AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 | 67

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
P00011	19-Sep-2014	SEE SCHEDULE	201204740

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
INSTAL & VEHICLE SUP CONTRACTING DIV 6501 E. 11 MILE ROAD WARREN MI 48397-5000	W56HZV	INSTAL & VEHICLE SUP CONTRACTING DIV LAURA K. SZEP CCTA-HDC-A/MS 350 LAURA.K.SZEP.CIV@MAIL.MIL WARREN MI 48397-5000	W56HZV

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
ROCK INDUSTRIES, INC. ROBERT BRUZA 340 ROCKWELL AVE PONTIAC MI 48341-0000		9A. AMENDMENT OF SOLICITATION NO.
		9B. DATED (SEE ITEM 11)
	X	10A. MOD. OF CONTRACT/ORDER NO. W56HZV-12-C-L573
	X	10B. DATED (SEE ITEM 13) 28-Sep-2012

CODE 3MPN1 FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer ☐ is extended, ☐ is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

See Schedule

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: Mutual Agreement By Bpth Parties
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☐ is not, ☒ is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

Modification Control Number: wiebell14715

Reference Purchase Request: 0010568021

Please See Page 2 For Modification Information

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) JOHN SARTI / CONTRACTING OFFICER TEL: 586-282-6524 EMAIL: john.m.sarti2.civ@mail.mil	
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY John Sarti (Signature of Contracting Officer)	16C. DATE SIGNED 19-Sep-2014

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION SF 30 - BLOCK 14 CONTINUATION PAGE

The following have been added by full text:

MODIFICATION 011 INFORMATION

1. The purpose of this bilateral modification is to add and fund CLIN 0011 and extend the period of performance on the contract due to a government delay.
2. CLIN 0011 will be added and funded in the amount of $20,000.00 for additional work that was done as a result of frozen pipe damage to building 1437 back in December 2013. Negotiations are still being conducted to finalize the pricing as proposal is greater than CLIN amount being funded. Due to scheduling conflicts, project's completion and FY14 funds expiring if not obligated, bilateral agreement to add funds now. If additional funding is needed, a new CLIN will be added to the contract and notated appropriately.
3. The period of performance is hereby extended to 31 October 2014.
4. Clause 52.211-10 in Section I has been updated to reflect the new period of performance.
5. Statement of Work Section 1.2 d has been changed from 30 June 2014 to 30 September 2014.
6. As a result of this modification, the total dollar amount has been increased by $20,000.00 from $559,556.61 to $579,556.61.
7. Except as provided herein, all other terms and conditions of W56HZV-12-C-L573 remain unchanged and in full force and effect.

SECTION A - SOLICITATION/CONTRACT FORM

The total cost of this contract was increased by $20,000.00 from $559,556.61 to $579,556.61.

SECTION B - SUPPLIES OR SERVICES AND PRICES

CLIN 0011 is added as follows:

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0011		1	Job	$20,000.00	$20,000.00
	Add'l Funding from Frozen Pipe Damage FFP Add'l Funding from Frozen Pipe Damage FOB: Destination PURCHASE REQUEST NUMBER: 0010568021				
				NET AMT	$20,000.00
	ACRN AH CIN: GFEBS001056802100001				$20,000.00

SECTION C - DESCRIPTIONS AND SPECIFICATIONS

The following have been modified:
STATEMENT OF WORK

Design-Build
Statement of Work

Building 1437 Occupant Safety Lab
Work Order Number 201204740

Selfridge Air National Guard Base
Harrison Township, MI

28-Mar-2013
Final Document

PROJECT TABLE OF CONTENTS

SECTION 01 02 10.00 06

PROJECT DESCRIPTION AND DESIGN REQUIREMENTS
06/10

PART 1 DESIGN OBJECTIVES

1.1 PROJECT DESCRIPTION

This project will require design-build services to design and perform the architectural, heating, ventilating, and air conditioning (HVAC), plumbing, electrical, communications, and fire protection work as described in this Request for Proposal (RFP).

AutoCAD 2011 computer-aided design and drafting (CADD) files or Adobe Acrobat Portable Document Format (PDF) files, which may include the existing building floor plans and utility plans, may be provided by TARDEC on compact disc (CD) as part of this RFP for design development.Additional files for the Contractor's reference may also be provided on this CD. The Contractor shall field verify all files and drawings provided by TARDEC for accuracy prior to cost proposal submission.

Design and construction shall comply with the requirements contained in this Request for Proposal (RFP). The design and technical criteria contained and cited in this RFP,the Department of Defense (DoD) Unified Facilities Criteria (UFC), and the Unified Facilities Guide Specifications (UFGS) establish minimum standards for design and construction quality. The Designers of Record shall use the Unified Facilities Guide Specifications and the requirements contained in this RFP to fully develop the technical specifications and construction drawings. The Contractor shall comply with the latest editions of all codes, standards, regulations, specifications, and requirements as of the date of issuance of this RFP. If there is a conflict between requirements in this RFP and the UFGