENTS

If Primavera P6 is being used, request a backup file template (.xer) from the Government, if one is available, prior to building the schedule. The following settings are mandatory and required in all schedule submissions to the Government:

a. Activity Codes must be Project Level, not Global or EPS level.

b. Calendars must be Project Level, not Global or Resource level.

c. Activity Duration Types must be set to "Fixed Duration & Units".

d. Percent Complete Types must be set to "Physical".

e. Time Period Admin Preferences must remain the default "8.0 hr/day, 40 hr/week, 172 hr/month, 2000 hr/year". Set Calendar Work Hours/Day to 8.0 Hour days.
f. Set Schedule Option for defining Critical Activities to "Longest Path".

g. Set Schedule Option for defining progressed activities to "Retained Logic".

h. Set up cost loading using a single lump sum labor resource. The Price/Unit must be $1/hr, Default Units/Time must be "8h/d", and settings "Auto Compute Actuals" and "Calculate costs from units" selected.

i. Activity ID's must not exceed 10 characters.

j. Activity Names must have the most defining and detailed description within the first 30 characters.

-- End of Section --
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PART 1   GENERAL

1.1  SUMMARY

The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections.

Units of weights and measures used on all submittals are to be the same as those used in the contract drawings.

Each submittal is to be complete and in sufficient detail to allow ready determination of compliance with contract requirements.

Contractor's Quality Control (CQC) System Manager and the Designer of Record, if applicable, to check and approve all items prior to submittal and stamp, sign, and date indicating action taken. Proposed deviations from the contract requirements are to be clearly identified. Include within submittals items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals.

Submittals requiring Government approval are to be scheduled and made prior to the acquisition of the material or equipment covered thereby. Pick up and dispose of samples not incorporated into the work in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

A submittal register showing items of equipment and materials for when submittals are required by the specifications is provided in the table immediately following this specification.

1.2  DEFINITIONS

1.2.1  Submittal Descriptions (SD)

Submittals requirements are specified in the technical sections. Submittals are identified by Submittal Description (SD) numbers and titles as follows:

SD-01 Preconstruction Submittals

Submittals which are required prior to start of construction (work), or the start of the next major phase of the construction on a multi-phase contract, includes schedules, tabular list of data, or tabular list including location, features, or other pertinent information regarding products, materials, equipment, or components to be used in the work.

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 (QC) plan
Environmental protection plan

SD-03 Product Data

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

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

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. Unless specified in another section, 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 logs and checklists.
   Final acceptance test and operational test procedure.

SD-07 Certificates

Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that the 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 manufacturer, supplier, installer or Subcontractor through Contractor. The document purpose is to further promote the 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 (MSDS) concerning impedances, hazards and safety precautions.

SD-10 Operation and Maintenance Data

Data that is furnished by the manufacturer, or the system provider, to the equipment operating and maintenance personnel, including manufacturer's help and product line documentation necessary to maintain and install equipment. This data is needed by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item.

This data is intended to be incorporated in an operations and maintenance manual or control system.

SD-11 Closeout Submittals

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

Submittals required for Guiding Principle Validation (GPV) or Third Party Certification (TPC).

Special requirements necessary to properly close out a construction contract. For example, Record Drawings and as-built drawings. Also, submittal requirements necessary to properly close out a major phase of construction on a multi-phase contract.

1.2.2 Approving Authority

Office or designated person authorized to approve submittal.

1.2.3 Work

As used in this section, on- and off-site construction required by contract documents, including labor necessary to produce submittals, except those SD-01 Pre-Construction Submittals noted above, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When
used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submittals coded "RO" and "DO" should be submitted to the Construction Resident Office and the Mobile District Office respectively. Submit the following in accordance with this section.

SD-01 Preconstruction Submittals

Submittal Register; G, RO

1.4 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.4.1 Designer of Record Approved (DA)

Design of Record (DOR) approval is required for extensions of design, critical materials, any deviations from the solicitation, the accepted proposal, or the completed design, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, they are considered to be "shop drawings." Contractor to provide the Government with the number of copies designated hereinafter of all DOR approved submittals. The Government may review any or all Designer of Record approved submittals for conformance to the Solicitation, Accepted Proposal and the completed design. The Government will review all submittals designated as deviating from the Solicitation or Accepted Proposal, as described below. Design submittals to be in accordance with Section 01 33 16 DESIGN AFTER AWARD. Generally, design submittals should be identified as SD-05 Design Data submittals.

1.4.2 Government Approved (G)

Government approval is required for any deviations from the Solicitation or Accepted Proposal and other items as designated by the Contracting Officer. Within the terms of the Contract Clause SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, they are considered to be "shop drawings."

1.4.3 Government Conformance Review of Design (CR)

The Government will review all intermediate and final design submittals for conformance with the technical requirements of the solicitation. Section 01 10 12 DESIGN AFTER AWARD covers the design submittal and review process in detail. Review will be only for conformance with the applicable codes, standards and contract requirements. Design data includes the design documents described in Section 01 10 12 DESIGN AFTER AWARD. Generally, design submittals should be identified as SD-05 Design Data submittals.

1.4.4 Designer of Record Approved/Government Conformance Review (DA/CR)

1.4.4.1 Deviations to the Accepted Design

Designer of Record approval and the Government's concurrence are required for any proposed deviation from the accepted design which still complies with the contract before the Contractor is authorized to proceed with material acquisition or installation. Within the terms of the Contract Clause SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, they are considered to be "shop drawings." If necessary to facilitate the project schedule, the
Contractor and the DOR may discuss a submittal proposing a deviation with the Contracting Officer's Representative prior to officially submitting it to the Government. However, the Government reserves the right to review the submittal before providing an opinion, if deemed necessary. In any case, the Government will not formally agree to or provide a preliminary opinion on any deviation without the DOR's approval or recommended approval. The Government reserves the right to non-concur with any deviation from the design, which may impact furniture, furnishings, equipment selections or operations decisions that were made, based on the reviewed and concurred design.

1.4.4.2 Substitutions

Unless prohibited or provided for otherwise elsewhere in the Contract, where the accepted contract proposal named products, systems, materials or equipment by manufacturer, brand name and/or by model number or other specific identification, and the Contractor desires to substitute manufacturer or model after award, submit a requested substitution for Government concurrence. Include substantiation, identifying information and the DOR's approval, as meeting the contract requirements and that it is equal in function, performance, quality and salient features to that in the accepted contract proposal. If the Contract otherwise prohibits substitutions of equal named products, systems, materials or equipment by manufacturer, brand name and/or by model number or other specific identification, the request is considered a "variation" to the contract. Variations are discussed below in paragraphs: "Designer of Record Approved/Government Approved" and "VARIATIONS."

1.4.5 Designer of Record Approved/Government Approved (DA/GA)

In addition to the above stated requirements for proposed deviations to the accepted design, both Designer of Record and Government Approval and, where applicable, a contract modification are required before the Contractor is authorized to proceed with material acquisition or installation for any proposed variation to the contract (the solicitation and/or the accepted proposal), which constitutes a change to the contract terms. Within the terms of the Contract Clause SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, they are considered to be "shop drawings." The Government reserves the right to accept or reject any such proposed deviation at its discretion.

1.4.6 For Information Only

Submittals not requiring Government approval will be for information only. For Design-build construction all submittals not requiring Designer of Record or Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.5 PREPARATION

1.5.1 Transmittal Form

Use the attached sample transmittal Form 4025-R for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. Properly complete this form by filling out all the heading blank spaces and identifying each item submitted. Exercise special care to ensure proper listing of the specification paragraph and sheet number of the contract drawings pertinent to the data submitted for each item.
1.5.2 Source Drawings for Shop Drawings

Source Drawing (DWG) or Revit (RVT) files will be provided to the Contractor after award.

1.5.2.1 Terms and Conditions

Data contained on these electronic files must not be used for any purpose other than as a convenience in the preparation of construction data for the referenced project. Any other use or reuse shall be at the sole risk of the Contractor and without liability or legal exposure to the Government. The Contractor must make no claim and waives to the fullest extent permitted by law, any claim or cause of action of any nature against the Government, its agents or sub consultants that may arise out of or in connection with the use of these electronic files. The Contractor must, to the fullest extent permitted by law, indemnify and hold the Government harmless against all damages, liabilities or costs, including reasonable attorney's fees and defense costs, arising out of or resulting from the use of these electronic files.

These electronic Source Drawing files are not construction documents. Differences may exist between the Source Drawing files and the corresponding construction documents. The Government makes no representation regarding the accuracy or completeness of the electronic Source Drawing files, nor does it make representation to the compatibility of these files with the Contractor hardware or software. In the event that a conflict arises between the signed and sealed construction documents prepared by the Government and the furnished Source Drawing files, the signed and sealed construction documents govern. The Contractor is responsible for determining if any conflict exists. Use of these Source Drawing files does not relieve the Contractor of duty to fully comply with the contract documents, including and without limitation, the need to check, confirm and coordinate the work of all contractors for the project. If the Contractor uses, duplicates or modifies these electronic Source Drawing files for use in producing construction data related to this contract, remove all previous indicia of ownership (seals, logos, signatures, initials and dates).

1.5.3 Electronic File Format

Provide submittals in electronic format, with the exception of material samples required for SD-04 Samples items. In addition to the electronic submittal, provide three (3) hard copies of the submittals. 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, 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 both 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 scan of a signature.

Email electronic submittal documents fewer than 10MB to an email address as directed by the Contracting Officer. Provide electronic documents over
10MB on an optical disc, or through an electronic file sharing system such as the AMRDEC SAFE Web Application located at the following website: https://safe.amrdec.army.mil/safe/.

Provide hard copies of submittals when requested by the Contracting Officer. Up to three (3) additional hard copies of any submittal may be requested at the discretion of the Contracting Officer, at no additional cost to the Government.

1.6 QUANTITY OF SUBMITTALS

1.6.1 Number of Copies of SD-02 Shop Drawings

Submit six copies of submittals of shop drawings requiring review and approval only by QC organization and seven copies of shop drawings requiring review and approval by Contracting Officer.

1.6.2 Number of Copies of SD-03 Product Data and SD-08 Manufacturer's Instructions

Submit in compliance with quantity requirements specified for shop drawings.

1.6.3 Number of Samples SD-04 Samples

a. Submit two samples, or two sets of samples showing range of variation, of each required item. One approved sample or set of samples will be retained by approving authority and one will be returned to Contractor.

b. Submit one sample panel or provide one sample installation where directed. Include components listed in technical section or as directed.

c. Submit one sample installation, where directed.

d. Submit one sample of non-solid materials.

1.6.4 Number of Copies SD-05 Design Data and SD-07 Certificates

Submit in compliance with quantity requirements specified for shop drawings.

1.6.5 Number of Copies SD-06 Test Reports and SD-09 Manufacturer's Field Reports

Submit in compliance with quantity and quality requirements specified for shop drawings other than field test results that will be submitted with QC reports.

1.6.6 Number of Copies of SD-10 Operation and Maintenance Data

Submit five copies of O&M Data to the Contracting Officer for review and approval.

1.6.7 Number of Copies of SD-01 Preconstruction Submittals and SD-11 Closeout Submittals

Unless otherwise specified, submit three sets of administrative submittals.
1.7 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe. For design-build construction the Government will retain three (3) copies of information only submittals.

1.8 SUBMITTAL REGISTER

Prepare and maintain submittal register, as the work progresses. Do not change data which is output in columns (c), (d), (e), and (f) as delivered by Government; retain data which is output in columns (a), (g), (h), and (i) as approved. A submittal register showing items of equipment and materials for which submittals are required by the specifications is provided as an attachment. This list may not be all inclusive and additional submittals may be required. Maintain a submittal register for the project in accordance with Section 01 45 00.15 10 RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE (RMS CM). The Government will provide the initial submittal register in electronic format with the following fields completed, to the extent that will be required by the Government during subsequent usage.

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

Column (d): Lists each submittal description (SD No. and type, e.g. SD-02 Shop Drawings) required in each specification section.

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

Thereafter, the Contractor is to track all submittals by maintaining a complete list, including completion of all data columns, including dates on which submittals are received and returned by the Government.

The Designer of Record develops a complete list of submittals during design and identify required submittals in the specifications, and use the list to prepare the Submittal Register. The list may not be all inclusive and additional submittals may be required by other parts of the contract. Complete the submittal register and submit it to the Contracting Officer for approval within 30 calendar days after Notice to Proceed. The approved submittal register will serve as a scheduling document for submittals and will be used to control submittal actions throughout the contract period. Coordinate the submit dates and need dates with dates in the Contractor prepared progress schedule. Submit monthly or until all submittals have been satisfactorily completed, updates to the submittal register showing the Contractor action codes and actual dates with Government action codes. Revise the submittal register when the progress schedule is revised and submit both for approval.
1.8.1 Use of Submittal Register

Submit submittal register with QC plan and project schedule. Verify that all submittals required for project are listed and add missing submittals. Coordinate and complete the following fields on the register submitted with the QC plan and the project schedule:

- **Column (a) Activity Number**: Activity number from the project schedule.
- **Column (g) Contractor Submit Date**: Scheduled date for approving authority to receive submittals.
- **Column (h) Contractor Approval Date**: Date Contractor needs approval of submittal.
- **Column (i) Contractor Material**: Date that Contractor needs material delivered to Contractor control.

1.8.2 Contractor Use of Submittal Register

Update the following fields in the Government-furnished submittal register program or equivalent fields in program utilized by Contractor with each submittal throughout contract:

- **Column (b) Transmittal Number**: Contractor assigned list of consecutive numbers.
- **Column (j) Action Code (k)**: Date of action used to record Contractor's review when forwarding submittals to QC.
- **Column (l) List date of submittal transmission**.
- **Column (q) List date approval received**.

1.8.3 Approving Authority Use of Submittal Register

Update the following fields in the Government-furnished submittal register program or equivalent fields in program utilized by Contractor:

- **Column (b) Transmittal Number**: Contractor assigned list of consecutive numbers.
- **Column (l) List date of submittal receipt**.
- **Column (m) through (p) List Date related to review actions**.
- **Column (q) List date returned to Contractor**.

1.8.4 Copies Delivered to the Government

Deliver one copy of submittal register updated by Contractor to Government with each invoice request.

1.9 VARIATIONS

Variations from contract requirements require both Designer of Record (DOR) and Government approval pursuant to contract Clause FAR 52.236-21 and will
be considered where advantageous to Government.

1.9.1 Considering Variations

Discussion with Contracting Officer prior to submission, after consulting with the DOR, will help ensure functional and quality requirements are met and minimize rejections and re-submittals. When contemplating a variation which results in lower cost, consider submission of the variation as a Value Engineering Change Proposal (VECP).

Specifically point out variations from contract requirements in transmittal letters. Failure to point out deviations may result in the Government requiring rejection and removal of such work at no additional cost to the Government.

1.9.2 Proposing Variations

When proposing variation, deliver written request to the Contracting Officer, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to Government, including the DOR's written analysis and approval. If lower cost is a benefit, also include an estimate of the cost savings. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

Check the column "variation" of ENG Form 4025 for submittals which include proposed deviations requested by the Contractor. Set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.9.3 Warranting that Variations are Compatible

When delivering a variation for approval, Contractor, including its Designer(s) of Record, warrants that this contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of work.

1.9.4 Review Schedule Extension

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

1.10 SCHEDULING

Schedule and submit concurrently submittals covering component items forming a system or items that are interrelated. Include certifications to be submitted with the pertinent drawings at the same time. No delay damages or time extensions will be allowed for time lost in late submittals.

a. Coordinate scheduling, sequencing, preparing and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow for potential resubmittal of requirements.

b. Submittals called for by the contract documents will be listed on the register. If a submittal is called for but does not pertain to the contract work, the Contractor is to include the submittal in the
register and annotate it "N/A" with a brief explanation. Approval by the Contracting Officer does not relieve the Contractor of supplying submittals required by the contract documents but which have been omitted from the register or marked "N/A."

c. Re-submit register and annotate monthly by the Contractor with actual submission and approval dates. When all items on the register have been fully approved, no further re-submittal is required.

d. Carefully control procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

1.11 GOVERNMENT APPROVING AUTHORITY

When approving authority is Contracting Officer, the Government will:

a. Note date on which submittal was received.

b. Review submittals for approval within scheduling period specified and only for conformance with project design concepts and compliance with contract documents.

c. Identify returned submittals with one of the actions defined in paragraph REVIEW NOTATIONS and with markings appropriate for action indicated.

Upon completion of review of submittals requiring Government approval, stamp and date submittals. Four (4) copies of the submittal will be retained by the Contracting Officer and two (2) copies of the submittal will be returned to the Contractor.

1.11.1 Review Notations

Submittals will be returned to the Contractor with the following notations:

a. Submittals marked "approved" or "accepted" authorize the Contractor to proceed with the work covered.

b. Submittals marked "approved as noted" or "approved, except as noted, resubmittal not required," authorize the Contractor to proceed with the work covered provided he takes no exception to the corrections.

c. Submittals marked "not approved" or "disapproved," or "revise and resubmit," indicate noncompliance with the contract requirements or design concept, or that submittal is incomplete. Resubmit with appropriate changes. No work shall proceed for this item until resubmittal is approved.

d. Submittals marked "not reviewed" will indicate submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and approved by Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by Contractor or for being incomplete, with appropriate action, coordination, or change.
1.12 DISAPPROVED OR REJECTED SUBMITTALS

Make corrections required by the Contracting Officer. If the Contractor considers any correction or notation on the returned submittals to constitute a change to the contract drawings or specifications; notice as required under the FAR clause entitled CHANGES, is to be given to the Contracting Officer. Contractor is responsible for the dimensions and design of connection details and construction of work. Failure to point out deviations may result in the Government requiring rejection and removal of such work at the Contractor's expense.

If changes are necessary to submittals, make such revisions and submission of the submittals in accordance with the procedures above. No item of work requiring a submittal change is to be accomplished until the changed submittals are approved.

1.13 APPROVED/ACCEPTED SUBMITTALS

The Contracting Officer's approval or acceptance of submittals is not to be construed as a complete check, and indicates only that design, general method of construction, materials, detailing and other information appear to meet the Solicitation and Accepted Proposal.

Approval or acceptance will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for design, dimensions, all design extensions, such as the design of adequate connections and details, etc., and the satisfactory construction of all work.

After submittals have been approved or accepted by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.14 APPROVED SAMPLES

Approval of a sample is only for the characteristics or use named in such approval and is not be construed to change or modify any contract requirements. Before submitting samples, the Contractor to assure that the materials or equipment will be available in quantities required in the project. No change or substitution will be permitted after a sample has been approved.

Match the approved samples for materials and equipment incorporated in the work. If requested, approved samples, including those which may be damaged in testing, will be returned to the Contractor, at his expense, upon completion of the contract. Samples not approved will also be returned to the Contractor at its expense, if so requested.

Failure of any materials to pass the specified tests will be sufficient cause for refusal to consider, under this contract, any further samples of the same brand or make of that material. Government reserves the right to disapprove any material or equipment which previously has proved unsatisfactory in service.

Samples of various materials or equipment delivered on the site or in place may be taken by the Contracting Officer for testing. Samples failing to meet contract requirements will automatically void previous approvals.
Contractor to replace such materials or equipment to meet contract requirements.

Approval of the Contractor's samples by the Contracting Officer does not relieve the Contractor of his responsibilities under the contract.

1.15 WITHHOLDING OF PAYMENT

No payment for materials incorporated in the work will be made if all required Designer of Record or required Government approvals have not been obtained. No payment will be made for any materials incorporated into the work for any conformance review submittals or information only submittals found to contain errors or deviations from the Solicitation or Accepted Proposal.

1.16 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements is to be similar to the following:
____ Approved

____ Approved with corrections as noted on submittal data and/or attached sheets(s)

SIGNATURE: ________________________________________________________________

TITLE: _________________________________________________________________

DATE: _________________________________________________________________

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --
## SUBMITTAL REGISTER

### TITLE AND LOCATION
FLIGHTLINE FIRE STATION

### CONTRACTOR

<table>
<thead>
<tr>
<th>ACTIVITY NO</th>
<th>SPEC SECT</th>
<th>DESCRIPTION</th>
<th>ITEM SUBMITTED</th>
<th>CONTRACTOR: SCHEDULE DATES</th>
<th>CONTRACTOR ACTION</th>
<th>APPROVING AUTHORITY</th>
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### SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS

(Read instruction on the reverse side prior to initiating this form)

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**REMARKS**

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

**NAME AND SIGNATURE OF CONTRACTOR**

### SECTION II - APPROVAL ACTION

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<td>EDITION OF AUG 89 IS OBSOLETE</td>
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Sheet ___ of ___
INSTRUCTIONS

1. Section 1 will be initiated by the Contractor in the required number of copies.

2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmits mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.

3. The "Item No." will be the same "Item No." as indicated on ENG FORM 4288 for each entry on this form.

4. Submittals requiring expeditious handling will be submitted on a separate form.

5. Separate transmittal form will be used for submittals under separate sections of the specifications.

6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications--also, a written statement to that effect shall be included in the space provided for "Remarks".

7. Form is self-transmittal, letter of transmittal is not required.

8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.

9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g, to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

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10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.
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)


GREEN BUILDING INITIATIVE (GBI)

GBI GP Compliance  GBI Guiding Principles Compliance Program for New Construction

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


U.S. DEPARTMENT OF ENERGY (DOE)


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

40 CFR 247  Comprehensive Procurement Guideline for Products Containing Recovered Materials

1.2 SUMMARY

This specification includes general requirements and procedures for this project to be constructed and documented per the federally mandated "Guiding Principles" (GP), Third Party Certification (TPC) requirements (if applicable), UFC 1-200-02, High Performance and Sustainable Building Requirements, and other requirements identified in this specification.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor QC approval. Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance to this section. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals
1.4 GUIDING PRINCIPLES VALIDATION (GPV)

Provide construction related sustainability documentation to verify achievement of ISWG Guiding Principles Validation (GPV). Provide the following for GPV:

a. Refer to Attachment 1, HPSB Checklist at the end of this specification section.

b. Obtain approval of any changes to the HPSB Checklist from the Contracting Officer at the Preconstruction Conference. Contracting Officer's approval establishes identified ISWG Guiding Principles Requirements as the project's sustainability goals.

No variations or substitutions to the HPSB Checklist are allowed without written consent from the Contracting Officer. Immediately bring to the attention of the Contracting Officer any changes that impact meeting the approved ISWG Guiding Principles Requirements for this project and demonstrate that change will not incur additional construction cost or increase the life cycle cost.

c. Include all work required to incorporate the applicable ISWG Guiding Principles Requirements indicated on the HPSB Checklist and in this contract.

d. Include construction related documentation to maintain an up-to-date Sustainability Notebook. Supplement construction related documentation containing the following components;

(1) HPSB Checklist
(2) Sustainability Action Plan
(3) Documentation illustrating Guiding Principle (GP) Requirements compliance
(4) Commissioning Plan and Reports
1.4.1 Sustainability Action Plan

Include the following information in the Sustainability Action Plan:

a. Contractor's planned method to achieve each construction related GP requirement.

b. For each designated construction related ISWG Guiding Principles Requirements that is not achieved, provide narrative explaining how mission or activity precludes achieving specific sustainability requirement or goal. Provide analysis of particular requirement and level to which project is able to comply.

c. Name and contact information for: Contractor's POC responsible for ensuring sustainability goals are accomplished and documentation is assembled.

1.4.2 Costs

Contractor is responsible for all costs associated with constructing and demonstrating that project complies with approved ISWG Guiding Principles Requirements.

1.4.3 Third Party Certification (TPC)

Contractor is responsible for registering and meeting all requirements to achieve Third Party Certification (TPC) level of GBI GP Compliance, or other Government-approved equivalent TPC sustainability certification. An equivalent TPC organization must demonstrate equivalency for Government consideration, prior to use on the project. Third Party Certification is met when Government receives TPC organization certificate.

Register project with TPC organization using the following format and content:


b. Project Title Second Line: MILCON P#, DD1391 Project Name

c. Project Address: UIC (Installation code), Category code, RPUID (Real Property Unique Identifier) Number


e. Primary Contact, Owner: Agency Project Manager

f. Additional Contact, Building Owner: Public Works Officer or Designee

The TPC Certification requires the following:

a. Refer to the Air Force Sustainability Requirements Scoresheet (HPSB Checklist).

b. Obtain approval of the TPC Checklist/ HPSB Checklist from the Contracting Officer at the Pre-Construction Conference.
No variations or substitutions to the approved TPC checklist are allowed without written consent from the Contracting Officer. Immediately bring to the attention of the Contracting Officer any project changes that impact meeting the approved TPC Requirements for this project. Demonstrate that change will not: incur additional construction cost; increase the life cycle cost; impact previous TPC Design Review; or impact required TPC certification level.

c. Complete all work required to incorporate the applicable TPC Requirements.

d. Maintain the construction related information, and provide replacement pages, in the Sustainability Notebook pertaining to additions and changes to the approved sustainability requirements. The Sustainability Notebook is in electronic format and is explained in the paragraph entitled "SUSTAINABILITY NOTEBOOK". The Sustainability Notebook contains the following components in addition to the GPV components above:

(1) TPC Checklist / HPSB Checklist

(2) Completed TPC Online forms for each identified prerequisite and credit

(3) Copy of all correspondence with the TPC organization including proof of TPC registration

(4) Documentation illustrating compliance with TPC requirements

(5) TPC Award Certificate

e. Include the following information in the Sustainability Action Plan. Provide this TPC information in addition to the GPV Action Plan items above:

(1) Contractor's planned method to achieve each TPC requirement.

(2) For each required TPC credit that is attempted but not achieved, provide narrative explaining how mission or activity precludes achieving specific sustainability requirement or goal. Provide analysis of particular requirement and level to which project is able to comply.

(3) Name and contact information for: Contractor's Sustainability POC and other names of sustainability professionals on the Contractor's Staff responsible for ensuring TPC sustainability goals are accomplished and documentation is assembled

(4) Provide the plan and schedule for performance testing, data collection, and commissioning to take place during first year of facility usage.

f. Contractor is responsible for all costs associated with constructing and demonstrating that project complies with approved TPC requirements, including but not limited to:

(1) Final TPC review, certification fees

(2) Online (or offline with secure facilities) TPC management and
documentation.

(3) Obtaining TPC certification based on Government-approved sustainability goals.

(4) Construction work required to incorporate TPC prerequisites and credits.

(5) Submittals required to demonstrate compliance with Government approved TPC checklists.

g. Provide all calculations, product data, and certifications required in this specification to demonstrate compliance with the TPC Requirements.

h. Provide all online (or offline, with secure facilities) TPC management and documentation.

i. Contractor is responsible for all required responses to TPC.

j. Provide TPC Certificates. Use format below to create the Plaque, Certificate and Letter of Congratulations. Forward to parties designated by Contracting Officer:

Certificate:

Project Title, first line: P-(X); Form DD1391 Project Name).

Project Title, second line: UIC (Installation code)

(3) Letter Congratulations:

Address letter to Facility's Installation commander Name. Address the letter to an individual person.

1.5 SUSTAINABILITY SUBMITTALS

Provide HPSB Checklist and other documentation in the Sustainability Notebook to indicate compliance with the sustainability requirements of the project.

1.5.1 High Performance Sustainable Building (HPSB) Checklist

Provide construction documentation that provides proof of and supports compliance with the completed HBSB Checklist.

1.5.1.1 HPSB Checklist Submittals

Submit updated HPSB Checklist with each Sustainability Notebook submittal. Attach final HPSB Checklist to DD1354 Real Property Record Submittal.

1.5.1.2 HPSB Checklist Public Access

Where not included as attachment to this specification section, use the following as HPSB Checklist for respective service branch. Where Internet address appears on two lines, copy full address into Internet browser.

a. Air Force - Air Force MILCON Sustainability Requirements Scoresheet (sample scoresheet provided for reference at end of section), Attachment 3 of "AF Sustainable Design Development Implementing
1.5.2 "S" Submittals for Sustainability Documentation

Submit the GPV and TPC sustainability documentation required in this specification as "S" submittals. Highlight GPV and TPC compliance data in "S" submittal.

1.5.3 SUSTAINABILITY NOTEBOOK

Provide and maintain a comprehensive Sustainability Notebook to document compliance with the sustainability requirements identified in the approved HPSB and TPC Checklist. Sustainability Notebook must contain all required data to support full compliance with the ISWG Guiding Principles Requirements and TPC requirements. Sustainability Notebook is in the form of an Adobe PDF file; bookmarked at each ISWG Guiding Principles Requirement, TPC requirement, and sub-bookmarked at each document. Match format to ISWG Guiding Principles numbering system indicated herein. Maintain up to date information, spreadsheets, templates, and other required documentation with each current submittal. For TPC projects, provide a second Table of contents using TPC numbering system. Locate documentation unique to TPC here. Where TPC documentation would repeat GP documentation, insert note referring reviewer to GP documentation.

Contracting Officer may deduct from the monthly progress payment accordingly if Sustainability Notebook information is not current, until information is updated and on track per project goals.

1.5.3.1 Sustainability Notebook Submittal Schedule

Provide Sustainability Notebook Submittals at the following milestones of the project:

a. Preliminary Sustainability Notebook

Submit preliminary Sustainability Notebook for approval at the Pre-construction conference. Include Preliminary High Performance and Sustainable Building Checklist.

b. Construction Progress Meetings. Update GP and TPC documentation in the Sustainability Notebook and TPC Online tool for each meeting.

c. Final Sustainability Notebook

Submit updated Sustainability Notebook within 60 days after the Beneficial Occupancy Date (BOD). Final progress payment retainage may be held by Contracting Officer until final sustainability documentation is complete. Submit three (3) electronic copies of the Final Sustainability Notebook on DVDs to the Government. Include Final High Performance and Sustainable Building Checklist.

d. Amended Final Sustainability Notebook
Amend and resubmit the Final Sustainability Notebook to include commissioning, testing and balancing, and collection of performance requirements. Submit three (3) final electronic copies of the Amended Final Sustainability Notebook Submittal on DVDs to the Government no longer than 30 days after the GP, TPC, and Cx designated data collection period.

1.6 DOCUMENTATION REQUIREMENTS

Third Party Certification requirements or credits are mandatory when they have requirements that match a Guiding Principle Requirement. Documentation used to demonstrate TPC compliance may be used to demonstrate GP compliance.

Incorporate each of the following ISWG Guiding Principles Requirements into project construction; and provide documentation that proves compliance with each listed requirement. Items below are organized according to the ISWG Guiding Principles. For projects that require TPC, refer to Third Party Certifier's reference manuals for TPC requirements.

1.6.1 Commissioning

Work with the Commissioning Authority (CxA) to achieve requirements of the Commissioning plan and other contract document requirements at each stage of commissioning. Maintain up-to-date records of commissioning activities in the Sustainability Notebook, to include commissioning plan and summary commissioning report.

1.6.2 Energy Efficient Equipment

Provide only energy-using equipment that is Energy Star rated, or has the Federal Energy Management Program (FEMP) recommended efficiency. Where Energy Star or FEMP recommendations have not been established, provide most efficient equipment available. Provide only energy using equipment that meets FEMP requirements for low standby power consumption. Energy efficient equipment can be found at: [http://www1.eere.energy.gov/femp/](http://www1.eere.energy.gov/femp/) and [http://www.energystar.gov/](http://www.energystar.gov/). Provide the following documentation:

Proof that equipment is labeled energy efficient and complies with the cited requirements.

1.6.3 Benchmarking

Provide report of initial actual energy performance with the energy design targets. Provide the following documentation:

Prefinal Performance Report with data collected from the first 60 days of operation of the facility after Beneficial Occupancy Date (BOD). Submit this information with the Final Sustainability Notebook Submittal.

1.6.4 Water Conserving Fixtures

Provide only water-consuming products that are EPA WaterSense labeled, or the most efficient water fixtures available when EPA Watersense products are not available. Provide the following documentation:

Proof that water fixtures are efficient and comply with the cited requirements.
1.6.5  Reduce Volatile Organic Compounds (VOC) (Low Emitting Materials)

Provide materials and products with low pollutant emissions, including composite wood products, adhesives, sealants, interior paints and finishes, carpet systems, and furnishings. Meeting the requirements of ASHRAE 189.1 Sections 8.4.2 (Prescriptive Option: Materials) or Section 8.5.2 (Performance Option: Materials) demonstrates compliance. Insulation products must meet the requirements of Section 8.5.2 (Performance Option: Materials). Provide the following documentation:

a. Demonstrate that materials do not exceed maximum VOC emissions of cited standards. VOC averaging is allowed where coatings are subject to human contact or harsh environmental conditions.

b. Demonstrate that flooring materials comply with VOC emissions of cited standards.

c. Demonstrate that composite wood and agrifiber products and associated laminating adhesives contain no added urea-formaldehyde.

d. Demonstrate that furniture and seating complies with low emissions requirements.

e. Create and maintain a list of above listed products used on the project within the building vapor barrier. Demonstrate how product meets cited standards.

1.6.6  Indoor Air Quality During Construction

Prior to construction, create indoor air quality plan. Implement IAQ plan during construction and flush building air before occupancy.

a. Construction submittal documentation required:

(1) For new construction and for renovation of unoccupied existing buildings, comply with ASHRAE 189.1 Section 10.3.1.4. (Indoor Air Quality (IAQ) Construction Management), with maximum outdoor air consistent with achieving relative humidity no greater than 60 percent. For renovation of occupied existing buildings, comply with ANSI/SMACNA 008 IAQ Guidelines for Occupied Buildings Under Construction.

(2) Provide required documentation showing that after construction ends and prior to occupancy, new HVAC filters were installed, and building air was flushed out in accordance with UFC 1-200-02.

1.6.7  Environmentally Preferred Products

Use products designated for Federal procurement to meet environmentally preferred requirements. Provide the following documentation:

Provide list of environmentally preferable products used on this project that meet the requirements of UFC 1-200-02.

1.6.8  Recycled Content

Provide materials on this project with aggregated total recycled content equal to or greater than 10 percent. In addition, comply with 40 CFR 247.
Refer to for assistance identifying products cited in 40 CFR 247. Provide the following documentation:

a. Total amount of recycled content contained in building materials as a percentage of total cost of all building materials on the project (mechanical, electrical, and plumbing components, fire protection equipment and transportation are excluded).

b. Manufacturers documents stating the recycled content by material, or written justification for claiming one of the exceptions allowed under RCRA 6002.

c. Substitutions: Contractor may submit for Government approval, proposed alternative products or systems that provide equivalent performance and appearance and have greater contribution to project recycled content requirements. For all such proposed substitutions, submit with the Sustainability Action Plan accompanied by product data demonstrating equivalence.

1.6.9 Bio-Based Products

Utilize products and material made from biobased materials to the maximum extent possible without jeopardizing the intended end use or detracting from the overall quality delivered to the end user. Use only supplies and materials of a type and quality that conform to applicable specifications and standards.

Biobased products that are designated for preferred procurement under the USDA BioPreferred Program must meet the required minimum biobased content. Refer to http://www.biopreferred.gov for the product categories and BioPreferred Catalog. Provide the following documentation:

a. For biobased products used on this project, provide biobased product content percentage and biobased source of material. Indicate name of the manufacturer, cost of each product and the use of each product on this project.

b. For products that meet USDA Biopreferred Program, provide documentation of USDA Biopreferred label.

1.6.10 Waste Material Management (Recycling - Construction)

Divert construction debris from landfill disposal where markets or on-site recycling exists in accordance with Section 01 74 19 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT. Provide the following documentation:

a. Documentation showing total amount of construction debris diverted from landfill as a percentage of all construction debris on the project.

b. Include project's Construction Waste Management Plan and all dumpster haul tickets.

1.6.11 Ozone Depleting Substances

The use of CFC-based refrigerants in HVAC&R systems is prohibited. Eliminate the use of ozone depleting substances (CFC's, HCFCs, or Halons) during and after construction where alternative environmentally preferable products are available, taking into account lifecycle impacts. Meet the requirements of ASHRAE 189.1 Section 9.3.3 Refrigerants for no CFC-based
refrigerants in heating ventilation, air conditioning and refrigeration systems (except for fire suppression system requirements, covered elsewhere in this specification). Provide the following documentation:

a. MSDS sheets for all refrigerants provided


1.6.12 Validation and Certification Restrictions

The Contractor's purchase of renewable energy certificates (RECs) specifically to meet project sustainability goals is prohibited.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 SUSTAINABILITY COORDINATION

3.1.1 Coordinating Sustainability Documentation Progress

Provide sustainability focus and coordination at the following meetings to achieve sustainability goals. Contractor's designated sustainability professional responsible for GP and TPC documentation must participate in the following meetings to coordinate documentation completion.

a. Pre-Construction Conference: Discuss the following: HPSB Checklist, Sustainability Action Plan, Construction submittal requirements and schedule, individuals responsible for achieving each Guiding Principle Requirement.

b. Construction Progress Meetings: Review GP sustainability requirements with project team including contractor and sub-contractor representatives. Demonstrate GP documentation is being collected and updated to the Sustainability Notebook.

(1) Facility Turnover Meetings: Review Sustainability Notebook for completeness and identify any outstanding issues relating to final documentation requirements.

(2) Final Sustainability Notebook Review

3.2 SUSTAINABILITY AWARD

Finalize the sustainability certification process and obtain the TPC Certification Certificates, indicating completion of the projects sustainability goals.

3.2.1 Third Party Certification Certificates

Provide 3 copies of original certificates, and deliver to Contractor Officer, unless otherwise instructed.

-- End of Section --
## Air Force Sustainability Requirements Scoresheet

**HPSB COMPLIANCE (Updated Jan 2017)**

### General Information

<table>
<thead>
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<tr>
<td>Real Property Unique ID (RPUID)</td>
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<td>Facility Number</td>
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<td>Building Name</td>
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<td>Program Year (FY####)</td>
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<tr>
<td>BOD (MM/DD/YY)</td>
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### Guiding Principles Compliance Certification Method

<table>
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<tr>
<th>Method</th>
<th>Value</th>
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</thead>
</table>

0% HPSB Compliant

0% Energy Efficiency Achieved (% below ANSI/ASHRAE/IESNA Standard 90.1-2013)

2017V1 Scoresheet version

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6/26/2017
## Air Force Sustainability Requirements Scoresheet

### HPSB COMPLIANCE (Updated Jan 2017)

**Color Coding:** See Instructions Tab for more detail

- **Drop-Down Box**
  - Yes or N/A
- **No Entry Required**
  - No
- **Custom Entry**
  - Recommended not Required

### 90.1-2013

#### HPSB I: Employ Integrated Design Principles (UFC 1-200-02 para 2-2)

<table>
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<tr>
<th>Total Points</th>
<th>Possible Points</th>
<th>0 INCOMPLETE</th>
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| HPSB I.1     | Integrated Design | 1 * |
| HPSB I.2     | Commissioning     | 1 * |

#### HPSB II: Optimize Energy Performance (UFC 1-200-02 para 2-3)

<table>
<thead>
<tr>
<th>Total Points</th>
<th>Possible Points</th>
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| HPSB II.1    | Energy Efficiency | 1 * |
| HPSB II.2    | On-site Renewable Energy | 1 * |
| HPSB II.3    | On-site Renewable Energy - Solar Hot Water Heater System | 1 * |
| HPSB II.4    | Metering         | 1 * |

#### HPSB III: Protect and Conserve Water (UFC 1-200-02 para 2-4)

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| HPSB III.1   | Indoor Water    | 1 * |
| HPSB III.2   | Indoor Water Metering | 1 * |
| HPSB III.3   | Outdoor Water   | 1 * |
| HPSB III.4   | Outdoor Water Metering | 1 * |
| HPSB III.5   | Alternative Water | 1 * |
| HPSB III.6   | Stormwater Management (LID Documentation per UFC 3-210-10) | 1 * |

### EISA Technical Constraints

- Change in Impervious Area (SF)
- Pre-Award Cost Estimate ($)
- Project addressed EISA 438
- EISA Technical Constraints

### LID Features Locations

- Retaining stormwater impact receiving water flow
- Shallow bedrock, contaminated soil, high ground water table, underground utilities
- Soil infiltration capacity limited
- Structural, plumbing, and other mods not feasible
- Other
- Site too small to infiltrate significant volume
- Non-potable water demand to small
- Other
- State or local restrict water harvesting
- State or local restrict use of green infrastructure or LID
- Other

### Percent Increase in Stormwater Runoff for 95 Percentile Storm (%) - or Percent Increase in Stormwater Runoff from continuous simulation model, published data, studies, or other established tools (Reference UFC 3-210-10 Figure 2-1 Implementation of EISA Section 438)

### Integrated Management Practices Employed
## Air Force Sustainability Requirements Scoresheet

### HPSB COMPLIANCE (Updated Jan 2017)

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<th>Possible Points</th>
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<td>HPSB IV.1 Thermal Comfort</td>
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<td>HPSB IV.2 Ventilation</td>
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<td>HPSB IV.3 Daylighting</td>
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<td>HPSB IV.4 Moisture Control</td>
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<td>HPSB IV.5 Low Emitting Materials</td>
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<td>HPSB IV.6 Protect Indoor Air Quality during Construction</td>
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<td>HPSB IV.7 Environmental Tobacco Smoke Control</td>
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<td>HPSB IV.8 Occupant Health and Wellness</td>
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### HPSB V: Reduce Environmental Impact of Materials (UFC 1-200-02 para 2-6)

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<td>HPSB V.2 Biologically-based Products</td>
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<td>HPSB V.3 Ozone Depleting Substances</td>
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<td>HPSB V.4 Waste and Materials Management - Recycling</td>
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<tr>
<td>HPSB V.5 Waste and Materials Management - Divert 60% from Disposal</td>
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<td>Insert percentage diverted from landfill</td>
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### HPSB VI: Address Climate Change Risk (UFC 1-200-02 para 2-7)

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### Federal Requirements

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<td>Federal Requirements - No</td>
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| Percentage of Federal Requirements Met                                     | 0%              |               |       |
## Federal Requirements for High Performance and Sustainable Buildings (HPSB) & UFC 1-200-02

Instructions: Provide a common or project specific justification for an element to be non-applicable, when completed, the Scoresheet tab will allow an N/A response.

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<thead>
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<th>Justification for Non-Applicable Answers</th>
<th>Common Justification</th>
<th>Project Specific Justification</th>
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<tr>
<td>HPSB I.1 Integrated Design</td>
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<td>HPSB I.2 Commissioning</td>
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<td>HPSB III.2 Outdoor Water Metering: Select N/A if no service</td>
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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 SAFETY ENGINEERS (ASSE/SAFE)

ASSE/SAFE A10.34 (2001; R 2012) Protection of the Public on or Adjacent to Construction Sites

ASSE/SAFE A10.44 (2014) Control of Energy Sources (Lockout/Tagout) for Construction and Demolition Operations

ASSE/SAFE Z244.1 (2003; R 2014) Control of Hazardous Energy Lockout/Tagout and Alternative Methods

ASSE/SAFE Z359.0 (2012) Definitions and Nomenclature Used for Fall Protection and Fall Arrest

ASSE/SAFE Z359.1 (2007) Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components

ASSE/SAFE Z359.11 (2014) Safety Requirements for Full Body Harnesses

ASSE/SAFE Z359.12 (2009) Connecting Components for Personal Fall Arrest Systems

ASSE/SAFE Z359.13 (2013) Personal Energy Absorbers and Energy Absorbing Lanyards


ASSE/SAFE Z359.15 (2014) Safety Requirements for Single Anchor Lifelines and Fall Arresters for Personal Fall Arrest Systems

ASSE/SAFE Z359.2 (2007) Minimum Requirements for a Comprehensive Managed Fall Protection Program

ASSE/SAFE Z359.3 (2007) Safety Requirements for Positioning and Travel Restraint Systems

ASSE/SAFE Z359.4 (2013) Safety Requirements for Assisted-Rescue and Self-Rescue Systems,
Subsystems and Components

ASSE/SAFE Z359.6 (2009) Specifications and Design Requirements for Active Fall Protection Systems

ASSE/SAFE Z359.7 (2011) Qualification and Verification Testing of Fall Protection Products

ASME INTERNATIONAL (ASME)


ASME B30.22 (2010) Articulating Boom Cranes


ASME B30.3 (2012) Tower Cranes

ASME B30.5 (2014) Mobile and Locomotive Cranes

ASME B30.8 (2010) Floating Cranes and Floating Derricks


ASTM INTERNATIONAL (ASTM)


INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)


NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10 (2013) Standard for Portable Fire Extinguishers


NFPA 51B (2014) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work

NFPA 70 (2014; AMD 1 2013; Errata 1 2013; AMD 2 2013; Errata 2 2013; AMD 3 2014; Errata 3-4 2014; AMD 4-6 2014) National
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, Confined Space

The CP, Confined Space, is a person meeting the competent person requirements as defined EM 385-1-1 Appendix Q, with thorough knowledge of OSHA’s Confined Space Standard, 29 CFR 1910.146, and designated in writing to be responsible for the immediate supervision, implementation and monitoring of the confined space program, who through training, knowledge and experience in confined space entry is capable of identifying, evaluating and addressing existing and potential confined space hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.3 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 as defined in EM 385-1-1 Appendix Q and 29 CFR 1926, 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.

1.2.4 Competent Person, Excavation/Trenching

A CP, Excavation/Trenching, is a person meeting the competent person requirements as defined in EM 385-1-1 Appendix Q and 29 CFR 1910.146, and designated in writing to be responsible for the immediate supervision, implementation and monitoring of the excavation/trenching program, who through training, knowledge and experience in excavation/trenching 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.

1.2.5 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 ASSE/SAFE 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.

1.2.6 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 and include 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
1.2.7  Competent Person (CP) Trainer

A competent person trainer as defined in EM 385-1-1 Appendix Q, who is qualified in the 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.

1.2.8  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.

1.2.9  High Visibility Accident

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

1.2.10  Load Handling Equipment (LHE)

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

1.2.11  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 through provided by a physician or registered personnel.

1.2.12  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).

1.2.13  Operating Envelope

The Operating Envelope is the area surrounding any crane or load handling equipment. 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.

1.2.14  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.

1.2.15 Qualified Person, Fall Protection (QP for FP)

A QP for FP is a person meeting the requirements of EM 385-1-1 Appendix Q, and ASSE/SAFE Z359.0, with 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.

1.2.16 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.

1.2.17 USACE Property and Equipment

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

1.2.18 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 any mishap that meets the criteria described in the Contractor Significant Incident Report (CSIR) using the Crane High Hazard working group mishap reporting form.
1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals as applicable.
   Accident Prevention Plan (APP); G, RO

SD-06 Test Reports
   Monthly Exposure Reports
   Notifications and Reports
   Accident Reports; G, RO
   LHE Inspection Reports

SD-07 Certificates
   Crane Operators/Riggers
   Standard Lift Plan; G, RO
   Critical Lift Plan; G, RO
   Activity Hazard Analysis (AHA)
   Confined Space Entry Permit
   Hot Work Permit
   Certificate of Compliance
   License Certificates
   Radiography Operation Planning Work Sheet; G, RO

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 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 the following federal, state, and local, or host nation laws, ordinances, criteria, rules and regulations as applicable. 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 SITE QUALIFICATIONS, DUTIES, AND MEETINGS

1.6.1 Personnel Qualifications

1.6.1.1 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 (1) person at each project site to function as the Site Safety and Health Officer (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. 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.

1.6.1.2 Contractor Quality Control (QC) Manager:

The Contractor Quality Control Manager can be the SSHO on this project.

1.6.1.3 Competent Person Qualifications

Provide Competent Persons in accordance with EM 385-1-1, Appendix Q and herein. Competent Persons for high risk activities include confined space, cranes and rigging, excavation/trenching, 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 Accident Prevention Plan, 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 the Contracting Officer for information in consultation with the Safety Office.

1.6.1.3.1 Competent Person for Confined Space Entry

Provide a Confined Space (CP) Competent Person who meets the requirements of EM 385-1-1, Appendix Q, and herein. The CP for Confined Space Entry must supervise the entry into each confined space.

1.6.1.3.2 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.
1.6.1.3.3 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 and herein.

1.6.1.4 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 (5) 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.

1.6.1.5 Crane Operators/Riggers

Provide Operators meeting the requirements in EM 385-1-1, Section 15.B for Riggers and Section 16.B for Crane Operators. 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.

1.6.2 Personnel Duties

1.6.2.1 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 OSHA's Form 300 to log work-related injuries and illnesses occurring on the project site for Prime Contractors and subcontractors. Post and maintain the Form 300 on the site Safety Bulletin Board.

d. Maintain applicable safety reference material on the job site.

e. Attend the pre-construction conference, 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 duties are not being effectively carried out. If 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.

1.6.3 Meetings

1.6.3.1 Preconstruction Conference

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project must attend the preconstruction conference. This includes the project superintendent, Site Safety and Occupational Health officer, quality control manager, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (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 at the conference 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 work until an APP is established that is acceptable to the Contracting Officer.

1.6.3.2 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 on the project location. The SSHO, supervisors, foremen, or CDSOs 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.

1.7 ACCIDENT PREVENTION PLAN (APP)

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 Quality Control 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 conference 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 Quality Control 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 ASSE/SAFE A10.34), and the environment.

1.7.1 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 Site Safety and Health Officer 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.

1.7.2 Plans

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

1.7.2.1 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.)

1.7.2.2 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 3 months.
1.7.2.3 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. 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.

In addition to the requirements of EM 385-1-1, Section 16.H.02, the critical lift plan must include the following:

a. For lifts of personnel, demonstrate compliance with the requirements of 29 CFR 1926.1400 and EM 385-1-1, Section 16.T.

b. For barge mounted mobile cranes, provide a Naval Architecture Analysis and include an LHE Manufacturer's Floating Service Load Chart in accordance with the criteria from the selected standard in EM 385-1-1, Section 16.L.02. The Floating Service Load Chart must provide a table of rated load versus boom angle and radius. The Floating Service Load Chart must also provide the maximum allowable machine list and trim associated with the tabular loads and radii provided. If the Manufacturer's Floating Service Load Chart is not available, a floating service load chart may be developed and provided by a qualified Registered Professional Engineer (RPE), competent in the field of floating cranes. The Load Chart must be in accordance with the criteria from the selected standard in EM 385-1-1, Section 16.L; provide a table of rated load versus boom angle and radius; provide the maximum allowable machine list and machine trim associated with the tabular loads and radii provided; and be stamped by a RPE qualified and competent in the field of floating cranes. The RPE, competent in the field of floating cranes must stamp and certify (sign) that the Naval Architectural Analysis (NAA) meets the requirements of EM 385-1-1, Section 16.L.03.

c. 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. 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.

1.7.2.4 Fall Protection and Prevention (FP&P) Plan

The plan must comply with the requirements of EM 385-1-1, Section 21.D and ASSE/SAFE 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 fall protection and prevention 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 Fall Protection and Prevention 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 Fall Protection and Prevention...
Plan documentation at the job site for the duration of the project. Include the Fall Protection and Prevention Plan documentation in the Accident Prevention Plan (APP).

1.7.2.5 Rescue and Evacuation Plan

Provide a Rescue and Evacuation Plan in accordance with EM 385-1-1 Section 21.N and ASSE/SAFE 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.

1.7.2.6 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, ASSE/SAFE Z244.1, and ASSE/SAFE A10.44. Submit this HECP as part of the Accident Prevention Plan (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.

1.7.2.7 Excavation Plan

Identify the safety and health aspects of excavation, and provide and prepare the plan in accordance with EM 385-1-1, Section 25.A.

1.8 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 SSCO, 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 DFOW. 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.

1.8.1 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 SSCO to ensure the implementation and effectiveness of the required safety and health controls for that work activity.
1.8.2 AHA Signature Log

Each employee performing work as part of an activity, task or DFOW 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.

1.9 DISPLAY OF SAFETY INFORMATION

1.9.1 Safety Bulletin Board

Within one calendar day(s) after 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.06. Additional items required to be posted include:

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

1.9.2 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.

1.10 SITE SAFETY REFERENCE MATERIALS

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

1.11 EMERGENCY MEDICAL TREATMENT

Contractors must arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.
1.12 NOTIFICATIONS and REPORTS

1.12.1 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, load handling equipment (LHE) or rigging mishaps, or any property damage. 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); load handling equipment or rigging; fall from height (any level other than same surface); and underwater diving. 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.

1.12.2 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 USACE Accident Report Form 3394, and provide the report to the Contracting Officer within 5 calendar day(s) of the accident. The Contracting Officer will provide copies of any required or special forms.

b. Near Misses: Near miss reports are considered positive and proactive Contractor safety management actions.

c. Conduct an accident investigation for any load handling equipment accident (including rigging gear accidents) to establish the root cause(s) of the accident. Complete the LHE Accident Report (Crane and Rigging Gear) 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.

1.12.3 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  HOT WORK

1.13.1  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 District Fire Chief. 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 Fire Marshall's phone number. REPORT ANY FIRE, NO MATTER HOW SMALL, TO THE RESPONSIBLE FIRE MARSHALL IMMEDIATELY.

1.13.2  Work Around Flammable Materials

Obtain services from a NFPA Certified Marine Chemist 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

1.14  RADIATION SAFETY REQUIREMENTS

Submit License Certificates, employee training records, and Leak Test Reports for radiation materials and equipment to the Contracting Officer and Radiation Safety Office (RSO) for all specialized and licensed material and equipment proposed for use on the construction project. Maintain on-site records whenever licensed radiological materials or ionizing equipment are on government property.

Protect workers from radiation exposure in accordance with 10 CFR 20, ensuring any personnel exposures are maintained As Low As Reasonably Achievable.

1.14.1  Radiography Operation Planning Work Sheet

Submit a Radiography Operation Planning Work Sheet to Contracting Officer 14 days prior to commencement of operations involving radioactive materials or radiation generating devices. The Contracting Officer will review this worksheet and submit questions and comments.

Contractors must use primary dosimeters process by a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory.
1.14.2 Site Access and Security

Coordinate site access and security requirements with the Contracting Officer for all radiological materials and equipment containing ionizing radiation that are proposed for use on a government facility. The authorized representative will meet the Contractor at a designated location, ensure safety of the materials being transported, and will escort the Contractor to the job site and return upon completion of the work.

Provide a copy of all calibration records, and utilization records for radiological operations performed on the site.

1.14.3 Loss or Release and Unplanned Personnel Exposure

Loss or release of radioactive materials, and unplanned personnel exposures must be reported immediately to the Contracting Officer, RSO, and Base Security Department Emergency Number.

1.14.4 Site Demarcation and Barricade

Properly demark and barricade an area surrounding radiological operations to preclude personnel entrance, in accordance with EM 385-1-1, Nuclear Regulatory Commission, and Applicable State regulations and license requirements, and in accordance with requirements established in the accepted Radiography Operation Planning Work Sheet.

Do not close or obstruct streets, walks, and other facilities occupied and used by the Government without written permission from the Contracting Officer.

1.14.5 Security of Material and Equipment

Properly secure the radiological material and ionizing radiation equipment at all times, including keeping the devices in a properly marked and locked container, and secondarily locking the container to a secure point in the Contractor's vehicle or other approved storage location during transportation and while not in use. While in use, maintain a continuous visual observation on the radiological material and ionizing radiation equipment. In instances where radiography is scheduled near or adjacent to buildings or areas having limited access or one-way doors, make no assumptions as to building occupancy. Where necessary, the Contracting Officer will direct the Contractor to conduct an actual building entry, search, and alert. Where removal of personnel from such a building cannot be accomplished and it is otherwise safe to proceed with the radiography, position a fully instructed employee inside the building or area to prevent exiting while external radiographic operations are in process.

1.14.6 Transportation of Material


1.14.7 Schedule for Exposure or Unshielding

Actual exposure of the radiographic film or unshielding the source must not be initiated until after 5 p.m. on weekdays.
1.14.8 Transmitter Requirements

Adhere to the base policy concerning the use of transmitters, such as radios and cell phones. Obey Emissions control (EMCON) restrictions.

1.15 CONFINED SPACE ENTRY REQUIREMENTS.

Confined space entry must comply with Section 34 of EM 385-1-1, OSHA 29 CFR 1926, OSHA 29 CFR 1910, OSHA 29 CFR 1910.146, and OSHA Directive CPL 2.100. Any potential for a hazard in the confined space requires a permit system to be used.

1.15.1 Entry Procedures

Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. Comply with EM 385-1-1, Section 34 for entry procedures. Hazards pertaining to the space must be reviewed with each employee during review of the AHA.

1.15.2 Forced Air Ventilation

Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its action level.

1.15.3 Sewer Wet Wells

Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.

1.15.4 Rescue Procedures and Coordination with Local Emergency Responders

Develop and implement an on-site rescue and recovery plan and procedures. The rescue plan must not rely on local emergency responders for rescue from a confined space.

1.16 SEVERE STORM PLAN

In the event of a severe storm warning, the Contractor must:

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.
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. An employee check-in/check-out communication procedure must be developed to ensure employee safety.

3.1.2 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 Radiation Safety Officer (RSO) prior to excepted items of radioactive material and devices being brought on base.

3.1.3 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 PRE-OUTAGE COORDINATION MEETING

Apply for utility outages at least 15 days in advance. As a minimum, the request must include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved, and prior to beginning work on the utility system requiring shut down, attend a pre-outage coordination meeting with the Contracting Officer and the Installation or Public Utilities representative(s) to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist.

3.3 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, and paragraph HAZARDOUS ENERGY CONTROL PROGRAM (HECP).

3.4 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 ASSE/SAFE Z359.2 and EM 385-1-1, Sections 21.A and 21.D.

3.4.1 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. 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 ASSE/SAFE Z359.2 in the AHA.

3.4.2 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 Fall Protection and Prevention 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.

3.4.2.1 Additional Personal Fall Protection

In addition to the required fall protection systems, other protection such as safety skiffs, personal floatation devices, and life rings, are required when working above or next to water in accordance with EM 385-1-1, Sections 21.0 through 21.0.06. 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.

3.4.2.2 Personal Fall Protection Harnesses

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 carabiners 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. All full body harnesses must be equipped 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.

3.4.3 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 of an edge, on a roof having a slope less than or equal to 4:12 (vertical to horizontal), protect personnel from falling by use of personal fall arrest/restraint systems, guardrails, or safety nets. A safety monitoring system is not adequate fall protection and is not authorized. Provide in accordance with 29 CFR 1926.500.

(2) For work greater than 6 feet from an edge, erect and install warning lines in accordance with 29 CFR 1926.500 and EM 385-1-1, Section L.

b. Steep-Sloped Roofs: Work on a roof having a slope greater than 4:1 (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.
3.4.4 Horizontal Lifelines (HLL)

Provide HLL in accordance with EM 385-1-1, Section 21.I.08.d.2. Commercially manufactured horizontal lifelines (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.

3.4.5 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.

3.4.6 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 Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP). The plan must comply with the requirements of EM 385-1-1, ASSE/SAFE Z359.2, and ASSE/SAFE Z359.4.

3.5 WORK PLATFORMS

3.5.1 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 or without appropriate fall protection as delineated in the accepted fall protection and prevention 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 six feet.

k. Delineate fall protection requirements when working above six feet or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

3.5.2 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.

3.6 EQUIPMENT

3.6.1 Material Handling Equipment (MHE)

a. Material handling equipment such as forklifts must not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions. Material handling equipment 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. Material Handling Equipment 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.

3.6.2 Load Handling Equipment (LHE)

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. Contractor's operator must remain with the crane during the spot check. Rigging gear must comply with OSHA, ASME B30.9 Standards and host country safety standards as applicable.

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 B30.3 for construction tower cranes, ASME B30.8 for floating cranes and floating derricks, ASME B30.9 for slings, ASME B30.20 for below the hook lifting devices and ASME B30.26 for rigging hardware.

e. Under no circumstance must a Contractor make a lift at or above 90 percent of the cranes rated capacity in any configuration.

f. 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.

g. 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.

h. Inspect, maintain, and recharge portable fire extinguishers as specified in NFPA 10, Standard for Portable Fire Extinguishers.

i. All employees must keep clear of loads about to be lifted and of suspended loads.

j. Use cribbing when performing lifts on outriggers.

k. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.

l. 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.

m. 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.

n. 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.

o. Certify that all LHE operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

p. 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.

3.6.3 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.

3.6.4 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.

3.7 EXCAVATIONS

Soil classification must be performed by a competent person in accordance with 29 CFR 1926 and EM 385-1-1.

3.7.1 Utility Locations

Provide a third party, independent, private utility locating company to positively identify underground utilities in the work area in addition to any station locating service and coordinated with the station utility department.

3.7.2 Utility Location Verification

Physically verify underground utility locations, including utility depth, by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system.
3.7.3 Utilities Within and Under Concrete, Bituminous Asphalt, and Other Impervious Surfaces

Utilities located within and under concrete slabs or pier structures, bridges, parking areas, and the like, are extremely difficult to identify. Whenever contract work involves chipping, saw cutting, or core drilling through concrete, bituminous asphalt or other impervious surfaces, the existing utility location must be coordinated with station utility departments in addition to location and depth verification by a third party, independent, private locating company. The third party, independent, private locating company must locate utility depth by use of Ground Penetrating Radar (GPR), X-ray, bore scope, or ultrasound prior to the start of demolition and construction. Outages to isolate utility systems must be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the Contractor from meeting this requirement.

3.8 ELECTRICAL

Perform electrical work in accordance with EM 385-1-1, Appendix A, 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 personnel 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. Journeymen/Apprentice ratio must be in accordance with State, 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 42 00

SOURCES FOR REFERENCE PUBLICATIONS

PART 1  GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization (e.g. ASTM B564 Standard Specification for Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the standards producing organization should be ordered from the source by title rather than by number.

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)
1791 Tullie Circle, NE
Atlanta, GA  30329
Ph:   800-527-4723 or 404-636-8400
Fax:  404-321-5478
E-mail: ashrae@ashrae.org
Internet:  http://www.ashrae.org

AMERICAN SOCIETY OF SAFETY ENGINEERS (ASSE/SAFE)
1800 East Oakton Street
Des Plaines, IL  60018-2187
Ph:  847-699-2929
Fax:  847-768-3434
E-mail: customerservice@asse.org
Internet:  http://www.asse.org

ASME INTERNATIONAL (ASME)
Three Park Avenue, M/S 10E
New York, NY 10016-5990
Ph:   800-854-7179 or 800-843-2763
Fax:  212-591-7674
E-mail: infocentral@asme.org
Internet:  http://www.asme.org

ASSOCIATED AIR BALANCE COUNCIL (AABC)
1518 K Street, NW
Washington, DC  20005
Ph:  202-737-0202
ASTM INTERNATIONAL (ASTM)  
100 Barr Harbor Drive, P.O. Box C700  
West Conshohocken, PA 19428-2959  
Ph: 610-832-9585  
Fax: 610-832-9555  
E-mail: service@astm.org  
Internet: http://www.astm.org

GREEN BUILDING INITIATIVE (GBI)  
2104 SE Morrison  
Portland, Oregon 97214  
Ph: 877-424-4241  
Fax: 503.961.8991  
Email: info@thegbi.org  
Internet: http://www.thegbi.org/gbi/

GREEN SEAL (GS)  
1001 Connecticut Avenue, NW  
Suite 827  
Washington, DC 20036-5525  
Ph: 202-872-6400  
Fax: 202-872-4324  
E-mail: greenseal@greenseal.org  
Internet: http://www.greenseal.org

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)  
445 Hoes Lane or 2001 L Street, NW, Suite 700  
Piscataway, NJ 08855-1331 or Washington, DC 20036-4910 USA  
Ph: 732-981-0060 or 800-701-4333  
Fax: 732-562-6380  
E-mail: onlinesupport@ieee.org or ieeeusa@ieee.org  
Internet: http://www.ieee.org

NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB)  
8575 Grovemont Circle  
Gaithersburg, MD 20877  
Ph: 301-977-3698  
Fax: 301-977-9589  
E-Mail: elana@nebb.org  
Internet: http://www.nebb.org

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)  
1 Batterymarch Park  
Quincy, MA 02169-7471  
Ph: 617-770-3000 or 800-344-3555  
Fax: 617-770-0700  
E-mail: webmaster@nfpa.org  
Internet: http://www.nfpa.org

SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)  
4201 Lafayette Center Drive  
Chantilly, VA 20151-1219  
Ph: 703-803-2980  
Fax: 703-803-3732
E-mail: info@smacna.org
Internet: http://www.smacna.org

U.S. AIR FORCE (USAF)
Air Force Publishing Distribution Center
E-mail: afdpo-ppl@pentagon.af.mil
Internet: http://www.e-publishing.af.mil/

U.S. ARMY CORPS OF ENGINEERS (USACE)
Order CRD-C DOCUMENTS from:
U.S. Army Engineer Waterways Experiment Station
ATTN: Technical Report Distribution Section, Services Branch, TIC
3909 Halls Ferry Road
Vicksburg, MS 39180-6199
E-mail: MTC-INFO@erdc.usace.army.mil
Internet:
Order Other Documents from:
USACE Publications Depot
Attn: CEHEC-IM-PD
2803 52nd Avenue
Hyattsville, MD 20781-1102
Ph: 301-394-0081
Fax: 301-394-0084
E-mail: pubs-army@usace.army.mil
Internet: http://www.usace.army.mil/publications or
http://www.hnc.usace.army.mil/Missions/Engineering/TECHINFO.aspx

U.S. DEPARTMENT OF DEFENSE (DOD)
Order DOD Documents from:
Room 3A750-The Pentagon
1400 Defense Pentagon
Washington, DC 20301-1400
Ph: 703-571-3343
FAX: 215-697-1462
E-mail: pia@hq.afis.asd.mil
Internet: http://www.dod.gov
Obtain Military Specifications, Standards and Related Publications from:
Acquisition Streamlining and Standardization Information System (ASSIST)
Department of Defense Single Stock Point (DODSSP)
Document Automation and Production Service (DAPS)
Building 4/D
700 Robbins Avenue
Philadelphia, PA 19111-5094
Ph: 215-697-6396 - for account/password issues
Internet: http://assist.daps.dla.mil/online/start/; account registration required
Obtain Unified Facilities Criteria (UFC) from:
Whole Building Design Guide (WBDG)
National Institute of Building Sciences (NIBS)
1090 Vermont Avenue NW, Suite 700
Washington, DC 20005
Ph: 202-289-7800
Fax: 202-289-1092
Internet: http://www.wbdg.org/references/docs.refs.php
U.S. DEPARTMENT OF ENERGY (DOE)
Order from:
1000 Independence Avenue Southwest
Washington, D.C. 20585
Ph: 202-586-5000
Fax: 202-586-4403
E-mail: The Secretary@hq.doe.gov
Internet: www.eere.energy.gov

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20004
Ph: 202-272-0167
for Fax and E-mail see below
Internet: http://www.epa.gov
--- Some EPA documents are available only from:
National Technical Information Service (NTIS)
5301 Shawnee Road
Alexandria, VA 22312
Ph: 703-605-6050 or 1-688-584-8332
Fax: 703-605-6900
E-mail: info@ntis.gov
Internet: http://www.ntis.gov

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
8601 Adelphi Road
College Park, MD 20740-6001
Ph: 866-272-6272
Fax: 301-837-0483
E-mail: contactcenter@gpo.gov
Internet: http://www.archives.gov
Order documents from:
Superintendent of Documents
U.S. Government Printing Office (GPO)
732 North Capitol Street, NW
Washington, DC 20401
Ph: 202-512-1800
Fax: 202-512-2104
E-mail: contactcenter@gpo.gov
Internet: http://www.gpoaccess.gov

PART 2 PRODUCTS
Not used

PART 3 EXECUTION
Not used

-- End of Section --
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 D3740 (2012a) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction


U.S. ARMY CORPS OF ENGINEERS (USACE)

ER 1110-1-12 (2006; Change 1) Engineering and Design -- Quality Management

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all associated costs will be included in the applicable Bid Schedule unit or lump sum prices.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance to Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Contractor Quality Control (CQC) Plan; G, RO

SD-06 Test Reports

Verification Statement

PART 2   PRODUCTS

Not Used
PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Establish and maintain an effective quality control (QC) system that complies with the Contract Clause titled "Inspection of Construction." QC consists of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The QC system must cover all design and construction operations, both onsite and offsite, and be keyed to the proposed design and construction sequence. The project superintendent will be held responsible for the quality of work and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. In this context the highest level manager responsible for the overall construction activities at the site, including quality and production is the project superintendent. The project superintendent must maintain a physical presence at the site at all times and is responsible for all construction and related activities at the site, except as otherwise acceptable to the Contracting Officer.

3.2 QUALITY CONTROL PLAN

Submit no later than fifteen (15) days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The Government will consider an interim plan for the first thirty (30) days of operation. Design and construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional work.

3.2.1 Content of the CQC Plan

Include, as a minimum, the following to cover all design and construction operations, both onsite and offsite, including work by subcontractors, designers of record, consultants, architect/engineers (AE), fabricators, suppliers, and purchasing agents:

a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff will implement the three phase control system for all aspects of the work specified. Include a CQC System Manager who reports to the project superintendent.

b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. Letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities will be issued by the CQC System Manager. Copies of these letters must be furnished to the Government.
d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, designers of record, consultants, architect engineers (AE), offsite fabricators, suppliers, and purchasing agents. These procedures must be in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities approved by the Contracting Officer must be used.)

f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

g. Procedures for tracking design and construction deficiencies from identification through acceptable corrective action. Establish verification procedures that identified deficiencies have been corrected.

h. Reporting procedures, including proposed reporting formats.

i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the coordination meeting.

3.2.2 Additional Requirements for Design Quality Control (DQC) Plan

The following additional requirements apply to the Design Quality Control (DQC) plan:

a. Submit and maintain a Design Quality Control (DQC) Plan as an effective quality control program which will assure that all services required by this design-build contract are performed and provided in a manner that meets professional architectural and engineering quality standards. As a minimum, all documents must be technically reviewed by competent, independent reviewers identified in the DQC Plan. The same element that produced the product may not perform the independent technical review (ITR). Correct errors and deficiencies in the design documents prior to submitting them to the Government.

b. Include the design schedule in the master project schedule, showing the sequence of events involved in carrying out the project design tasks within the specific contract period. This should be at a detailed level of scheduling sufficient to identify all major design tasks, including those that control the flow of work. Include review and correction periods associated with each item. This should be a forward planning as well as a project monitoring tool. The schedule reflects calendar days and not dates for each activity. If the schedule is changed, submit a revised schedule reflecting the change within 7 calendar days. Include in the DQC Plan the discipline-specific checklists to be used during the design and quality control of each submittal. Submit at each design phase as part of the project.
documentation these completed discipline-specific checklists. ER 1110-1-12 provided some useful information in developing checklists.

c. Implement the DQC Plan by a Design Quality Control Manager who has the responsibility of being cognizant of and assuring that all documents on the project have been coordinated. This individual must be a person who has verifiable engineering or architectural design experience and is a registered professional engineer or architect. Notify the Contracting Officer, in writing, of the name of the individual, and the name of an alternate person assigned to the position.

The Contracting Officer will notify the Contractor in writing of the acceptance of the DQC Plan. After acceptance, any changes proposed by the Contractor are subject to the acceptance of the Contracting Officer.

3.2.3 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of design and construction. Acceptance is conditional and will be predicated on satisfactory performance during the design and construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4 Notification of Changes

After acceptance of the CQC Plan, notify the Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Postaward Conference, before start of design or construction, and prior to acceptance by the Government of the CQC Plan, meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. Submit the CQC Plan a minimum of five (5) calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details must be developed, including the forms for recording the CQC operations, design activities, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting will be prepared by the Government, signed by both the Contractor and the Contracting Officer and will become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a Safety and Health Manager, CQC System Manager, a Design Quality Manager, and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager must report directly to a senior project (or corporate) official independent from the CQC System Manager. The Safety and Health Manager will also serve as a member of the CQC Staff Personnel identified in the technical provisions as requiring specialized skills to
assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff must maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff will be subject to acceptance by the Contracting Officer. Provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Promptly complete and furnish all letters, material submittals, shop drawing submittals, schedules and all other project documentation to the CQC organization. The CQC organization is responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

Identify as CQC System Manager an individual within the onsite work organization who is responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager must be a construction person with a minimum of ten (10) years in related work. This CQC System Manager must be on the site at all times during construction and be employed by the prime Contractor. The CQC System Manager may have duties as project superintendent in addition to quality control. Identify in the plan an alternate to serve in the event of the CQC System Manager's absence. The requirements for the alternate are the same as the CQC System Manager.

3.4.3 Additional Requirement

In addition to the above experience and education requirements, the CQC System Manager must have completed the Construction Quality Management (CQM) for Contractors course. If the CQC System Manager does not have a current certification, 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 information on the next scheduled class.

The Construction Quality Management Training certificate expires after 5 years. If the CQC System Manager's certificate has expired, retake the course to remain current.

3.4.4 Organizational Changes

Maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, must comply with the requirements in Section 01 33 00 SUBMITTAL PROCEDURES. The CQC organization is responsible for certifying that all submittals and deliverables are in compliance with the contract requirements. When Section 23 08 00.00 10 COMMISSIONING OF HVAC SYSTEMS are included in the contract, the submittals required by those sections must be coordinated with Section 01 33 00 SUBMITTAL PROCEDURES to ensure adequate time is allowed for each type of submittal required.

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures
that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control must be conducted by the CQC System Manager for each definable feature of the construction work as follows:

3.6.1 Preparatory Phase

This phase is performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase includes:

a. A review of each paragraph of applicable specifications, reference codes, and standards. Make available during the preparatory inspection a copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field. Maintain and make available in the field for use by Government personnel until final acceptance of the work.

b. Review of the contract drawings.

c. Check to assure that all materials and/or equipment have been tested, submitted, and approved.

d. Review of provisions that have been made to provide required control inspection and testing.

e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

f. Examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

g. Review of the appropriate activity hazard analysis to assure safety requirements are met.

h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

i. Check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

j. Discussion of the initial control phase.

k. The Government must be notified at least 24 hours in advance of beginning the preparatory control phase. Include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. Document the results of the preparatory phase actions by separate minutes prepared by the CQC System Manager and attach to the daily CQC report. Instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase

This phase is accomplished at the beginning of a definable feature of work. Accomplish the following:
a. Check work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing are in compliance with the contract.

c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

d. Resolve all differences.

e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.

f. The Government must be notified at least 24 hours in advance of beginning the initial phase for definable feature of work. Prepare separate minutes of this phase by the CQC System Manager and attach to the daily CQC report. Indicate the exact location of initial phase for definable feature of work for future reference and comparison with follow-up phases.

g. The initial phase for definable feature of work should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase

Perform daily checks to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. Record the checks in the CQC documentation. Conduct final follow-up checks and correct all deficiencies prior to the start of additional features of work which may be affected by the deficient work. Do not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

Conduct additional preparatory and initial phases on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

Perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. Procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site. Perform the following activities and record and provide the following data:
a. Verify that testing procedures comply with contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

e. Record results of all tests taken, both passing and failing on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. Provide an information copy of tests performed by an offsite or commercial test facility directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2 Testing Laboratories

The listing of validated testing laboratories is available at http://gsl.erdc.usace.army.mil/SL/MTC/.

3.7.2.1 Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel must meet criteria detailed in ASTM D3740 and ASTM E329.

3.7.2.2 Capability Recheck

If the selected laboratory fails the capability check, the Contractor will be assessed a charge determined by the Contracting Officer's Representative to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

3.7.3 Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Conduct an inspection of the work by the CQC System Manager near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and
Completion of Work", or by the specifications. Prepare and include in the
CQC documentation a punch list of items which do not conform to the
approved drawings and specifications, as required by paragraph
DOCUMENTATION. Include within the list of deficiencies the estimated date
by which the deficiencies will be corrected. Make a second inspection the
CQC System Manager or staff to ascertain that all deficiencies have been
corrected. Once this is accomplished, notify the Government that the
facility is ready for the Government Pre-Final inspection.

3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the
facility is complete and ready to be occupied. A Government Pre-Final
Punch List may be developed as a result of this inspection. Ensure that
all items on this list have been corrected before notifying the Government,
so that a Final inspection with the customer can be scheduled. Correct any
items noted on the Pre-Final inspection in a timely manner. These
inspections and any deficiency corrections required by this paragraph must
be accomplished within the time slated for completion of the entire work or
any particular increment of the work if the project is divided into
increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the
superintendent or other primary management person, and the Contracting
Officer's Representative must be in attendance at the final acceptance
inspection. Additional Government personnel including, but not limited to,
those from Base/Post Civil Facility Engineer user groups, and major
commands may also be in attendance. The final acceptance inspection will
be formally scheduled by the Contracting Officer based upon results of the
Pre-Final inspection. Notify the Contracting Officer at least 14 days
prior to the final acceptance inspection and include the Contractor's
assurance that all specific items previously identified to the Contractor
as being unacceptable, along with all remaining work performed under the
contract, will be complete and acceptable by the date scheduled for the
final acceptance inspection. 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 titled "Inspection
of Construction".

3.9 DOCUMENTATION

Maintain current records providing factual evidence that required quality
control activities and/or tests have been performed. Include in these
records the work of subcontractors and suppliers on an acceptable form that
includes, as a minimum, the following information:

a. Contractor/subcontractor and their area of responsibility.
b. Operating plant/equipment with hours worked, idle, or down for repair.
c. Work performed each day, giving location, description, and by whom.
   When Network Analysis (NAS) is used, identify each phase of work
   performed each day by NAS activity number.
d. Test and/or control activities performed with results and references to
   specifications/drawings requirements. Identify the control phase
(Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.

e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

g. Offsite surveillance activities, including actions taken.

h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

i. Instructions given/received and conflicts in plans and/or specifications.

j. Provide documentation of design quality control activities. For independent design reviews, provide, as a minimum, identification of the Independent Technical Review (ITR) team, the ITR review comments, responses and the record of resolution of the comments.

k. Contractor's Verification Statement.

Indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. Cover both conforming and deficient features and include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. Furnish the original and one copy of these records in report form to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, prepare and submit one report for every 7 days of no work and on the last day of a no work period. All calendar days must be accounted for throughout the life of the contract. The first report following a day of no work will be for that day only. Reports must be signed and dated by the CQC System Manager. Include copies of test reports and copies of reports prepared by all subordinate quality control personnel within the CQC System Manager Report.

3.10 SAMPLE FORMS

Sample forms enclosed at the end of this section.

3.11 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. Take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, will be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, 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 will be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

-- End of Section --
PART 1 GENERAL

1.1 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)


1.2 Contract Administration

The Government will use the Resident Management System (RMS) to assist in its monitoring and administration of this contract. The Contractor uses the Government-furnished Construction Contractor Mode of RMS, referred to as RMS CS, to record, maintain, and submit various information throughout the contract period. The Contractor mode user manuals, updates, and training information can be downloaded from the RMS web site (http://rms.usace.army.mil). The joint Government-Contractor use of RMS facilitates electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

Administration
Finances
Quality Control
Submittal Monitoring
Scheduling
Import/Export of Data

1.2.1 Correspondence and Electronic Communications

For ease and speed of communications, exchange correspondence and other documents in electronic format to the maximum extent feasible between the Government and Contractor. Correspondence, pay requests and other documents comprising the official contract record are also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

1.2.2 Other Factors

Particular attention is directed to Contract Clause, "Schedules for Construction Contracts", Contract Clause, "Payments", Section 01 32 01.00 10 PROJECT SCHEDULE, Section 01 33 00 SUBMITTAL PROCEDURES, and Section 01 45 00.00 10 QUALITY CONTROL, which have a direct relationship to the reporting to be accomplished through RMS. Also, there is no separate payment for establishing and maintaining the RMS database; costs associated will be included in the contract pricing for the work.
1.3 RMS SOFTWARE

RMS is a Windows-based program that can be run on a Windows based PC meeting the requirements as specified in Section 1.3. The Government will make available the RMS software to the Contractor after award of the construction contract. Prior to the Pre-Construction Conference, the Contractor will be responsible to download, install and use the latest version of the RMS software from the Government's RMS Internet Website. Any program updates of RMS will be made available to the Contractor via the Government RMS Website as the updates become available.

1.3.1 RMS CONTRACTOR'S MODE (CM)

RMS Contractor's Mode or RMS CM is the replacement for Quality Control System or QCS. The database remains the same. References to RMS in this specification includes RMS CM.

1.4 SYSTEM REQUIREMENTS

The following is the minimum system configuration required to run RMS and Contractor Mode:

<table>
<thead>
<tr>
<th>Minimum RMS System Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hardware</strong></td>
</tr>
<tr>
<td>Windows-based PC</td>
</tr>
<tr>
<td>RAM</td>
</tr>
<tr>
<td>Hard drive disk</td>
</tr>
<tr>
<td>Monitor</td>
</tr>
<tr>
<td>Mouse or other pointing device</td>
</tr>
<tr>
<td>Windows compatible printer</td>
</tr>
<tr>
<td>Connection to the Internet</td>
</tr>
<tr>
<td><strong>Software</strong></td>
</tr>
<tr>
<td>MS Windows</td>
</tr>
<tr>
<td>Word Processing software</td>
</tr>
<tr>
<td>Microsoft.NET Framework</td>
</tr>
<tr>
<td>Email</td>
</tr>
<tr>
<td>Virus protection software</td>
</tr>
</tbody>
</table>
1.5 RELATED INFORMATION

1.5.1 RMS User Guide

After contract award, download instructions for the installation and use of RMS from the Government RMS Internet Website.

1.6 CONTRACT DATABASE

Prior to the pre-construction conference, the Government will provide the Contractor with basic contract award data to use for RMS. The Government will provide data updates to the Contractor as needed. These updates will generally consist of submittal reviews, correspondence status, Quality Assurance(QA) comments, and other administrative and QA data.

1.7 DATABASE MAINTENANCE

Establish, maintain, and update data in the RMS database throughout the duration of the contract at the Contractor's site office. Submit data updates to the Government (e.g., daily reports, submittals, RFI's, schedule updates, payment requests) using RMS. The RMS database typically includes current data on the following items:

1.7.1 Administration

1.7.1.1 Contractor Information

Contain within the database the Contractor's name, address, telephone numbers, management staff, and other required items. Within 7 calendar days of receipt of RMS software from the Government, deliver Contractor administrative data in electronic format in RMS.

1.7.1.2 Subcontractor Information

Contain within the database the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor is listed separately for each trade to be performed. Assign each subcontractor/trade a unique Responsibility Code, provided in RMS. Within 7 calendar days of receipt of RMS software from the Government, deliver subcontractor administrative data in electronic format.

1.7.1.3 Correspondence

Identify all Contractor correspondence to the Government with a serial number. Prefix correspondence initiated by the Contractor's site office with "S". Prefix letters initiated by the Contractor's home (main) office with "H". Letters are numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

1.7.1.4 Equipment

Contain within the Contractor's RMS database a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.7.1.5 Management Reporting

RMS includes a number of reports that Contractor management can use to
track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of RMS. Among these reports are: Progress Payment Request worksheet, Quality Assurance/Quality Control (QA/QC) comments, Submittal Register Status, Three-Phase Control checklists.

1.7.1.6 Request For Information (RFI)

Exchange all Requests For Information (RFI) using the Built-in RFI generator and tracker in RMS.

1.7.2 Finances

1.7.2.1 Pay Activity Data

Include within the RMS database a list of pay activities that the Contractor develops in conjunction with the construction schedule. The sum of pay activities equals the total contract amount, including modifications. Each pay activity must be assigned to a Contract Line Item Number (CLIN). The sum of the activities equals the amount of each CLIN. The sum of all CLINs equals the contract amount.

1.7.2.2 Payment Requests

Prepare all progress payment requests using RMS. Complete the payment request worksheet, prompt payment certification, and payment invoice in RMS. Update the work completed under the contract, measured as percent or as specific quantities, at least monthly. After the update, generate a payment request report using RMS. Submit the payment request, prompt payment certification, and payment invoice with supporting data using RMS CM. If permitted by the Contracting Officer, email or an optical disc may be used. A signed paper copy of the approved payment request is also required and will govern in the event of discrepancy with the electronic version.

1.7.3 Quality Control (QC)

RMS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other Contractor QC requirements. Maintain this data on a daily basis. Entered data will automatically output to the RMS generated daily report. Provide the Government a Contractor Quality Control (CQC) Plan within the time required in Section 01 45 00.00 10 QUALITY CONTROL. Within seven calendar days of Government acceptance, submit a RMS update reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.7.3.1 Daily Contractor Quality Control (CQC) Reports.

RMS includes the means to produce the Daily CQC Report. The Contractor can use other formats to record basic Quality Control (QC) data. However, the Daily CQC Report generated by RMS must be the Contractor's official report. Summarize data from any supplemental reports by the Contractor and consolidate onto the RMS-generated Daily CQC Report. Submit daily CQC Reports as required by Section 01 45 00.00 10 QUALITY CONTROL. Electronically submit reports to the Government within 24 hours after the date covered by the report. Also provide the Government a signed, printed copy of the daily CQC report.
1.7.3.2 Deficiency Tracking.

Use RMS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using its Quality Control (QC) punch list items. Maintain a current log of its QC punch list items in the RMS database. The Government will log the deficiencies it has identified using its Quality Assurance (QA) punch list items. The Government's QA punch list items will be included in its export file to the Contractor. Regularly update the correction status of both QC and QA punch list items.

1.7.3.3 QC Requirements

Develop and maintain a complete list of QC testing and required structural and life safety special inspections required by the International Code Council (ICC), transferred and installed property, and user training requirements in RMS. Update data on these QC requirements as work progresses, and promptly provide the information to the Government via RMS.

1.7.3.4 Three-Phase Control Meetings

Maintain scheduled and actual dates and times of preparatory and initial control meetings in RMS.

1.7.3.5 Labor and Equipment Hours

Log labor and equipment exposure hours on a daily basis. The labor and equipment exposure data will be rolled up into a monthly exposure report.

1.7.3.6 Accident/Safety Reporting

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be provided via RMS CM. Regularly update the correction status of the safety comments. In addition, utilize RMS to advise the Government of any accidents occurring on the jobsite. A brief supplemental entry of an accident is not to be considered as a substitute for completion of mandatory reports, e.g., ENG Form 3394 and OSHA Form 300.

1.7.3.7 Features of Work

Include a complete list of the features of work in the RMS database. A feature of work is associated with multiple pay activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

1.7.3.8 Hazard Analysis

Use RMS CM to develop a hazard analysis for each feature of work included in the CQC Plan. The Activity Hazard Analysis will include information required by EM 385-1-1, paragraph 01.A.13.

1.7.4 Submittal Management

The Government will provide the initial submittal register in electronic format. Thereafter, maintain a complete list of submittals, including completion of data columns. Dates when submittals are received and returned by the Government will be included. Use RMS CM to track and transmit submittals. ENG Form 4025, submittal transmittal form, and the
submittal register update is produced using RMS. RMS will be used to update, store and exchange submittal registers and transmittals. In addition to requirements stated in specification 01 33 00, actual submittals are to be stored in RMS CM, with hard copies also provided. Exception will be where the Contracting Officer specifies only hard copies required, where size of document cannot be saved in RMS CM, and where samples, spare parts, color boards, and full size drawings are to be provided.

1.7.5 Schedule

Develop a construction schedule consisting of pay activities, in accordance with Section 01 32 01.00 10 PROJECT SCHEDULE. Input and maintain in the RMS database the schedule either manually or by using the Standard Data Exchange Format (SDEF) (see Section 01 32 01.00 10 PROJECT SCHEDULE). Include with each pay request the updated schedule. Provide electronic copies of transmittals.

1.7.6 Import/Export of Data

RMS includes the ability to import schedule data using SDEF.

1.8 IMPLEMENTATION

Use of RMS CM as described in the preceding paragraphs is mandatory. Ensure that sufficient resources are available to maintain contract data within the RMS CM system. RMS CM is an integral part of the Contractor's management of quality control.

1.9 MONTHLY COORDINATION MEETING

Update the RMS CM database each workday. At least monthly, generate and submit a schedule update. At least one week prior to submittal, meet with the Government representative to review the planned progress payment data submission for errors and omissions.

Make required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will not be accepted. The Government will not process progress payments until all required corrections are processed.

1.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. Take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, will be deemed sufficient for the purpose of notification.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --
CONTRACTOR'S QUALITY CONTROL REPORT (QCR)  
(ER 1180-1-6)

<table>
<thead>
<tr>
<th>CONTRACT NUMBER AND NAME OF CONTRACTOR:</th>
<th>DESCRIPTION AND LOCATION OF THE WORK:</th>
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**WEATHER CLASSIFICATION:**

<table>
<thead>
<tr>
<th>CLASS</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>No interruptions of any kind from weather conditions occurring on this or previous shifts.</td>
</tr>
<tr>
<td>B</td>
<td>Weather occurred during this shift that caused a complete stoppage of all work.</td>
</tr>
<tr>
<td>C</td>
<td>Weather occurred during this shift that caused a partial stoppage of work.</td>
</tr>
<tr>
<td>D</td>
<td>Weather overhead excellent or suitable during shift. Work completely stopped due to results of previous adverse weather.</td>
</tr>
<tr>
<td>E</td>
<td>Weather overhead excellent or suitable during shift but work partially stopped due to previous adverse manner.</td>
</tr>
<tr>
<td>OTHER</td>
<td>Explain.</td>
</tr>
</tbody>
</table>

**CLASSIFICATION:**

<table>
<thead>
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<th>CLASS</th>
<th>MAX</th>
<th>MIN</th>
<th>TEMPERATURE:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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</table>

**PRECIPITATION:**

<table>
<thead>
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<th>INCHES</th>
<th></th>
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</thead>
</table>

**CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:**

(Attach list of items of equipment either idle or working as appropriate.)

a.   
b.   
c.   
d.   
e.   
f.   
g.   

1. **WORK PERFORMED TODAY:** (Indicate location and description of work performed. Refer to work performed by prime and/or subcontractors by letter in Table above.)

**PURPOSE:** Contractors Daily QC Report. Revision necessitated by EIG recommendation

**MONTHLY USAGE:** 1,500

**PRESCRIBING DIRECTIVE:** ER 1180-1-6

**FUNCTIONAL CODE:** 1180 Series - Engineer Contracts

2. **TYPE AND RESULTS OF INSPECTION:** (Indicate whether: P - Preparatory, I - Initial, or F - Follow-up and include satisfactory work completed or deficiencies with action to be taken.)

3. **TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS:**
4. VERBAL INSTRUCTIONS RECEIVED: (List any instructions given by Government personnel on construction deficiencies. retesting required, etc., with action to be taken.)

5. REMARKS: (Cover any conflicts in plans, specifications or instructions: acceptability of incoming materials: offsite surveillance activities; progress of work, delays, causes and extent thereof; days of no work with reasons for same.)

6. SAFETY: (Include any infractions of approved safety plan, safety manual or instructions from Government personnel. Specify corrective action taken.)

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed and tests conducted during this reporting period were in strict compliance with the contract plans and specifications except as noted above.
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. AIR FORCE (USAF)


U.S. ARMY CORPS OF ENGINEERS (USACE)


WETLAND MANUAL Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1

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

33 CFR 328 Definitions of Waters of the United States

40 CFR 152 - 186 Pesticide Programs

40 CFR 260 Hazardous Waste Management System: General

40 CFR 279 Standards for the Management of Used Oil

40 CFR 302 Designation, Reportable Quantities, and Notification

40 CFR 355 Emergency Planning and Notification

40 CFR 68 Chemical Accident Prevention Provisions

FLORIDA ADMINISTRATIVE CODE (FAC)

FAC 40B-4.1140(1b) Limiting Conditions on Permits, Section (1)(b) Florida Stormwater Erosion and Sedimentation Control Inspector's Manual (July 2008)

1.2  DEFINITIONS

1.2.1  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 and/or historically.

1.2.2 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.

1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means 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 etc.), waste thinners, excess paints, excess solvents, waste solvents, and excess pesticides, and contaminated pesticide equipment rinse water.

1.2.4 Installation Pest Management Coordinator

Installation Pest Management Coordinator (IPMC) is the individual officially designated by the Installation Commander to oversee the Installation Pest Management Program and the Installation Pest Management Plan.

1.2.5 Project Pesticide Coordinator

The Project Pesticide Coordinator (PPC) is an individual that resides at a Civil Works Project office and that is responsible for oversight of pesticide application on Project grounds.

1.2.6 Land Application for Discharge Water

The term "Land Application" for discharge water implies that the Contractor shall discharge water at a rate which 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" shall occur. Land Application shall be in compliance with all applicable Federal, State, and local laws and regulations.

1.2.7 Pesticide

Pesticide is defined as any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant or desiccant.

1.2.8 Pests

The term "pests" means arthropods, birds, rodents, nematodes, fungi, bacteria, viruses, algae, snails, marine borers, snakes, weeds and other organisms (except for human or animal disease-causing organisms) that adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable.
1.2.9 Surface Discharge

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "waters of the United States" and would require a permit to discharge water from the governing agency.

1.2.10 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

1.2.11 Wetlands

Wetlands means those areas that are inundated or saturated by surface or ground water 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. Wetlands generally include swamps, marshes, and bogs. Official determination of whether or not an area is classified as a wetland must be done in accordance with WETLAND MANUAL.

1.3 EGLIN STANDARDS

See Appendices V and W for additional information related to environmental protection. The Appendices take precedence over this specification.

1.4 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.5 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subContractors.

1.6 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

1.7 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office.
that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Environmental Protection Plan; G, RO

The environmental protection plan.

List of Proposed Chemicals; G, RO

The Contractor Hazardous Material Inventory including all information on manufacturers and manufacturer-specific Material Safety Data Sheets.

SD-07 Certificates

Non-Hazardous Solid Waste Diversion Report; G, RO

An inventory of non-hazardous solid waste diversion and disposal of construction and demolition debris DUE EACH QUARTER.

Hazardous Waste Manifests; G, RO

Submit hazardous waste manifests for contractor generated hazardous waste or PCB containing ballasts.

Universal Waste Manifests; G, RO

Submit universal waste manifests for disposal of fluorescent bulbs.

1.8 ENVIRONMENTAL PROTECTION PLAN

Within 15 days after receipt of the Notice to Proceed, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. Approval of the Contractor's plan will not relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.8.1 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall
be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.8.2 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.

c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.

d. Description of the Contractor's environmental protection personnel training program.

e. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection; pollution control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits.

f. Methods for protection of features to be preserved within authorized work areas like trees, shrubs, vines, grasses and ground cover, landscape features, air and water quality, soil, historical, archaeological, and cultural resources.

g. Procedures to be implemented to provide the required environmental protection, to comply with the applicable laws and regulations, and to correct pollution due to accident, natural causes, or failure to follow the procedures of the environmental protection plan.

h. Environmental monitoring plans for the job site, including land, water, air, and noise monitoring.

i. Methods of protecting surface and groundwater during construction activities.

j. A settling pond removal plan 120 days prior to removal work. The plan shall include the method of removing and testing of the collected sediment.

k. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan shall include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.

l. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials
m. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.

n. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

o. Borrow areas shall be from approved sites located outside the limits of government property.

p. The Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer and the local Fire Department in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

3. Training requirements for Contractor's personnel and methods of accomplishing the training.

4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

6. The methods and procedures to be used for expeditious contaminant cleanup.

q. Location of the solid waste recycling and disposal area.

r. A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris. The plan shall include description and estimated quantities of the proposed job-site waste to be generated, a description of the means by which any waste materials above will be stored and a description of the means to be employed in recycling the above materials consistent with
requirements for acceptance by designated facilities, schedules for disposal and the name of the landfill(s) where trash will be disposed of and a description of the means of transportation of the waste and recycled materials (whether materials will be site-separated and self-hauled to designated center, or whether mixed materials will be collected by a waste hauler and removed from the site). The Contractor shall identify any subcontractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction. The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted. In addition, the report shall provide clear description of the solid waste. Describe such as dirt, concrete, wood/light metal, etc.

1. The Contractor shall attach a copy of each of the Non-Hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after first quarter that non-hazardous solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted. Request manufacturers use the minimum packaging required for protection and identification of project products, and to use packaging materials with recycled content where economically feasible in accordance with FAR, Executive Order 13101.

s. A recycling and solid waste minimization plan with a list of measures to reduce consumption of energy and natural resources; for example, the possibility to shred fallen trees and use them as mulch shall be considered as an alternative to burning or burial. The plan shall detail the Contractor's actions to comply with and to participate in Federal, State, Regional, and local government sponsored recycling programs to reduce the volume of solid waste at the source.

t. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.

u. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

v. A waste water management plan that identifies the methods and
procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented. If surface discharge will be the method of disposal, a copy of the permit and associated documents shall be included as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, the plan shall include documentation that the Waste Water Treatment Plant Operator has approved the flow rate, volume, and type of discharge.

w. A historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

x. A pesticide treatment plan, including a list of proposed chemicals, shall be included and updated, as information becomes available. The plan shall include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements as well as any additional requirements. The Contractor shall follow AFI 32-1053 Sections 3.4.13 and 3.4.14 for data required to be reported to the Installation.

1.8.3 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

1.9 PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including 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. This survey report shall be signed by both the the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.10 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.11 NOTIFICATION

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 Environmental Protection plan. The Contractor shall, 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. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

1.11.1 Litigation

If work is suspended, delayed, or interrupted due to a court order of competent jurisdiction, the Contracting Officer will determine whether the order is due in any part to the acts or omissions of the Contractor, or subcontractors at any tier, not required by the terms of the contract. If it is determined that the order is not due to Contractor's failing, such suspension, delay, or interruption shall be considered as ordered by the Contracting Officer in the administration of the contract under the contract clause SUSPENSION OF WORK.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

The Contractor shall obtain all needed permits or licenses. The Government will not obtain any permits for this project; see Contract Clause PERMITS AND RESPONSIBILITIES. The state Department of Natural Resources, through the National Pollutant Discharge Elimination System (NPDES), requires general permits, a notice of intent, and a notice of discontinuation. The Contractor shall be responsible for implementing the terms and requirements of the appropriate permits as needed and for payment of all fees.
3.2 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications, and as authorized by the Contracting Officer's Representative. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor.

3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.2.2 Landscape

This project includes NO trees, shrubs, vines, grasses, land forms and other landscape features indicated or defined on the drawings to be preserved. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.2.3 Erosion and Sediment Controls

Earthwork brought to final grade shall be finished as indicated. Side slopes and back slopes shall be protected as soon as practicable upon completion of rough grading. All earthwork shall be planned and conducted to minimize the duration of exposure of unprotected soils. Except in cases where the constructed feature obscures borrow areas, quarries, and waste material areas, these areas shall not initially be totally cleared. Clearing of such areas shall progress in reasonably sized increments as needed to use the developed areas as approved by the Contracting Officer. The Contractor shall effectively prevent erosion and control sedimentation through approved methods, including but not limited to, the following:

a. Retardation and control of runoff. Runoff from the construction site or from storms shall be controlled, retarded, and diverted to protected drainage courses by means of diversion ditches, benches, berms, and by any measures required by area wide plans under the Clean Water Act.

b. Erosion and sedimentation control devices. The Contractor shall construct or install temporary and permanent erosion and sedimentation control features as indicated on the construction drawings and specifications. Berms, dikes, drains, sedimentation basins, grassing, and mulching shall be maintained until permanent drainage and erosion control facilities are completed and.
operative.


3.2.4 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

3.3 WATER RESOURCES

The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation when such application may cause contamination of the fresh water reserve. Monitoring of water areas affected by construction shall be the Contractor's responsibility. All water areas affected by construction activities shall be monitored by the Contractor.

3.4 AIR RESOURCES

Equipment operation and activities or processes performed by the Contractor in accomplishing the specified construction shall be in accordance with State of Florida rules and all Federal emission and performance laws and standards. Ambient Air Quality Standards set by the Environmental Protection Agency shall be maintained. Monitoring of air quality shall be the Contractor's responsibility. All air areas affected by the construction activities shall be monitored by the Contractor. Monitoring results will be periodically reviewed by the Government to ensure compliance.

3.4.1 Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants; shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall 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 which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, 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 at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all State and local visibility regulations.
3.4.2 Odors

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.4.3 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with the provisions of the State of Florida rules.

3.4.4 Burning

Burning shall be prohibited on the Government premises.

3.4.5 Hydrocarbons and Carbon Monoxide

Hydrocarbons and carbon monoxide emissions from equipment shall be controlled to Federal and State allowable limits at all times.

3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.5.1 Solid Wastes

Solid wastes shall be recycled if possible and placed in containers which are emptied on a regular schedule (excluding clearing debris). Wastes not recycled shall be disposed of in compliance with Federal, State and local requirements for solid waste. The Contractor shall comply with site procedures, and Federal, State and local laws and regulations pertaining to the use of landfill areas. Handling and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. Recyclable materials such as cardboard and scrap metals shall not be mixed with other construction debris. The Contractor shall transport solid waste off Government property.

3.5.1.1 Solid Waste Management Plan Implementation

a. The Contractor shall designate an on-site party (or parties) responsible for instructing workers and overseeing and documenting results of the Solid Waste Management Plan for the project.

b. The Contractor shall distribute copies of the Solid Waste Management Plan to key personnel.

c. The Contractor shall provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties.

d. The Contractor shall lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.
3.5.2 Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

3.5.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

The Contractor shall submit hazardous waste manifests for all contractor generated hazardous waste or PCB containing ballasts. The Contractor shall submit universal waste manifests for disposal of fluorescent bulbs. The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing and shall collect waste in suitable containers observing compatibility. The Contractor shall transport hazardous waste off Government property and dispose of it in compliance with Federal and local laws and regulations. Contractor shall follow AAC 32-5 and pay for the management and disposal of their hazardous waste. See web site https://em.eglin.af.mil/emcp/recycle/grp.asp for AAC 32-5. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility.

3.5.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations.

3.5.5 Waste Water

Disposal of waste water shall be as specified below.

a. Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related waste water off-Government property in accordance with all Federal, State, Regional and Local laws and regulations. Any discharge of wastewater (treated or otherwise) is prohibited unless a NPDES permit is obtained. Any dewatering activities will require a permit from the State of Florida and should be coordinated through AAC/EMCE, Water Quality Program Manager, Russell Brown (882-7760).

b. For discharge of ground water, the Contractor shall obtain a State or Federal permit specific for pumping and discharging ground water prior to surface discharging.
c. Water generated from the flushing of lines after disinfection or disinfection in conjunction with hydrostatic testing shall be discharged into the sanitary sewer with prior approval and/or notification to the Waste Water Treatment Plant’s Operator.

3.5.6 Pollution Prevention

The Contractor shall pursue pollution prevention, waste minimization and recycling as much as possible to reduce environmental compliance requirements. The Contractor shall seek alternatives for hazardous materials, especially those that generate hazardous waste as well as air and water pollutants.

3.5.7 Affirmative Procurement

The Contractor shall observe all affirmative procurement requirement as outlined in Executive Order 13101 and referenced laws therein, as well as Federal Comprehensive Procurement Guidelines and Recovered Materials Advisory Notices.

3.5.8 Hazardous Materials

The Contractor shall submit to the Contracting Officer a list of all hazardous materials to be brought onto Eglin AFB property prior to the onset of any work. The list shall include all paints, solvents, POL products, pesticides, etc., to be used during the duration of the contract. All newly identified requirements for hazardous material after the above list is submitted shall be coordinated with and approved by the Eglin AFB Hazardous Material Cell located in Building 615 prior to bringing the material on Eglin property. An MSDS must be on hand for all hazardous material in use. All empty and unused hazardous material will be properly disposed of and removed from Eglin AFB by the Contractor, when contract is completed.

3.6 RECYCLING AND WASTE MINIMIZATION

IT IS EGLIN AFB POLICY FOR ALL CONTRACTORS TO MAXIMIZE ALL RECYCLING OPPORTUNITIES DURING RENOVATION AND CONSTRUCTION. The Contractor shall participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project. All wastes, whether recycled or landfilled, shall be weighed prior to disposal and shall be reported on the Solid Waste Diversion Report. Expense and cleanup of any spills on or off base are always the responsibility of the Contractor. The Contractor shall attempt to reutilize or recycle all undamaged light fixtures and fluorescent bulbs.

3.7 NON-HAZARDOUS SOLID WASTE DIVERSION REPORT

The Contractor shall maintain an inventory of non-hazardous solid waste diversion and disposal of construction and demolition debris. The Contractor shall submit a report to AAC/EMCP, Solid Waste Management through the Contracting Officer on the first working day after each fiscal year quarter, starting the first quarter that non-hazardous solid waste has been generated. Dale Whittington AAC-EMCP at 850-882-7672 should be contacted concerning the details of the report. If contact is not successful, contact the Contracting Officer. For recycling information browse the web at: https://em.eglin.af.mil/emcp/recycle/grp.asp. The following shall be included in the report:
a. Construction and Demolition (C&D) Debris Disposed = _____ in cubic yards or tons, as appropriate. The amount (in tons) of material land-filled from the project, the identity of the landfill, the total amount of tipping fees paid at the landfill, and the total disposal cost. Include manifests, weight tickets, receipt, and invoices.

b. Construction and Demolition (C&D) Debris Recycled = _____ in cubic yards or tons, as appropriate. For each material recycled, reused or salvaged from the project, the amount (in tons), the date removed from the job-site, the receiving party, the transportation cost, the amount of any money paid or received for the recycled or salvaged material, and the net total cost or savings or salvage or recycling each material. Attach manifests, weight tickets, receipts, and invoices.

c. Total C&D Debris Generated = _____ in cubic yards or tons, as appropriate.

d. Waste Sent to Waste-To-Energy Incineration Plant (This amount should not be included in the recycled amount) = _____ in cubic yards or tons, as appropriate.

e. The report shall provide clear description of the solid waste. Describe such as dirt, concrete, wood/light metal, etc.

3.8 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

If during excavation or other construction activities any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to or the destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.9 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.10 INTEGRATED PEST MANAGEMENT

In order to minimize impacts to existing fauna and flora, the Contractor, through the Contracting Officer, shall coordinate with the Installation Pest Management Coordinator (IPMC) at the earliest possible time prior to pesticide application. The Contractor shall discuss integrated pest
management strategies with the IPMC and receive concurrence from the IPMC through the COR prior to the application of any pesticide associated with these specifications. Pest Management personnel shall be given the opportunity to be present at all meetings concerning treatment measures for pest or disease control and during application of the pesticide. The use and management of pesticides are regulated under 40 CFR 152 - 186.

3.10.1 Pesticide Delivery and Storage

Pesticides shall be delivered to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses. Pesticides shall be stored according to manufacturer's instructions and under lock and key when unattended.

3.10.2 Qualifications

For the application of pesticides, the Contractor shall use the services of a subContractor whose principal business is pest control. The subContractor shall be licensed and certified in the state where the work is to be performed.

3.10.3 Pesticide Handling Requirements

The Contractor shall formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions and shall use the clothing and personal protective equipment specified on the labeling for use during all phases of the application. Material Safety Data Sheets (MSDS) shall be available for all pesticide products.

3.10.4 Application

Pesticides shall be applied by a State Certified Pesticide Applicator in accordance with EPA label restrictions and recommendation. The Certified Applicator shall wear clothing and personal protective equipment as specified on the pesticide label. Water used for formulating shall only come from locations designated by the Contracting Officer. The Contractor shall not allow the equipment to overflow. Prior to application of pesticide, all equipment shall be inspected for leaks, clogging, wear, or damage and shall be repaired prior to being used.

3.11 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

3.12 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

3.13 MILITARY MUNITIONS

In the event the Contractor discovers or uncovers military munitions as defined in 40 CFR 260, the Contractor shall immediately stop work in that
area and immediately inform the Contracting Officer.

3.14 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: 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, wetlands, and endangered species and their habitat that are known to be in the area.

3.15 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs 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. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

-- End of Section --
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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 D 4491 (1999a; R 2004e1) Water Permeability of Geotextiles by Permittivity
ASTM D 4873 (2002) Identification, Storage, and Handling of Geosynthetic Rolls and Samples

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)


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

40 CFR 122.26 Storm Water Discharges (Applicable to State NPDES Programs, see section 123.25)

FLORIDA ADMINISTRATIVE CODE (FAC)

FAC 40B-4.1140(1b) Limiting Conditions on Permits, Section (1)(b) Florida Stormwater Erosion and Sedimentation Control Inspector's Manual (July 2008)

1.2   SYSTEM DESCRIPTION

The work consists of implementing the storm water pollution prevention measures to prevent sediment from entering streams or water bodies as specified in this Section in conformance with the requirements of Section 01 57 20.00 10 ENVIRONMENTAL PROTECTION, and the requirements of the
National Pollution Discharge Elimination System (NPDES) permit attached to that Section.

1.3 EROSION AND SEDIMENT CONTROLS

The controls and measures required of the Contractor are described below.

1.3.1 Stabilization Practices

The stabilization practices to be implemented include temporary seeding, geotextiles, sod stabilization, etc. On the daily CQC Report, record the dates when the major grading activities occur, (e.g., excavation, and grading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Except as provided in paragraphs UNSUITABLE CONDITIONS and NO ACTIVITY FOR LESS THAN 21 DAYS, initiate stabilization practices as soon as practicable, but no more than 14 days, in any portion of the site where construction activities have temporarily or permanently ceased.

1.3.1.1 Unsuitable Conditions

Where the initiation of stabilization measures by the fourteenth day after construction activity temporarily or permanently ceases or is precluded by unsuitable conditions caused by the weather, initiate stabilization practices as soon as practicable after conditions become suitable.

1.3.1.2 No Activity for Less Than 21 Days

When the total time period in which construction activity is temporarily ceased on a portion of the site is 21 days minimum, stabilization practices do not have to be initiated on that portion of the site until 14 days have elapsed after construction activity temporarily ceased.

1.3.1.3 Burnoff

Burnoff of the ground cover is not permitted.

1.3.1.4 Protection of Erodible Soils

Immediately finish the earthwork brought to a final grade, as indicated or specified, and protect the side slopes and back slopes upon completion of rough grading. Plan and conduct earthwork to minimize the duration of exposure of unprotected soils.

1.3.2 Erosion, Sediment and Stormwater Control

a. Submit "Erosion and Sediment Controls" (E&S) (form provided at the pre-construction conference) and Storm Water Inspection Reports for General Permit to the Contracting Officer once every 7 calendar days and within 24 hours of a storm event that produces 0.5 inch or more of rain.

b. Storm Water Notice of Intent for Construction Activities

c. Submit a Storm Water Notice of Intent for NPDES coverage under the general permit for construction activities and a Storm Water Pollution Prevention Plan (SWPPP) for the project to the Contracting Officer prior to the commencement of work. The SWPPP shall meet the requirements of the State of Florida general permit for storm water
discharges from construction sites. Submit the SWPPP along with any required Notice of Intents, Notice of Termination, and appropriate permit fees, via the Contracting Officer, to the appropriate State agency for approval, a minimum of 14 calendar days prior to the start of any land disturbing activities. Maintain an approved copy of the SWPPP at the construction on-site office, and continually update as regulations require, to reflect current site conditions. Include within the SWPPP:

(1) Identify potential sources of pollution which may be reasonably expected to affect the quality of storm water discharge from the site.

(2) Describe and ensure implementation of practices which will be used to reduce the pollutants in storm water discharge from the site.

(3) Ensure compliance with terms of the State of Florida general permit for storm water discharge.

(4) Select applicable best management practices from EPA 832-R-92-005.

(5) Include a completed copy of the Registration Statement, BMP Inspection Report Template and Notice of Termination except for the effective date.

(6) Storm Water Pollution Prevention Measures and Notice of Intent 40 CFR 122.26, EPA 832-R-92-005. Provide a "Storm Water Pollution Prevention Plan" (SWPPP) for the project. The SWPPP will meet the requirements of the State of Florida general permit for storm water discharges from construction sites. Submit the SWPPP along with any required Notice of Intents, Notice of Termination, and appropriate permit fees, via the Contracting Officer, to the appropriate State agency for approval, a minimum of 14 calendar days prior to the start of construction. A copy of the approved SWPPP will be kept at the construction on-site office, and continually updated as regulations require to reflect current site conditions.

1.3.3 Structural Practices

Implement structural practices to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Implement structural practices in a timely manner, during the construction process, to minimize erosion and sediment runoff. Include the following devices; Location and details of installation and construction are shown on the drawings.

1.3.3.1 Silt Fences

Provide silt fences as a temporary structural practice to minimize erosion and sediment runoff. Properly install silt fences to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Install silt fences in the locations indicated on the drawings. Obtain approval from the Contracting Officer prior to final removal of silt fence barriers.
1.3.4 Vegetation and Mulch

a. Provide temporary protection on sides and back slopes as soon as rough grading is completed or sufficient soil is exposed to require erosion protection. Protect slopes by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Stabilize slopes by hydrosieving, anchoring mulch in place, covering with anchored netting, sodding, or such combination of these and other methods necessary for effective erosion control.

b. Seeding: Provide new seeding where ground is disturbed. Include topsoil or nutriment during the seeding operation necessary to establish a suitable stand of grass.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Storm Water Pollution Prevention Plan
Storm Water Notice of Intent

Pollution prevention plan and Notice of intent for NPDES coverage under the general permit for construction activities

SD-06 Test Reports

Storm Water Inspection Reports for General Permit
Erosion and Sediment Controls

SD-07 Certificates

Mill Certificate or Affidavit

Certificate attesting that the Contractor has met all specified requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

Identify, store and handle filter fabric in accordance with ASTM D 4873.

PART 2 PRODUCTS

2.1 COMPONENTS FOR SILT FENCES

2.1.1 Filter Fabric

Provide geotextile that complies with the requirements of ASTM D 4439, and consists of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and contains stabilizers and/or inhibitors added to the base plastic to make the filaments resistant to deterioration.
due to ultraviolet and heat exposure. Provide synthetic filter fabric that contains ultraviolet ray inhibitors and stabilizers to assure a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements:

<table>
<thead>
<tr>
<th>PHYSICAL PROPERTY</th>
<th>TEST PROCEDURE</th>
<th>STRENGTH REQUIREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grab Tensile</td>
<td>ASTM D 4632</td>
<td>100 lbs. min.</td>
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<tr>
<td>Elongation (percent)</td>
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<td>Trapezoid Tear</td>
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<td>55 lbs. min.</td>
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<tr>
<td>Permittivity</td>
<td>ASTM D 4491</td>
<td>0.2 sec-1</td>
</tr>
<tr>
<td>AOS (U.S. Std Sieve)</td>
<td>ASTM D 4751</td>
<td>20-100</td>
</tr>
</tbody>
</table>

2.1.2 Silt Fence Stakes and Posts

Use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 2 by 2 inches when oak is used and 4 by 4 inches when pine is used, and have a minimum length of 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds/linear foot and a minimum length of 5 feet.

2.1.3 Mill Certificate or Affidavit

Provide a mill certificate or affidavit attesting that the fabric and factory seams meet chemical, physical, and manufacturing requirements specified above. Specify in the mill certificate or affidavit the actual Minimum Average Roll Values and identify the fabric supplied by roll identification numbers. Submit a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the filter fabric.

PART 3 EXECUTION

3.1 INSTALLATION OF SILT FENCES

Extend silt fences a minimum of 16 inches above the ground surface without exceeding 24 inches above the ground surface. Provide filter fabric from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, splice together filter fabric at a support post, with a minimum 6 inch overlap, and securely sealed. Excavate trench approximately 4 inches wide and 4 inches deep on the upslope side of the location of the silt fence. The 4 by 6 inch trench shall be backfilled and the soil compacted over the filter fabric. Remove silt fences upon approval by the Contracting Officer.

3.2 FIELD QUALITY CONTROL

Maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. Use the following procedures to maintain the protective measures.

3.2.1 Silt Fence Maintenance

Inspect the silt fences in accordance with paragraph, titled "Inspections," of this section and in accordance with FAC 40B-4.1140(1b). Any required repairs shall be made promptly. Pay close attention to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, replace the fabric promptly. Remove sediment deposits when deposits reach 12" or one-half of the height of the barrier. Remove a silt fence when it is no longer required. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade. The areas disturbed by this shaping shall receive erosion control.

3.3 INSPECTIONS

3.3.1 General

Inspect disturbed areas of the construction site, areas that have not been finally stabilized used for storage of materials exposed to precipitation, stabilization practices, structural practices, other controls, and area where vehicles exit the site daily and within 24 hours of the end of any storm that produces 0.5 inches or more rainfall at the site. Conduct inspections at least once every month where sites have been finally stabilized.

3.3.2 Inspections Details

Inspect disturbed areas and areas used for material storage that are exposed to precipitation for evidence of, or the potential for, pollutants entering the drainage system. Observe erosion and sediment control measures identified in the Storm Water Pollution Prevention Plan to ensure that they are operating correctly. Inspect discharge locations or points to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Inspect locations where vehicles exit the site for evidence of offsite sediment tracking.

3.3.3 Inspection Reports

For each inspection conducted, prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Storm Water Pollution Prevention Plan, maintenance performed, and actions taken. Furnish the report to the Contracting Officer within 24 hours of the inspection as a part of the Contractor's daily CQC REPORT. A copy of the inspection report shall be maintained on the job site.

-- End of Section --
1.1 GOVERNMENT POLICY

Government policy is to apply sound environmental principles in the design, construction and use of facilities. As part of the implementation of that policy: (1) practice efficient waste management when sizing, cutting, and installing products and materials and (2) use all reasonable means to divert construction and demolition waste from landfills and incinerators and to facilitate their recycling or reuse. Divert a minimum of 60 percent by weight of total project solid waste from the landfill.

1.2 MANAGEMENT

Develop and implement a waste management program. Take a pro-active, responsible role in the management of construction and demolition waste and require all subcontractors, vendors, and suppliers to participate in the effort. Construction and demolition waste includes products of demolition or removal, excess or unusable construction materials, packaging materials for construction products, and other materials generated during the construction process but not incorporated into the work. In the management of waste, consider the availability of viable markets, the condition of the material, the ability to provide the material in suitable condition and in a quantity acceptable to available markets, and time constraints imposed by internal project completion mandates. Implement any special programs involving rebates or similar incentives related to recycling of waste. Revenues or other savings obtained for salvage, or recycling accrue to the Contractor. Appropriately permit firms and facilities used for recycling, reuse, and disposal for the intended use to the extent required by federal, state, and local regulations. Also, 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 project.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals
   Waste Management Plan; G, RO

SD-11 Closeout Submittals
   Records;

1.4 MEETINGS

Conduct Construction Waste Management meetings. After award of the
Contract and prior to commencement of work, schedule and conduct a meeting with the Contracting Officer to discuss the proposed Waste Management Plan and to develop a mutual understanding relative to the details of waste management. The requirements for this meeting may be fulfilled during the coordination and mutual understanding meeting outlined in Section 01 45 00.00 10 QUALITY CONTROL. At a minimum, discuss environmental and waste management goals and issues at the following additional meetings:

a. Pre-bid meeting.
b. Preconstruction meeting.
c. Regular QC meetings.
d. Work safety meetings.

1.5 WASTE MANAGEMENT PLAN

Submit a waste management plan within 15 days after notice to proceed and not less than 10 days before the preconstruction meeting. The plan demonstrates how to meet the project waste diversion goal. Also, include the following in the plan:

a. Name of individuals on the Contractor's staff responsible for waste prevention and management.
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 wastes.
e. Characterization, including estimated types and quantities, of the waste to be generated.
f. Name of landfill and/or incinerator to be used and the estimated costs for use, assuming that there would be no salvage or recycling on the project.
g. Identification of local and regional reuse programs, including non-profit organizations such as schools, local housing agencies, and organizations that accept used materials such as materials exchange networks and Habitat for Humanity. Include the name, location, and phone number for each reuse facility to be used, and provide a copy of the permit or license for each facility.
h. List of specific waste materials 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, location, and phone number, including a copy of the permit or license for each facility.
i. Identification of materials that cannot be recycled/reused with an explanation or justification, to be approved by the Contracting Officer.
j. Description of the means by which any waste materials identified in item (h) above will be protected from contamination.

k. 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).

l. Anticipated net cost savings determined by subtracting Contractor program management costs and the cost of disposal from the revenue generated by sale of the materials and the incineration and/or landfill cost avoidance.

Revise and resubmit Plan as required by the Contracting Officer. Approval of Contractor's Plan will not relieve the Contractor of responsibility for compliance with applicable environmental regulations or meeting project cumulative waste diversion requirement. Distribute copies of the Waste Management Plan to each subcontractor, the Quality Control Manager, and the Contracting Officer.

1.6 RECORDS

Maintain records to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration.

1.7 COLLECTION

Separate, store, protect, and handle at the site identified recyclable and salvageable waste products in a manner that maximizes recyclability and salvagability of identified materials. Provide the necessary containers, bins and storage areas to facilitate effective waste management and clearly and appropriately identify them. Provide materials for barriers and enclosures around recyclable material storage areas which are nonhazardous and recyclable or reusable. Locate out of the way of construction traffic. Provide adequate space for pick-up and delivery and convenience to subcontractors. Recycling and waste bin areas are to be kept neat and clean, and handle recyclable materials to prevent contamination of materials from incompatible products and materials. Clean contaminated materials prior to placing in collection containers. Use cleaning materials that are nonhazardous and biodegradable. Handle hazardous waste and hazardous materials in accordance with applicable regulations. Separate materials by one of the following methods:

1.7.1 Source Separated Method.

Separate waste products and materials that are recyclable from trash and sorted as described below into appropriately marked separate containers and then transported 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 following category types as appropriate to the project waste and to the available recycling and reuse programs in the project area:

a. Land clearing debris.
b. Asphalt.

c. Concrete and masonry.

d. Metal (e.g. banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized, stainless steel, aluminum, copper, zinc, lead brass, bronze).
   (1) Ferrous.
   (2) Non-ferrous.

e. Wood (nails and staples allowed).

f. Debris.

g. Glass (colored glass allowed).

h. Paper.
   (1) Bond.
   (2) Newsprint.
   (3) Cardboard and paper packaging materials.

i. Plastic.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Polyethylene Terephthalate (PET, PETE)</td>
</tr>
<tr>
<td>2</td>
<td>High Density Polyethylene (HDPE)</td>
</tr>
<tr>
<td>3</td>
<td>Vinyl (Polyvinyl Chloride or PVC)</td>
</tr>
<tr>
<td>4</td>
<td>Low Density Polyethylene (LDPE)</td>
</tr>
<tr>
<td>5</td>
<td>Polypropylene (PP)</td>
</tr>
<tr>
<td>6</td>
<td>Polystyrene (PS)</td>
</tr>
</tbody>
</table>

7 Other. Use of this code indicates that the package in question is made with a resin other than the six listed above, or is made of more than one resin listed above, and used in a multi-layer combination.

j. Non-hazardous paint and paint cans.

k. Ceiling tiles.

l. Insulation.

m. Beverage containers.
1.7.2 Co-Mingled Method.

Place waste products and recyclable materials into a single container and then transport to a recycling facility where the recyclable materials are sorted and processed.

1.7.3 Other Methods.

Other proposed methods may be used when approved by the Contracting Officer.

1.8 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. Except as otherwise specified in other sections of the specifications, dispose of in accordance with the following:

1.8.1 Reuse.

Give first consideration to salvage for reuse since little or no re-processing is necessary for this method, and less pollution is created when items are reused in their original form. Consider sale or donation of waste suitable for reuse.

1.8.2 Recycle.

Recycle waste materials not suitable for reuse, but having value as being recyclable. Recycle all fluorescent lamps, HID lamps, and mercury-containing thermostats removed from the site. Arrange for timely pickups from the site or deliveries to recycling facilities in order to prevent contamination of recyclable materials.

1.8.3 Waste.

Dispose of materials with no practical use or economic benefit to waste-to-energy plants where available. As the last choice, dispose of materials at a landfill or incinerator.

1.8.4 Return

Set aside and protect misdelivered and substandard products and materials and return to supplier for credit.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used. -- End of Section --
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SECTION 01 78 00
CLOSEOUT SUBMITTALS
08/11

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)


GREEN SEAL (GS)

GS-37 (2012) Cleaning Products for Industrial and Institutional Use

U.S. ARMY CORPS OF ENGINEERS (USACE)

ERDC/ITL TR-12-1 (2012) CAD Drafting Standard

ERDC/ITL TR-12-6 (2012) A/E/C CAD Standard - Release 5.0

U.S. DEPARTMENT OF DEFENSE (DOD)

UFC 1-300-08 (2009, with Change 2) Criteria for Transfer and Acceptance of DoD Real Property

1.2 DEFINITIONS

1.2.1 As-Built Drawings

As-built drawings are developed and maintained by the Contractor and depict actual conditions, including deviations from the Contract Documents. These deviations and additions may result from coordination required by, but not limited to: contract modifications; official responses to Contractor submitted Requests for Information; direction from the Contracting Officer; designs which are the responsibility of the Contractor, and differing site conditions. Maintain the as-builts throughout construction as red-lined hard copies on site. As-built drawings are further defined in NFAS 5252.236-9310. These files serve as the basis for the creation of the record drawings.

1.2.2 Record Drawings

The record drawings are the final compilation of actual conditions reflected in the as-built drawings.
1.3 SOURCE DRAWING FILES

Request the full set of electronic drawings, in the source format, for Record Drawing preparation, after award and at least 30 days prior to required use.

1.3.1 Terms and Conditions

Data contained on these electronic files must not be used for any purpose other than as a convenience in the preparation of construction data for the referenced project. Any other use or reuse shall be at the sole risk of the Contractor and without liability or legal exposure to the Government. The Contractor must make no claim and waives to the fullest extent permitted by law, any claim or cause of action of any nature against the Government, its agents or sub Consultants that may arise out of or in connection with the use of these electronic files. The Contractor must, to the fullest extent permitted by law, indemnify and hold the Government harmless against all damages, liabilities or costs, including reasonable attorney's fees and defense costs, arising out of or resulting from the use of these electronic files.

These electronic CAD drawing files are not construction documents. Differences may exist between the CAD files and the corresponding construction documents. The Government makes no representation regarding the accuracy or completeness of the electronic CAD files, nor does it make representation to the compatibility of these files with the Contractor hardware or software. In the event that a conflict arises between the signed and sealed construction documents prepared by the Government and the furnished Source drawing files, the signed and sealed construction documents govern. The Contractor is responsible for determining if any conflict exists. Use of these Source Drawing files does not relieve the Contractor of duty to fully comply with the contract documents, including and without limitation, the need to check, confirm and coordinate the work of all contractors for the project. If the Contractor uses, duplicates or modifies these electronic source drawing files for use in producing construction data related to this contract, remove all previous indicia of ownership (seals, logos, signatures, initials and dates).

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data
  Warranty Management Plan
  Warranty Tags
  Final Cleaning
  Spare Parts Data

SD-08 Manufacturer's Instructions
  Posted Instructions

SD-10 Operation and Maintenance Data
1.5 SPARE PARTS DATA

Submit two copies of the Spare Parts Data list.

a. Indicate manufacturer's name, part number, nomenclature, and stock level required for maintenance and repair. List those items that may be standard to the normal maintenance of the system.

1.6 QUALITY CONTROL

Additions and corrections to the contract drawings must be equal in quality and detail to that of the originals. Line colors, line weights, lettering, layering conventions, and symbols must be the same as the original line colors, line weights, lettering, layering conventions, and symbols.

1.7 WARRANTY MANAGEMENT

1.7.1 Warranty Management Plan

Develop a warranty management plan which contains information relevant to the clause Warranty of Construction in FAR 52.246-21. At least 30 days before the planned pre-warranty conference, submit one set of the warranty management plan. Include within the warranty management plan all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan must be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below must include due date and whether item has been submitted or was accomplished. Warranty information made available during the construction phase must be submitted to the Contracting Officer for approval prior to each monthly pay estimate. Assemble approved information in a binder and turn over to the Government upon acceptance of the work. The construction warranty period will begin on the date of project acceptance and continue for the full product warranty period. A joint 4 month and 9 month warranty inspection will be conducted, measured from time of acceptance, by the Contractor, Contracting Officer and the Customer Representative. Include within the warranty management plan, but not limited to, the following:

a. Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the Contractors, subcontractors, manufacturers or suppliers involved.

b. Furnish with each warranty the name, address, and telephone number of each of the guarantor's representatives nearest to the project location.
c. Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.

d. A list for each warranted equipment, item, feature of construction or system indicating:

1. Name of item.
2. Model and serial numbers.
3. Location where installed.
4. Name and phone numbers of manufacturers or suppliers.
5. Names, addresses and telephone numbers of sources of spare parts.
6. Warranties and terms of warranty. Include one-year overall warranty of construction, including the starting date of warranty of construction. Items which have extended warranties must be indicated with separate warranty expiration dates.
7. Cross-reference to warranty certificates as applicable.
8. Starting point and duration of warranty period.
9. Summary of maintenance procedures required to continue the warranty in force.
11. Organization, names and phone numbers of persons to call for warranty service.
12. Typical response time and repair time expected for various warranted equipment.

e. Procedure and status of tagging of all equipment covered by extended warranties.

f. Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

1.7.2 Performance Bond

The Performance Bond must remain effective throughout the construction period.

a. In the event the Contractor fails to commence and diligently pursue any construction warranty work required, the Contracting Officer will have the work performed by others, and after completion of the work, will charge the remaining construction warranty funds of expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.

b. In the event sufficient funds are not available to cover the construction warranty work performed by the Government at the Contractor's expense, the Contracting Officer will have the right to recoup expenses from the bonding company.

c. Following oral or written notification of required construction warranty repair work, respond in a timely manner. Written verification will follow oral instructions. Failure to respond will be cause for the Contracting Officer to proceed against the Contractor.
1.7.3  Pre-Warranty Conference

Prior to contract completion, and at a time designated by the Contracting Officer, meet with the Contracting Officer to develop a mutual understanding with respect to the requirements of this section. Communication procedures for Contractor notification of construction warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Contracting Officer for the execution of the construction warranty will be established/reviewed at this meeting. In connection with these requirements and at the time of the Contractor’s quality control completion inspection, furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue construction warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warranted construction, be continuously available, and be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of its responsibilities in connection with other portions of this provision.

1.7.4  Contractor's Response to Construction Warranty Service Requirements

Following oral or written notification by the Contracting Officer, respond to construction warranty service requirements in accordance with the "Construction Warranty Service Priority List" and the three categories of priorities listed below. Submit a report on any warranty item that has been repaired during the warranty period. Include within the report the cause of the problem, date reported, corrective action taken, and when the repair was completed. If the Contractor does not perform the construction warranty within the timeframe specified, the Government will perform the work and back charge the construction warranty payment item established.

a.  First Priority Code 1.  Perform onsite inspection to evaluate situation, and determine course of action within 4 hours, initiate work within 6 hours and work continuously to completion or relief.

b.  Second Priority Code 2.  Perform onsite inspection to evaluate situation, and determine course of action within 8 hours, initiate work within 24 hours and work continuously to completion or relief.

c.  Third Priority Code 3.  All other work to be initiated within 3 work days and work continuously to completion or relief.

d.  The "Construction Warranty Service Priority List" is as follows:

   Code 1-Life Safety Systems
   (1)  Fire suppression systems.
   (2)  Fire alarm system(s) in place in the building.

   Code 1-Air Conditioning Systems
   (1)  Recreational support.
   (2)  Air conditioning leak in part of building, if causing damage.
   (3)  Air conditioning system not cooling properly.

   Code 1-Doors
   (1)  Overhead doors not operational, causing a security, fire, or safety problem.
   (2)  Interior, exterior personnel doors or hardware, not functioning properly, causing a security, fire, or safety problem.
Code 3-Doors
(1) Overhead doors not operational.
(2) Interior/exterior personnel doors or hardware not functioning properly.

Code 1-Electrical
(1) Power failure (entire area or any building operational after 1600 hours).
(2) Security lights
(3) Smoke detectors

Code 2-Electrical
(1) Power failure (no power to a room or part of building).
(2) Receptacle and lights (in a room or part of building).

Code 3-Electrical
Street lights.

Code 1-Gas
(1) Leaks and breaks.

Code 1-Heat
(1) Area power failure affecting heat.
(2) Heater in unit not working.

Code 1-Plumbing
(1) Hot water heater failure.
(2) Leaking water supply pipes.

Code 2-Plumbing
(1) Flush valves not operating properly.
(2) Fixture drain, supply line to commode, or any water pipe leaking.
(3) Commode leaking at base.

Code 3-Plumbing
Leaky faucets.

Code 3-Interior
(1) Floors damaged.
(2) Paint chipping or peeling.
(3) Casework.

Code 1-Roof Leaks
Temporary repairs will be made where major damage to property is occurring.

Code 2-Roof Leaks
Where major damage to property is not occurring, check for location of leak during rain and complete repairs on a Code 2 basis.

Code 2-Water (Exterior)
No water to facility.

Code 2-Water (Hot)
No hot water in portion of building listed.

Code 3-All other work not listed above.
1.7.5 Warranty Tags

At the time of installation, tag each warranted item with a durable, oil and water resistant tag approved by the Contracting Officer. Attach each tag with a copper wire and spray with a silicone waterproof coating. Also, submit two record copies of the warranty tags showing the layout and design. The date of acceptance and the QC signature must remain blank until the project is accepted for beneficial occupancy. Show the following information on the tag.

<table>
<thead>
<tr>
<th>Type of product/material</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Model number</td>
<td></td>
</tr>
<tr>
<td>Serial number</td>
<td></td>
</tr>
<tr>
<td>Contract number</td>
<td></td>
</tr>
<tr>
<td>Warranty period from/to</td>
<td></td>
</tr>
<tr>
<td>Inspector's signature</td>
<td></td>
</tr>
<tr>
<td>Construction Contractor</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td></td>
</tr>
<tr>
<td>Telephone number</td>
<td></td>
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<tr>
<td>Warranty contact</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td></td>
</tr>
<tr>
<td>Telephone number</td>
<td></td>
</tr>
<tr>
<td>Warranty response time priority code</td>
<td></td>
</tr>
</tbody>
</table>

WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE DURING THE WARRANTY PERIOD.

PART 2 PRODUCTS

2.1 GOVERNMENT FURNISHED MATERIALS

The Government will provide an optical disc (CD or DVD) at the preconstruction conference that contains the following:

a. One set of "as-designed" electronic CAD files in the specified software and format revised to reflect all amendments and the final contract PDF drawings. The CAD files are provided to enable preparation of as-built or as-constructed drawings. If discrepancies exist between the CAD files and the contract PDF drawings, correct the CAD files to show the
contract PDF drawings.

b. A submittal register data file in comma separated value (CSV) format for import into the Resident Management System (RMS).

2.2 SYSTEM DESCRIPTION

Prepare the CAD drawing files in AutoCAD version coordinated with the 96th CEG drafting section at time of submission.

2.2.1 Additional Drawings

If additional drawings are required, prepare them using the specified electronic file format applying the same graphic standards specified for original drawings. The title block and drawing border to be used for any new final record drawings must be identical to that used on the contract drawings.

2.2.1.1 Sheet Numbers and File Names

If a sheet needs to be added between two sequential sheets, append a Supplemental Drawing Designator in accordance with ERDC/ITL TR-12-6 Adding a drawing sheet, and ERDC/ITL TR-12-1 Adding or deleting drawing sheets and index sheet procedures.

PART 3 EXECUTION

3.1 AS-BUILT DRAWINGS

Provide and maintain two black line print copies of the PDF contract drawings for As-Built Drawings. Provide and maintain As-Built Drawings in accordance with NFAS 5252.236-9310. Submit As-Built Drawings 30 days prior to Beneficial Occupancy Date (BOD). Refer to: Appendix Q "As-Built Information Control Requirements"; and Appendix R "As-Built Requirements" for additional requirements.

3.1.1 Markup Guidelines

Make comments and markup the drawings complete without reference to letters, memos, or materials that are not part of the As-Built drawing. Show what was changed, how it was changed, where items(s) were relocated and change related details. These working as-built markup prints must be neat, legible and accurate as follows:

a. Use base colors of red, green, and blue. Color code for changes as follows:

   (1) Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes.

   (2) Deletions (Red) - Over-strike deleted graphic items (lines), lettering in notes and leaders.

   (3) Additions (Green) - Added items, lettering in notes and leaders.

b. Provide a legend if colors other than the "base" colors of red, green, and blue are used.

c. Add and denote any additional equipment or material facilities, service
lines, incorporated under As-Built Revisions if not already shown in legend.

d. Use frequent written explanations on markup drawings to describe changes. Do not totally rely on graphic means to convey the revision.

e. Use legible lettering and precise and clear digital values when marking prints. Clarify ambiguities concerning the nature and application of change involved.

f. Wherever a revision is made, also make changes to related section views, details, legend, profiles, plans and elevation views, schedules, notes and call out designations, and mark accordingly to avoid conflicting data on all other sheets.

g. For deletions, cross out all features, data and captions that relate to that revision.

h. For changes on small-scale drawings and in restricted areas, provide large-scale inserts, with leaders to the applicable location.

i. Indicate one of the following when attaching a print or sketch to a markup print:
   1) Add an entire drawing to contract drawings
   2) Change the contract drawing to show
   3) Provided for reference only to further detail the initial design.

j. Incorporate all shop and fabrication drawings into the markup drawings.

3.1.2 As-Built Drawings Content

Revise As-Built Drawings in accordance with ERDC/ITL TR-12-1 and ERDC/ITL TR-12-6. Provide 2 sets of paper copies from PDF drawings to show the as-built conditions by red-line process during the execution of the project. Keep these working as-built markup drawings current on a weekly basis and at least one set available on the jobsite at all times. Changes from the contract drawings which are made during construction or additional information which might be uncovered in the course of construction must be accurately and neatly recorded as they occur by means of details and notes. Submit the working as-built markup drawings for approval prior to submission of each monthly pay estimate. For failure to maintain the working and final record drawings as specified herein, the Contracting Officer will withhold 10 percent of the monthly progress payment until approval of updated drawings. Show on the as-built drawings, but not limited to, the following information:

a. The actual location, kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, show by offset dimensions to two permanently fixed surface features the end of each run including each change in direction on the record drawings. Locate valves, splice boxes and similar appurtenances by dimensioning along the utility run from a reference point. Also record the average depth below the surface of each run.
b. The location and dimensions of any changes within the building structure.

c. Layout and schematic drawings of electrical circuits and piping.

d. Correct grade, elevations, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from contract plans.

e. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor; including but not limited to shop drawings, fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.

f. The topography, invert elevations and grades of drainage installed or affected as part of the project construction.

g. Changes or Revisions which result from the final inspection.

h. Where contract drawings or specifications present options, show only the option selected for construction on the working as-built markup drawings.

i. If borrow material for this project is from sources on Government property, or if Government property is used as a spoil area, furnish a contour map of the final borrow pit/spoil area elevations.

j. Systems designed or enhanced by the Contractor, such as HVAC controls, fire alarm, fire sprinkler, and irrigation systems.

k. Changes in location of equipment and architectural features.

j. Modifications (include within change order price the cost to change working as-built markup drawings to reflect modifications) and compliance with Eglin Standard procedures - See Appendices for Standards.

l. Actual location of anchors, construction and control joints, etc., in concrete.

m. Unusual or uncharted obstructions that are encountered in the contract work area during construction.

n. Location, extent, thickness, and size of stone protection particularly where it will be normally submerged by water.

3.2 RECORD DRAWING FILES

If additional drawings are required, prepare them using the specified electronic file format applying the same graphic standards specified for original drawings. The title block and drawing border to be used for any new final record drawings must be identical to that used on the contract drawings. Accomplish additions and corrections to the contract drawings using CAD files. Provide all program files and hardware necessary to prepare final PDF record drawings. The Contracting Officer will review final PDF record drawings for accuracy and return them to the Contractor for required corrections, changes, additions, and deletions.
3.2.1 Rename the CAD Drawing files

Rename the CAD Drawing files using the contract number as the Project Code field, (e.g., W91238-15-C-10A-102.DWG) as instructed in the Pre-Construction conference. Use only those renamed files for the Marked-up changes. Make all changes on the layer/level as the original item.

a. For AutoCAD files (DWG), enter all as-built delta changes and notations on the AS-BUILT layer.c. When final revisions have been completed, show the wording "RECORD DRAWING AS-BUILTS" followed by the name of the Contractor in letters at least 3/16 inch high on the cover sheet drawing. Date "RECORD DRAWING AS-BUILTS" drawing revisions in the revision block.

d. Within 10 days after Government approval of all of the working record drawings for a phase of work, prepare the final CAD record drawings for that phase of work and submit PDF drawing files and two sets of prints for review and approval. The Government will promptly return one set of prints annotated with any necessary corrections. Within 7 days revise the CAD files accordingly at no additional cost and submit one set of final prints for the completed phase of work to the Government. Within 10 days of substantial completion of all phases of work, submit the final record drawing package for the entire project. Submit one set of electronic CAD files, and one set of the approved working record PDF files on an optical disc with two sets of prints. The CAD files must be complete in all details and identical in form and function to the CAD drawing files supplied by the Government. Prepare AutoCAD files for transmittal using e-Transmit. Prepare MicroStation files for transmittal using the Packager (Archive). Make any transactions or adjustments necessary to accomplish this. The Government reserves the right to reject any drawing files it deems incompatible with the customer's CAD system. Paper prints, drawing files and storage media submitted will become the property of the Government upon final approval. Failure to submit final record PDF drawing files, CAD files and marked prints as specified will be cause for withholding any payment due under this contract. Approval and acceptance of final record drawings must be accomplished before final payment is made.

3.3 RECORD DRAWINGS

Prepare and provide Record Drawings. Provide 2 copies of Record Drawings on two separate CDs or DVDs 30 days after BOD.

Prepare final record drawings after the completion of each definable feature of work as listed in the Contractor Quality Control Plan (Foundations, Utilities, Structural Steel, etc., as appropriate for the project). Transfer the changes from the approved working as-built markup drawings to the original electronic CAD drawing files. Modify the as-built CAD drawing files to correctly show the features of the project as-built by bringing the working CAD drawing set into agreement with approved working as-built markup drawings, and adding such additional drawings as may be necessary. Refer to ERDC/ITL TR-12-1 Chapter 11 Drawing Revisions. Jointly review the working as-built CAD drawing PDF files for accuracy and completeness. Monthly review of working as-built CAD drawing PDF file printouts must cover all sheets revised since the previous review. These PDF drawing files are part of the permanent records of this project. Any drawings damaged or lost must be satisfactorily replaced at no expense to the Government.
a. Drawing revisions (include within change order price the cost to change working and final record drawings to reflect revisions) and compliance with the following procedures.

(1) Follow directions in the revision for posting descriptive changes.

(2) The revision delta size must be 5/16 inch unless the area where the delta is to be placed is crowded. Use a smaller size delta for crowded areas.

(3) Place a revision delta at the location of each deletion.

(4) For new details or sections which are added to a drawing, place a revision delta by the detail or section title.

(5) For minor changes, place a revision delta by the area changed on the drawing (each location).

(6) For major changes to a drawing, place a revision delta by the title of the affected plan, section, or detail at each location.

(7) For changes to schedules or drawings, place a revision delta either by the schedule heading or by the change in the schedule.

3.3.1 Final Record Drawing Package

Submit the final record PDF and CAD drawings package for the entire project within 20 days of substantial completion of all phases of work. Submit one set of ANSI D size PDF and CAD files on optical disc, read-only memory (ROM), two sets of ANSI D size prints and one set of the approved working record drawings. The package must be complete in all details and identical in form and function to the contract drawing files supplied by the Government.

3.4 FINAL APPROVED SHOP DRAWINGS

Submit final approved project shop drawings 30 days after transfer of the completed facility.

3.5 CONSTRUCTION CONTRACT SPECIFICATIONS

Submit final PDF file record construction contract specifications, including revisions thereto, 30 days after transfer of the completed facility. Submit record construction contract specifications on the same disk as the Final Record Drawing package.

3.6 AS-BUILT RECORD OF EQUIPMENT AND MATERIALS

Furnish one copy of preliminary record of equipment and materials used on the project 15 days prior to final inspection. This preliminary submittal will be reviewed and returned 2 days after final inspection with Government comments. Submit Two sets of final record of equipment and materials 10 days after final inspection. Key the designations to the related area depicted on the contract drawings. List the following data:
3.7 OPERATION AND MAINTENANCE MANUALS

Provide project operation and maintenance manuals as specified in Section 01 78 23 OPERATION AND MAINTENANCE MANUALS DATA. Provide four electronic copies of the Operation and Maintenance Manual files and one hard copy of the Operation and Maintenance Manuals. Submit to the Contracting Officer for approval within 30 calendar days of the Beneficial Occupancy Date (BOD). Update and resubmit files for final approval at BOD.

3.8 CLEANUP

Provide final cleaning in accordance with ASTM E1971 and submit two copies of the listing of completed final clean-up items. Leave premises "broom clean." Comply with GS-37 for general purpose cleaning and bathroom cleaning. Use only nonhazardous cleaning materials, including natural cleaning materials, in the final cleanup. Clean interior and exterior glass surfaces exposed to view; remove temporary labels, stains and foreign substances; polish transparent and glossy surfaces; vacuum carpeted and soft surfaces. Clean equipment and fixtures to a sanitary condition. Replace filters of operating equipment and comply with the Indoor Air Quality (IAQ) Management Plan. Sweep paved areas and rake clean landscaped areas. Remove waste and surplus materials, rubbish and construction facilities from the site. Recycle, salvage, and return construction and demolition waste from project in accordance with Section 01 57 20.00 10 ENVIRONMENTAL PROTECTION - EGLIN STANDARD, and 01 74 19 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT.

3.9 REAL PROPERTY RECORD

Near the completion of Project, but a minimum of 60 days prior to final acceptance of the work, complete and submit an accounting of all installed property with Interim DD FORM 1354. Include any additional assets, improvements, and alterations from the Draft DD FORM 1354. Contact the Contracting Officer for any project specific information necessary to complete the DD FORM 1354. Refer to UFC 1-300-08 for instruction on completing the DD FORM 1354. For information purposes, a blank fillable PDF DD FORM 1354 may be obtained at the following: http://www.dtic.mil/whs/directives/forms/eforms/dd1354.pdf

Submit the completed Checklist for DD FORM 1354 of Installed Building Equipment items. Attach this list to the updated DD FORM 1354.

-- End of Section --
PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-10 Operation and Maintenance Data
  O&M Database; G, RO
  Training Plan; G, RO
  Training Outline; G, RO
  Training Content; G, RO

SD-11 Closeout Submittals
  Training Video Recording; G, RO
  Validation of Training Completion; G, RO

1.2 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 and Section 01 33 00 SUBMITTAL PROCEDURES.

1.2.1 Package Quality

Documents must be fully legible. Operation and Maintenance data must be consistent with the manufacturer's standard brochures, schematics, printed instructions, general operating procedures, and safety precautions.

1.2.2 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. Use Data Package 3 for commissioned items without a specified data package requirement in the individual technical sections. Provide a Data Package 3
instead of Data Package 1 or 2, as specified in the individual technical section, for items that are commissioned.

1.2.3 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.

1.3 OPERATION AND MAINTENANCE MANUAL FILE FORMAT

Assemble data packages into electronic Operation and Maintenance 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 operation and maintenance directory.

1.3.1 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.

1.3.2 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

1.4 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.
1.4.1 Operating Instructions

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

1.4.1.1 Safety Precautions and Hazards

List personnel hazards and equipment or product safety precautions for operating conditions. List all residual hazards identified in the Activity Hazard Analysis provided under Section 01 35 26 GOVERNMENT SAFETY REQUIREMENTS. Provide recommended safeguards for each identified hazard.

1.4.1.2 Operator Prestart

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

1.4.1.3 Startup, Shutdown, and Post-Shutdown Procedures

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

1.4.1.4 Normal Operations

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

1.4.1.5 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.

1.4.1.6 Operator Service Requirements

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

1.4.1.7 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.

1.4.1.8 Operating Log

Provide forms, sample logs, and instructions for maintaining necessary operating records.

1.4.1.9 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.

1.4.2 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.

1.4.2.1 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.

1.4.2.2 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.

1.4.3 Repair

Provide manufacturer's recommended procedures and instructions for correcting problems and making repairs.

1.4.3.1 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.

1.4.3.2 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.

1.4.3.3 Repair Procedures

Provide instructions and a list of tools required to repair or restore the product or equipment to proper condition or operating standards.
1.4.3.4 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.

1.4.3.5 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.

1.4.3.6 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.

1.4.4 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:

1.4.4.1 Product Submittal Data

Provide a copy of SD-03 Product Data submittals documented with the required approval.

1.4.4.2 Manufacturer's Instructions

Provide a copy of SD-08 Manufacturer's Instructions submittals documented with the required approval.

1.4.4.3 O&M Submittal Data

Provide a copy of SD-10 Operation and Maintenance Data submittals documented with the required approval.

1.4.4.4 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.
1.4.4.5 Warranty Information

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

1.4.4.6 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.

1.4.4.7 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.

1.4.4.8 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.

1.4.4.9 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.

1.4.4.10 Field Test Reports

Provide a copy of Field Test Reports (SD-06) submittals documented with the required approval.

1.4.4.11 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.

1.5 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:

1.5.1 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

1.5.2 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

1.5.3 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

1.5.4 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

1.5.5 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

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 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 Quality Control Manager (QC) prior to forwarding to the Contracting Officer. 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 operation and maintenance information. The QC 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 Operation and Maintenance 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 Operation and Maintenance Manual Preparer for inclusion into the Manual's documentation.

3.1.7 Quality Control Coordination

Coordinate this training with the QC in accordance with Section 01 45 00.00 10 QUALITY CONTROL.

-- End of Section --
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PART 1  GENERAL

Commission the building systems listed herein. Employ the services of an independent Commissioning Firm. The Commissioning Firm must be a 1st tier subcontractor of the General or Prime Contractor and must be financially and corporately independent of all other subcontractors. The Commissioning Firm must employ a Lead Commissioning Specialist who must coordinate all aspects of the commissioning process. Conform to the commissioning procedures outlined in this specification.

1.1  SYSTEMS TO BE COMMISSIONED

Commission the following systems:

- Heating, Ventilating, Air Conditioning, and Refrigeration Systems (HVAC)
- Building Automation System
- Utility Monitoring and Control System
- Lighting Systems
- Power Distribution Systems
- Power Generation Systems
- Plumbing Systems
- Compressed Air and Vacuum Systems
- Building Envelope: moisture and thermal integrity and air tightness
- Fire Alarm System
- Intrusion Detection System

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.

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

- ASSOCIATED AIR BALANCE COUNCIL (AABC)

- NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB)
1.3 COMMUNICATION WITH THE GOVERNMENT

The Lead Commissioning Specialist (CxC) must submit all plans, schedules, reports, and documentation directly to the Contracting Officer Representative concurrent with submission to the CQC System 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 SEQUENCING AND SCHEDULING

1.4.1 Sequencing

Complete Functional Performance Tests of HVAC systems prior to Performance Verification Tests required for DIRECT DIGITAL CONTROL SYSTEMS FOR HVAC. Complete the following prior to starting Functional Performance Tests of mechanical systems:

a. All equipment and systems have been completed, cleaned, flushed, disinfected, calibrated, tested, and operate in accordance with contract documents and construction plans and specifications.

b. Testing, Adjusting, and Balancing has been completed and the Testing, Adjusting, and Balancing Report, has been submitted and approved.

c. The building envelope is enclosed according to contract documents with final construction completed, and the Air Barrier Pressure Tests have been completed and the Air Leakage Test Reports and Diagnostic Test Reports have been submitted and approved.

d. The Pre-Functional Checklists have been submitted and approved.

e. The Certificate of Readiness for mechanical systems has been submitted and approved.

Complete the following prior to starting Functional Performance Tests of the electrical systems:

a. All electrical and lighting equipment and systems have been completed, calibrated, tested, and operate in accordance with contract documents and construction plans and specifications.

b. The building envelope is enclosed according to contract documents with final construction completed.

c. Ceiling tiles, floor coverings, and window coverings are in place.

d. The Certificate of Readiness for electrical systems has been submitted and approved.

e. Lamps have completed a minimum 100 hour burn-in period.
1.4.2 Project Schedule

Include the following tasks in the project schedule required by Section 01 32 01.00 10 PROJECT SCHEDULE. Ensure sufficient time is scheduled to accommodate the requirements of this specification section. The order of items listed below is not intended to imply a specified sequence:

a. Submission and approval of the Commissioning Firm and Commissioning Specialist

b. Submission and approval of the Testing, Adjusting, and Balancing (TAB) Firm and TAB Specialist

c. Submission and approval of the Construction Phase Commissioning Plan

d. Installation of permanent utilities (water, electric)

e. Building Envelope Construction

f. Submission and approval of the Building Envelope Inspection Checklists

i. Air Barrier Pressure Tests.


k. Factory Acceptance Testing for each of the systems to be commissioned as required by technical specifications

l. Manufacturer's Equipment Start-Up for each of the systems to be commissioned.

m. Potable Water System Flushing.

n. Operational Tests of the plumbing system.

o. Potable Water System Disinfection.


q. Submission and approval of Duct Air Leakage Test Procedures.

r. Duct Air Leakage Test Execution.

s. Submission and approval of the Final Duct Air Leakage Test Report.

t. Testing, Adjusting, and Balancing (TAB) Field Work required.

u. Submission and approval of the TAB Report.

v. TAB Field Acceptance Testing required.

w. Submission and approval of the HVAC Start-Up Testing Report.

x. Submission and approval of the DDC Controls Performance Verification Test Procedures.

y. DDC Controls Performance Verification Tests.
z. DDC Controls Performance Verification Test Report.

aa. Pre-Functional Checklist Submittal

bb. Functional Performance Testing for each system to be commissioned

c. Integrated Systems Tests

dd. Post-Test Deficiency Correction for each system to be commissioned

e. Re-Testing

gg. Training for each of the systems to be commissioned

hh. Systems Manual submission and approval

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance to Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Commissioning Firm; G, RO

Lead Commissioning Specialist; G, RO

Technical Commissioning Specialists; G, RO

Commissioning Firm's Contract; G, RO

SD-06 Test Reports

Interim Construction Phase Commissioning Plan; G, RO

Final Construction Phase Commissioning Plan; G, RO

Template Building Envelope Inspection Checklists; G, RO

Building Envelope Inspection Checklists; G, RO

Pre-Functional Checklists; G, RO

Issues Log

Commissioning Report; G, RO

Post-Construction Trend Log Report; G, RO

SD-07 Certificates

Certificate of Readiness; G, RO
1.6 COMMISSIONING FIRMS

Provide a Commissioning Firm that is certified in commissioning by one of the following: the AABC Commissioning Group (ACG); the National Environmental Balancing Bureau (NEBB); the International Certification Board/Testing, Adjusting, and Balancing Bureau (ICB/TABB), the Building Commissioning Association (BCA); the Association of Energy Engineers (AEE).

The Commissioning Firm may employ a commissioning professional certified by the University of Wisconsin-Madison or the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) as required in paragraph LEAD COMMISSIONING SPECIALIST as an alternative to certification of the Commissioning Firm. The Commissioning Firm must be certified in all systems to be commissioned to the extent such certifications are available from the certifying body. Describe any lapses in certification or disciplinary action taken by the certifying body against the proposed Commissioning Firm or Lead Commissioning Specialist in detail. Any firm or commissioning professional that has been the subject of disciplinary action by the certifying body within the five years preceding contract award is not eligible to perform any duties related to commissioning.

a. Submit the Commissioning Firm's certification of qualifications including the name of the firm and certifications no later than 30 calendar days after Notice to Proceed. Submit one hard copy and an electronic copy.

b. The Commissioning Firm's and Commissioning Specialists' certifications must be maintained for the entire duration of the duties specified herein. If, for any reason, the firm or a specialist loses a certification during this period, immediately notify the Contracting Officer's Representative and submit another Commissioning Firm or Commissioning Specialist for approval. All work specified in this specification section performed by the Commissioning Firm or associated Commissioning Specialists is invalid if the Commissioning Firm or Commissioning Specialist loses its certification prior to contract completion and must be performed by an approved successor.

c. The Commissioning Firm must oversee and assist the General or Prime Contractor with the work specified herein.

d. The Commissioning Firm may act as the Pressure Test Agency.

1.6.1 Lead Commissioning Specialist

The Commissioning Firm must provide a Lead Commissioning Specialist (CxC) that has a minimum of five years of commissioning experience, including two projects of similar size and complexity, and that is one of the following: a NEBB qualified Systems Commissioning Administrator (SCA); ACG Certified Commissioning Authority (CxA); ICB/TABB Certified Commissioning Supervisor; BCA Certified Commissioning Professional (CCP); AEE Certified Building...
a. Submit the Lead Commissioning Specialist's certification of qualifications including the name of the specialist and firm; certifications; years of experience; and a listing of representative projects of similar size and complexity no later than 30 calendar days after Notice to Proceed. Submit one hard copy and an electronic copy.

b. The Lead Commissioning Specialists certifications must be maintained for the entire duration of the duties specified herein. If, for any reason, the specialist loses a certification during this period, immediately notify the Contracting Officer's Representative and submit another Lead Commissioning Specialist for approval. All work specified in this specification section to be performed by the Lead Commissioning Specialist is invalid if the Lead Commissioning Specialist loses its certification prior to contract completion and must be performed by an approved successor.

c. The Lead Commissioning Specialist must lead and oversee the commissioning work specified herein and be the primary point of contact for the Government regarding the commissioning work.

1.6.2 Technical Commissioning Specialists

Technical Commissioning Specialists, employed by the Commissioning Firm and that have the following qualifications, must perform the technical work specified herein associated with each system to be commissioned:

a. The technical work associated with mechanical systems including Heating, Ventilating, Air Conditioning, and Refrigeration Systems; Building Automation System; Utility Monitoring and Control System; Service Water Heating Systems; Plumbing Systems; Water Pumping and Mixing Systems; Compressed Air Systems; Energy and Water Utility Metering Systems 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 HVAC systems with five years of experience in the commissioning of HVAC systems.

b. The technical work associated with electrical systems including Lighting Systems; Power Distribution Systems; Fire Alrm; Intrusion Detection System; and Power Generation Systems must be performed by an engineering technician certified by the InterNational Electrical Testing Association (NETA) or the National Institute for Certification in Engineering Technologies (NICET) with five years of experience inspecting, testing, and calibrating electrical distribution and generation equipment, systems, and devices.

c. The technical work associated with the Building Envelope system must be performed by a registered architect with five years of building envelope design or construction experience. The Commissioning Firm team member with the required experience related to the building envelope may act as the Air Barrier Inspector provided that all qualification requirements of that specification section are met.

d. Submit the Technical Commissioning Specialist's certification of qualifications including the name of the specialist and firm; certifications; years of experience; and a listing of representative
projects of similar size and complexity no later than 30 calendar days after Notice to Proceed. Submit one hard copy and an electronic copy.

1.6.3 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 the acceptable standards unless otherwise stated herein. The acceptable standards are ACG Commissioning Guideline, NEBB Commissioning Standard, SMACNA 1429, or ASHRAE 202. Comply with applicable NETA and NICET 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 prior to contract solicitation by the body responsible for the Commissioning Standard.

1.7 ISSUES LOG

The Lead Commissioning Specialist must develop and maintain an Issues Log for tracking and resolution of all deficiencies discovered through commissioning review, inspection, and testing. Include the date of final resolution of issues as confirmed by the Commissioning Specialist. Submit the Issues Log to the Contracting Officer's Technical Representative on a monthly basis at a minimum, and provide an electronic copy to the Government Acceptance Engineer concurrently. 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.

Track construction deficiencies identified in the Issues Log using QCS as specified in Specification Section 01 45 00.00 10 QUALITY CONTROL SYSTEM (QCS). Track construction deficiencies identified in the Issues Log in accordance with the Quality Control Plan required by Specification Section.

1.8 CERTIFICATE OF READINESS

Prior to scheduling Functional Performance Tests for each system, issue a Certificate of Readiness for the system certifying that the system is ready for Functional Performance Testing. The Certificate of Readiness must include, for each system to be commissioned, all equipment and system
start-up reports; Performance Verification Test Reports; completed Building Envelope Inspection Checklists; completed Pre-Functional Checklists; Testing, Adjusting, and Balancing (TAB) Report; HVAC Controls Start-Up Reports; and the Air Leakage Test Reports and Diagnostic Test Reports to the extent applicable to the system. The Contractor, the Lead Commissioning Specialist; the Contractor's Quality Control Representative; the Mechanical, Electrical, Controls, and TAB subcontractor representatives must sign and date the Certificate of Readiness. Submit the Certificate of Readiness for each system no later than 14 calendar days prior to Functional Performance Tests of that system. Submit one hard copy and an electronic copy. Do not schedule Functional Performance Tests for a system until the Certificate of Readiness for that system receives approval by the Government.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 DESIGN PHASE

3.1.1 Design Commissioning Coordination Meeting

The Lead Commissioning Specialist must lead a meeting prior to the interim design submittal for any system required to be commissioned to discuss the commissioning process including contract requirements, lines of communication, roles and responsibilities, schedules, and documentation requirements. The Contractor's Superintendent or Project Manager, the Contractor's Quality Control Representative, the Designers of Record for the commissioned systems, and the Government must attend this meeting.

3.1.2 Design Phase Commissioning Plan

The Lead Commissioning Specialist (CxC) must prepare the Design Phase Commissioning Plan. Submit the Design Phase Commissioning Plan no later than 14 calendar days after approval of the Commissioning Specialists. Submit one hard copy and an electronic copy.

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. In addition, include the following in the Design Phase Commissioning Plan:

a. Plan purpose
b. Commissioning scope
c. Systems to be commissioned
d. Examples and description of development of building envelope inspection, pre-functional, and functional performance test checklists
e. Building information
f. Contact information for the Commissioning Specialists
g. Criteria listing, including Unified Facilities Criteria and building
codes and standards, identified by the design-build contract
h. Roles and responsibilities
  i. Management plan
j. Owner's Project Requirements
k. Description of the Basis of Design
l. Description of design reviews by the Commissioning Specialists
m. Description of design review by Government Acceptance Engineer
n. Description of site observation reports and the issues log
o. Listing and description of required meetings
p. Identification and sequence of commissioning and acceptance tasks for incorporation into the Project Schedule
q. Listing of required submittals to Government, Government Acceptance Engineer, and Commissioning Specialists
r. Description of execution of building envelope inspection, pre-functional checks, and functional performance tests
s. Description of Endurance Tests
t. Acceptance testing of critical systems as identified in contract specifications
u. Operation and maintenance manual requirements
v. Description of training requirements
w. Description of required Systems Manual
x. Description of the Commissioning Report

3.1.3 Design Review

The Lead Commissioning Specialist and Technical Commissioning Specialists must review the design-build construction contract, Design Plans and Specifications, the Basis of Design, and the Owner's Project Requirements prior to 60 percent completion of the design. The Owner's Project Requirements are attached as Appendix A. The Owner's Project Requirements are not contract requirements and are provided for commissioning review purposes only. The Commissioning Specialists must assess the completeness and clarity of the Owner's Project Requirements, verify that the requirements stated in the design-build construction contract and the Owner's Project Requirements are addressed in the Basis of Design, and verify that the Design Plans and Specifications are prepared in accordance with the Basis of Design, the design-build construction contract, the Unified Facilities Criteria (UFC) referenced by the design-build construction contract, and the Owner's Project Requirements. The Commissioning Specialists must also identify any deficiencies that would prevent the building systems from operating or performing effectively. The Commissioning Specialists must backcheck the reviewed documents at all
The Commissioning Specialists must provide a Design Review Report for each submittal identifying any discrepancies between the reviewed documents or deficiencies that would prevent the building systems and features from operating or performing effectively in accordance with the design-build construction contract and Owner's Project Requirements and from being adequately maintainable. Individually list each deficiency and the corresponding proposed corrective action necessary for proper system performance in the Design Review Report. Submit one hard copy and an electronic copy of the report with the corrected final design submission. The Contracting Officer's Representative, the Lead Commissioning Specialist, 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.

3.2 CONSTRUCTION PHASE

3.2.1 Construction Commissioning Coordination Meeting

The Lead Commissioning Specialist must lead a Construction Commissioning Coordination Meeting no later than 30 days following construction notice to proceed to 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 specification section. The Contractor's Superintendent or Project Manager, the Contractor's Quality Control Representative, and the Government must attend this meeting. The User and a Base Civil Engineer Office Representative will be invited and may attend this meeting.

3.2.2 Design Phase Commissioning Plan

A commissioning plan developed during design phase is provided as Appendix C for information only. The design phase commissioning plan does not form a part of this contract and is provided for commissioning review purposes only.

3.2.3 Construction Phase Commissioning Plan

3.2.3.1 Interim Construction Phase Commissioning Plan

The Lead Commissioning Specialist (CxC) must prepare the Interim Construction Phase Commissioning Plan. Submit the Interim Construction Phase Commissioning Plan no later than 30 calendar days after the Construction Commissioning Coordination Meeting and no later than 14 days prior to the start of construction of the building envelope. Submit one hard copy and an electronic copy.

Identify 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, and Template Building Envelope Inspection Checklists in the Interim Construction Phase Commissioning Plan.
3.2.3.1 Checklists

Download example Building Envelope Inspection Checklists, Pre-Functional Checklists, Functional Performance Test Checklists for specification section 01 91 00.15 TOTAL BUILDING COMMISSIONING at the following location: http://wbdg.org/ccb/NAVGRAPH/graphtoc.pdf. The checklists submitted in the Interim and Final Construction Phase Commissioning Plans must contain the same level of detail shown in the examples. The submitted checklists are not required to match the format of the examples.

3.2.3.1.2 Contents

In addition, include the following in the Interim Construction Phase Commissioning Plan:

3.2.3.1.3 Template Building Envelope Inspection Checklists

The Building Envelope Technical Commissioning Specialist must develop the Template Building Envelope Inspection Checklists. Include items that verify the building materials and construction maintain the required thermal and moisture integrity and air tightness of the building envelope system in the Building Envelope Inspection Checklists.

3.2.3.2 Final Construction Phase Commissioning Plan

The Lead Commissioning Specialist (CxC) must prepare the Final Construction Phase Commissioning Plan. Submit the Final Construction Phase Commissioning Plan no later than 30 calendar days prior to the start of Pre-Functional Checks. Submit one hard copy and an electronic copy.

Include the information provided in the Interim Construction Phase Commissioning Plan. In addition, the Technical Commissioning Specialist must develop the Pre-Functional 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.

3.2.3.2.1 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. See paragraph Pre-Functional Checks for more information. Functional Performance test procedures must explain, step-by-step, the actions and expected results that will demonstrate that the system performs in accordance with the contract in the Functional Performance Test Checklists. See paragraph Functional Performance Tests for more information.

3.2.3.2.2 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. See paragraph Functional Performance Tests for more information. 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 accepted 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.

l. System operation observations for system-based tests demonstrating each control algorithm, operation mode, and alarm condition resulting from control point(s) manipulation. System operation observations must contain the following:

   (1) introduction identifying testing methodology

   (2) as-found conditions prior to control point(s) manipulation

   (3) clear list of test items (step numbers)

   (4) control algorithm (design control sequence) segmented by unique functions

   (5) intended test procedures following each segmented control algorithm identifying control point(s) required to be manipulated to initiate system response

   (6) expected system response

   (7) space for comments for each test item complete including resulting control signal such as 0-volts, 10-volts, active, or inactive

   (8) pass or fail indication for each test item

3.2.4 Design Review

The Lead Commissioning Specialist and Technical Commissioning Specialists must review the construction contract plans and specifications, the Owner's
Project Requirements, and the Basis of Design. The Owner's Project Requirements are attached as Appendix A. The Basis of Design is attached as Appendix B. The Owner's Project Requirements and Basis of Design documents are not contract documents and are provided for commissioning review purposes only.

a. Advise the Contracting Officer's Representative Contracting Officer's Technical Representative of any discrepancies between the Basis of Design and Owner's Project Requirements, deficiencies of the design to comply with the Owner's Project Requirements or Basis of Design, and deficiencies that would prevent the building systems and features from operating or performing effectively and from being adequately maintainable.

b. The Commissioning Specialists must provide a Design Review Report individually listing each deficiency and the corresponding proposed corrective action necessary for proper system operation or performance. Submit one hard copy and an electronic copy of the report to the Contracting Officer's Representative no later than 14 days after approval of the Commissioning Specialists.

c. The Lead Commissioning Specialist must participate in a meeting to discuss any items contained in the report no later than 14 calendar days after submission of the report.

3.2.5 Construction Submittals

Provide all submittals associated with the systems to be commissioned, including shop drawings; equipment submittals; test plans, procedures, and reports; and resubmittal's to the Commissioning Specialists. The Technical Commissioning Specialist must review the submittals to the extent necessary verify that the equipment and system installation will comply with the contract requirements and the requirements of the Basis of Design and the Owner's Project Requirements.

3.2.6 Inspection and Testing

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 Owner's Project Requirements. Requirements in related specification sections are independent from the requirements of this section and do not satisfy any of the requirements specified in this specification section. Provide all materials, services, and labor required to perform the Pre-Functional Checks, Building Envelope Inspection and Functional Performance Tests.

3.2.6.1 Commissioning Team

Provide a commissioning representative for each sub-contractor associated with the systems to be commissioned. Each commissioning representative is responsible for coordination of their respective sub-contractor's execution of the commissioning activities and participation in the inspection and testing required by this specification section. The designers listed below are the designers of record for their respective systems. Substitutes must be approved by the Contracting Officer's Representative.
3.2.6.1.1 Building Envelope Inspections Team

The following team members must participate in building envelope inspections:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>CxB</td>
<td>Building Envelope Technical Commissioning Specialist</td>
</tr>
<tr>
<td>QAR</td>
<td>Contracting Officer's Quality Assurance Representative</td>
</tr>
<tr>
<td>CQC</td>
<td>Contractor's Quality Control Personnel</td>
</tr>
<tr>
<td>BEC</td>
<td>Contractor's Building Envelope Commissioning Representative</td>
</tr>
</tbody>
</table>

3.2.6.1.2 Mechanical System Pre-Functional Checks Team

The following team members must participate in Pre-Functional checks of mechanical systems:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>CxM</td>
<td>Mechanical System Technical Commissioning Specialist</td>
</tr>
<tr>
<td>QAR</td>
<td>Contracting Officer's Quality Assurance Representative</td>
</tr>
<tr>
<td>CQC</td>
<td>Contractor's Quality Control Personnel</td>
</tr>
<tr>
<td>MC</td>
<td>Contractor's Mechanical Commissioning Representative</td>
</tr>
<tr>
<td>EC</td>
<td>Contractor's Electrical Commissioning Representative</td>
</tr>
<tr>
<td>CC</td>
<td>Contractor's Controls Commissioning Representative</td>
</tr>
<tr>
<td>TABC</td>
<td>Contractor's TAB Commissioning Representative</td>
</tr>
<tr>
<td>PC</td>
<td>Contractor's Plumbing Commissioning Representative</td>
</tr>
</tbody>
</table>

3.2.6.1.3 Electrical System Pre-Functional Checks Team

The following team members must participate in Pre-Functional checks of electrical systems:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>CxE</td>
<td>Mechanical System Technical Commissioning Specialist</td>
</tr>
</tbody>
</table>
3.2.6.2 Building Envelope Inspection

Document building envelope inspection by the commissioning team using the approved Template Building Envelope Inspection Checklists. Indicate commissioning team member inspection and acceptance of each Building Envelope Inspection Checklist item by initials at the time they are inspected and found to be in conformance with contract requirements. Inspect checklist items before they become hidden as construction progresses.

a. Submit the completed and initialed Building Envelope Inspection Checklists no later than 7 calendar days after completion of inspection of all checklists items. Submit one hard copy and an electronic copy.

b. The Building Envelope Technical Commissioning Specialist must make at least two site visits to the site to observe construction of the building envelope in-progress. On each visit, the Building Envelope Commissioning Specialist must review the Contractor's in-progress checklists to ensure that the commissioning team is inspecting the building envelope as required.

c. The Building Envelope Technical Commissioning Specialist must witness the building envelope pressure tests and diagnostic tests. The Building Envelope Technical Commissioning Specialist must review the resulting reports and provide recommendations for correction of any deficiencies or further testing.

3.2.6.3 Pre-Functional Checks

Pre-Functional Checklists from the approved Final Construction Phase Commissioning Plan must be completed by the commissioning team. 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 acceptance of each Pre-Functional Checklist item by initials. Acceptance of each Pre-Functional Checklist item by each team member indicates that item conforms to the construction contract requirements in their area of responsibility. Technical Commissioning Specialist acceptance 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. Submit the completed and initialed Pre-Functional Checklists no later than 7 calendar days after completion of inspection of all checklists items for each system. Submit one hard copy and an electronic copy. Include manufacturer start-up checklists associated with equipment with the submission of the Pre-Functional Checklists.
3.2.6.4 Testing, Adjusting, and Balancing (TAB) Report and Field Acceptance Testing

The Mechanical System Technical Commissioning Specialist must review the pre-final TAB Report. Identify any deficiencies to the Contracting Officer's Representative and the Contractor's Quality Control Personnel. Resolve all deficiencies prior to TAB Field Acceptance Testing.

The Mechanical System Technical Commissioning Specialist must witness the TAB Field Acceptance Testing. Include a certification by the Mechanical Technical Specialist that no outstanding deficiencies exist in the systems relative to Testing, Adjusting, and Balancing with the final TAB Report submittal.

3.2.6.5 HVAC Controls Test Reports

The Mechanical System Technical Commissioning Specialist must review the Performance Verification Testing Plan, Checklists, and Report. Include a certification by the Mechanical System Technical Commissioning Specialist that the submittals contain no deficiencies or that the submittals do not indicate any deficiencies in the HVAC systems or HVAC control systems with each of these submittals.

3.2.6.6 Tests

3.2.6.6.1 Functional Performance Tests

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.

a. Functional Performance Tests must be performed with the Contracting Officer's Quality Assurance Representative present.

b. Abort Functional Performance Tests when any system deficiency prevents the successful completion of the test.

c. Technical Commissioning Specialists must lead and document all Functional Performance Tests for the systems to be commissioned with the Contractor and appropriate sub-contractors performing the Functional Performance Tests. The representatives listed in the paragraph Commissioning Team must attend the tests. Abort Functional Performance Tests when any required commissioning team member is not present for the test.

3.2.6.6.1.1 Checklist

Use the Functional Performance Test Checklists from the approved Final Construction Phase Commissioning Plan to guide the Functional Performance Tests. Functional Performance Tests must be performed for each item of equipment and each system required to be commissioned and verify all sensor calibrations, control responses, safety, interlocks, operating modes, sequences of operation, capacities, lighting levels, and all other performance requirements comply with construction contract regardless of the specific items listed within the Functional Performance Test Checklists provided. Testing must progress from equipment or components to subsystems to systems to interlocks and connections between systems. The
order of components and systems to be tested must be determined by the Technical Commissioning Specialists.

3.2.6.6.1.2 Acceptance

Indicate acceptance of each item of equipment and systems tested by signature of each commissioning team member for each Functional Performance Test. The Contractor's Quality Control Representative and the Technical Commissioning Specialists must indicate acceptance after the equipment and systems are free of deficiencies.

3.2.6.6.2 HVAC Test Methods

Perform Functional Performance Tests in accordance with the following:

3.2.6.6.2.1 Prior to Testing

Prior to testing operating modes, sequences of operation, interlocks, and safeties, complete control point-to-point observations, test sensor calibrations, and test actuator commands.

3.2.6.6.2.2 Simulating Conditions

Over-writing control input values through the controls system is not acceptable, unless approved by the Contracting Officer's Representative. Identify proposed exceptions in a protocol submitted to the Contracting Officer's Representative for approval. Before simulating conditions, overwriting values (if approved), or changing set-points, calibrate all sensors, transducers and devices. Below are several examples of exceptions that would be considered acceptable:

a. When varying static pressures inside ductwork can not be simulated within the duct, and where a sensor signals the controls system to initiate sequences at various duct static pressures, it is acceptable to simulate the various pressures with a Pneumatic Squeeze-Bulb Type Signaling Device with gauge temporarily attached to the sensing tube leading to the transmitter. It is not acceptable to reset the various set-points, nor to simulate an electric analog signal (unless approved as noted above).

b. Dirty filter pressure drops can be simulated using sheets of cardboard at filter face.

c. Freeze-stat safeties can be simulated by packing portion of sensor with ice.

d. High outside air temperatures can be simulated with a hair blower.

e. High entering cooling coil temperatures can be used to simulate entering cooling coil conditions.

f. Do not use signal generators to simulate sensor signals unless approved by the Contracting Officer's Representative, as noted above, for special cases.

g. Control set points can be altered. For example, to see the air conditioning compressor lockout work at an outside air temperature below 55 degrees F, when the outside air temperature is above 55 degrees F, temporarily change the lockout set point to be 0 degrees F above the
current outside air temperature. Caution: Set points are not to be raised or lowered to a point such that damage to the components, systems, or the building structure and/or contents will occur.

h. Test duct mounted smoke detectors in accordance with the manufacturer's recommendations. Perform the tests with air system at minimum airflow condition in ductwork.

i. Test current sensing relays used for fan and pump status signals to control system to indicate unit failure and run status by resetting the set point on the relay to simulate a lost belt or unit failure while the unit is running. Confirm that the failure alarm was generated and received at the control system. After the test is conducted, return the set point to its original set-point or a set-point as indicated by the Contracting Officer's Representative.

3.2.6.6.2.3 Setup

Perform each test under conditions that simulate actual conditions as close as is practically possible. Provide all necessary materials and system modifications to produce the necessary flows, pressures, temperatures, and other conditions necessary to execute the test according to the specified conditions. At completion of the test, return the affected building equipment and systems to their pre-test condition.

3.2.6.6.3 Aborted Tests and Re-Testing

Abort Functional Performance Tests if any deficiency prevents successful completion of the test or if any required commissioning team member is not present for the test. Reimburse the Government for all costs associated with effort lost due to re-testing due to test failures and aborted tests. These costs must include salary, travel costs, and per diem for Government commissioning team members. Re-test only after all deficiencies identified during the original tests have been corrected.

3.2.6.6.3.1 100 Percent Sample

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.

3.2.7 Training Plan

all training required by specification sections associated with commissioned systems. Include a matrix listing each training requirement, content of the training, the trainer name, trainer contact information, and schedule and location of training. Submit one hard copy and an electronic copy of the Training Plan to the Commissioning Specialists and the Government no later than 30 calendar days prior to the associated training.

Document training attendance using training attendance rosters and provide completed attendance rosters to the Commissioning Specialists and the Government no later than 7 calendar days following the completion of training for each system to be commissioned. Submit one hard copy and an electronic copy.
3.2.8 Systems Manual

Systems Manual including, for all commissioned systems, 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. Update and resubmit the Systems Manual based on any corrective action taken during the warranty period. The Technical Commissioning Specialists must review the Systems Manual. Include a signed certification or letter from the Lead Commissioning Specialist stating that the Systems Manual is complete, clear, and accurate with the submittal.

Submit Systems Manual no later than 30 calendar days following completion of Functional Performance Tests. Submit three hard copies and an electronic copy.

3.3 COMMISSIONING REPORT

Following the completion of Functional Performance Tests, with the exception of Seasonal Tests, the Lead Commissioning Specialist must prepare a Commissioning Report.

a. Include an executive summary describing the overall commissioning process, the results of the commissioning process, any outstanding deficiencies and recommended resolutions, and any seasonal testing that must be scheduled for a later date. Indicate, in the executive summary, whether the systems meet the requirements of the construction contract and the Owner's Project Requirements.

b. Detail any deficiencies discovered during the commissioning process and the corrective actions taken in the report. Include the completed Building Envelope Inspection Checklists, Pre-Functional Checklists, Functional Performance Test Checklists, the Commissioning Plans, the Issues Log, Performance Verification Test Reports, Training Attendance Rosters, the Design Review Report, the final TAB Report.

c. Submit the Commissioning Report no later than 14 calendar days following commissioning team acceptance of all Functional Performance Tests with the exception of Seasonal Tests. Submit three hard copies and an electronic copy.

d. Following any Seasonal Tests or Post-Construction Activities, update the Commissioning Report to reflect any changes and resubmit.

3.4 POST-CONSTRUCTION SUPPORT

3.4.1 Post-Construction Site Visit

The Commissioning Specialists 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. The Commissioning Specialists must identify any deficiency of the building systems to operate in accordance with the contract requirements and the Owner's Project Requirements. The Commissioning Specialists must advise the Contracting Officer's Representative of any identified deficiencies and the proposed corrective action. Submit an updated commissioning report and
systems manual documenting the results of the post-construction inspection.
OWNER'S PROJECT REQUIREMENTS DOCUMENT

Project:  Project, Location, PN ####

Approved:

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<th>Name</th>
<th>Design Agent's Representative</th>
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OWNER'S PROJECT REQUIREMENTS DOCUMENT

Contents

1. Owner and User Requirements
   a. Primary Purpose, Program, and Use
   b. Project History
   c. Broad Goals
      i. Future Expansion
      ii. Flexibility
      iii. Quality of Materials
      iv. Construction Costs
      v. Operational Costs

2. Environmental and Sustainability Goals
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3. Energy Efficiency Goals
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4. Indoor Environmental Quality Requirements
   a. Space Type 1
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      iv. Occupant System Control Ability
      v. Type of Lighting
      vi. After-hour Use Accommodation
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      ii. Type
      iii. Automation
      iv. Flexibility
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      iii. Automation
      iv. Flexibility
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   c. Domestic Hot Water Systems
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e. Other Systems
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   iv. Flexibility
   v. Maintenance Requirements

6. Building Occupant and O&M Personnel Requirements
   a. Facility Operation
   b. UMCS (EMCS or FMCS)
   c. Occupant Training and Orientation
   d. O&M Staff Training and Orientation
1. Owner and User Requirements

   a. Primary Purpose, Program, and Use

       Explain the purpose, program, and use of the facility. (i.e. Army Reserve Center used for training reserve units. Training includes spaces such as weapons, medical, vehicle repair, cooking, etc.)

   b. Project History

       Explain the history of the project related to design/construction (i.e. D/B/B, D/B, IDIQ, JOC, COE in-house, A/E, etc.). Explain any additional project background that would impact energy/sustainability goals.

   c. Broad Goals

       i. Future Expansion: Explain goals related to potential future expansion.

       ii. Flexibility: Explain goals related to flexibility for layout and use of the building. (i.e. high rate of office churn, expected frequency of renovation, etc.)

       iii. Quality of Materials: Explain goals related to quality of materials. (i.e. highest quality materials, 50 yr life, 25 yr life, highest quality within budget, etc.)

       iv. Construction Costs: Explain goals related to construction costs. (i.e. how low can you go, set project amount, select simplest systems for low cost, etc.)

       v. Operational Costs: Explain goals related to operational costs. (i.e. low utilities based on water and energy conservation, trade-off allowable on maintenance costs to reduce utility cost, utility cost unimportant compared to construction cost, etc.)
2. Environmental and Sustainability Goals

   a. LEED/Green Globes Goal

      Set LEED/Green Globes goal and explain sustainable features permissible or preferred to be incorporated. Explain relative importance of LEED/Green Globes goal within project scope. Indicate requirement from service or agency specific criteria and policy.

   b. Other

      Explain any special sustainability or environmental goals associated with the project. Identify specific sustainability features that may be required or desired. (i.e. hydro-power, solar power, on-site water treatment, on-site water infiltration, impervious cover reduction, parking capacity, etc.)
3. Energy Efficiency Goals

   a. Goals/Policy

       Explain the specific project goals and requirements regarding energy efficiency. Incorporate the requirements of UFC 1-200-02 High Performance and Sustainable Building Requirements and/or other relevant agency policies.

   b. Systems and Feature Energy Impacts

       Identify and explain envelope, system, or site and building features that will be incorporated to maximize energy efficiency. Identify features that must be incorporated that will reduce or limit energy efficiency.
4. Indoor Environmental Quality Requirements

   a. Space Type 1

      i. Intended Use: Explain how the space will be used (i.e. classroom occasionally used as conference room).

      ii. Occupancy Schedule: Describe the occupancy including number of people at various times (i.e. drill weekend-maximum capacity, weekdays-20 percent; or 0700-0900 - none, 0900-1400 - 30 people, 1400-1600 - none).

      iii. Environmental Requirements: Describe the environmental requirements of the space. Include description of temperatures, humidity levels, ventilation rates, air quality, lighting levels, or any other specific parameters desired (i.e. 75 deg F, 50 percent rh, 30 fc, etc.).

      iv. Occupant System Control Ability: Describe the desired level of control the occupants will have over the thermal comfort and lighting systems. (i.e. adjustable thermostat for every person, adjustable thermostat in all private offices, no adjustable thermostats, adjustable thermostat in senior rank also controlling other offices, occupancy sensors for lighting, adjustable dimming, etc.)

      v. Type of Lighting: Describe the type of lighting desired (i.e. task lighting with minimal overhead, maximize daylight with dimming on overhead, accent lighting, particular fixtures, etc.).

      vi. After-hour Use Accommodations: Describe whether and how often the space may be used after hours. Describe the systems that activate when an occupant uses the building after-hours. Describe the level of control of after-hour use HVAC.

         (Example: Space is rarely used after-hours by few occupants. HVAC and lighting system should activate when occupants enter after-hours. The HVAC operation will be limited to that required to provide heating, A/C, and ventilation to the occupied space alone.) (Example: Space is rarely used after-hours by few occupants. Lighting and heating systems should activate. Ventilation and cooling should remain in normal after-hour operation.)

   b. Space Type 2
5. Equipment and System Expectations

a. HVAC Systems

i. Quality and Reliability: Explain the level of quality and reliability required of the HVAC systems.

(Example: Equipment efficiency should meet ASHRAE and FEMP/Energy Star requirements. Due to critical nature of facility, additional redundancy in the cooling and heating systems is required, i.e. multiple chillers, boilers, and pumps.) (Example: No specific quality or reliability requirements specified. Equipment should remain serviceable over life of building or to the extent typical of the type of equipment.)

ii. Type: Explain the type of equipment desired.

(Example: Boilers should be condensing type. Use hydronic heating and cooling. Use self-contained A/C units in computer rooms.)

iii. Automation: Explain the level of automation in the HVAC System desired.

(Example: Single loop HVAC systems permissible. Use packaged controls only.) (Example: Control HVAC systems from DDC system connected to the base UMCS.) (Example: Boilers should have packaged controls connected to the DDC system.)

iv. Flexibility: Describe the desired level of flexibility of the HVAC system.

(Example: System should accommodate frequent office layout changes including private office wall movement.) (Example: Layout will remain mostly unchanged; no flexibility required.) (Example: Accommodate potential for conference and classrooms to change to offices.)

v. Maintenance Requirements: Describe the level of maintenance available or the requirements of the equipment regarding maintainability.

(Example: Equipment should be located to allow easy maintenance access. Equipment vendors or repair service should be able to respond within 24 hrs.)

b. Lighting Systems

i. Quality and Reliability: Explain the level of quality and reliability required of the lighting system controls.

(Example: The building lighting system should meet ASHRAE 90.1 - IP requirements.)

ii. Type: Explain the type of lighting or control equipment desired.

(Example: High-efficiency fluorescent lamps with high-efficiency ballasts will be specified. Indirect lighting will be used in all office and classroom spaces. Lighting foot-candle levels may be reduced to 45 foot-candles in lieu of the typical 50 foot-candles when indirect lighting is used.)

iii. Automation: Explain the level of automation in the lighting control
system desired.

(Example: Provide occupancy sensors in restrooms, corridors, and storage areas.)

iv. Flexibility: Describe the desired level of flexibility of the lighting system and control systems.

(Example: Provide dual level switching in classrooms and conference rooms.)

v. Maintenance Requirements: Describe the level of maintenance available or the requirements of the equipment regarding maintainability.

(Example: )

c. Domestic Hot Water Systems

i. Quality and Reliability: Explain the level of quality and reliability required of the domestic hot water systems.

(Example: Equipment efficiency should meet ASHRAE and FEMP/Energy Star requirements. Due to critical nature of facility, additional redundancy in the water heating systems is required, i.e. multiple hot water heaters and circulation pumps.) (Example: No specific quality or reliability requirements specified. Equipment should remain serviceable over life of building or to the extent typical of the type of equipment.)

ii. Type: Explain the type of equipment desired.

(Example: Gas-fired storage tank water heater with mixing valve for temperature control.) (Example: Instantaneous electric water heater at lavatories.) (Example: Instantaneous electric water heater with integral control system for eyewash/showers.)

iii. Automation: Explain the level of automation in the domestic hot water control system desired.

(Example: Occupancy schedule control for recirculation loop and gas burner. Connect package controls to DDC system.)

iv. Flexibility: Describe the desired level of flexibility of the domestic hot water systems.

(Example: No anticipated changes to restroom layout; no additional flexibility required.)

v. Maintenance Requirements: Describe the level of maintenance available or the requirements of the equipment regarding maintainability.

(Example: Equipment should be located to allow easy maintenance access. Equipment vendors or repair service should be able to respond within 24 hrs.)

d. On-site Power Systems

i. Quality and Reliability: Explain the level of quality and reliability required of the on-site power system.
ii. Type: Explain the type of on-site power system desired.

iii. Automation: Explain the level of automation in the on-site power system desired.

iv. Flexibility: Describe the desired level of flexibility of the on-site power system.

v. Maintenance Requirements: Describe the level of maintenance available or the requirements of the on-site power system regarding maintainability.

e. Other Systems

i. Quality and Reliability: Explain the level of quality and reliability required of the system.

ii. Type: Explain the type of system desired.

iii. Automation: Explain the level of automation in the system desired.

iv. Flexibility: Describe the desired level of flexibility of the system.

v. Maintenance Requirements: Describe the level of maintenance available or the requirements of the system regarding maintainability.
6. Building Occupant and O&M Personnel Requirements

   a. Facility Operation

       Describe how the facility will be operated. Who operates the facility? Who maintains the facility? Who pays the utility bills?

   b. UMCS (EMCS or FMCS)

       Will the building be tied to an UMCS/EMCS/FMCS? What system will be connected to? Provide information regarding connection requirements, protocols, and control, scheduling and monitoring points.

   c. Occupant Training and Orientation

       How much training and orientation is desired for building occupants? Will training need to be provided for all systems? To what extent do the occupants need to understand and use the systems?

   d. O&M Staff Training and Orientation

       How much training and orientation is desired for building occupants? Will training need to be provided for all systems? To what extent do the occupants need to understand and use the systems?
APPENDIX B - BASIS OF DESIGN
APPENDIX C - DESIGN PHASE COMMISSIONING PLAN

-- End of Section --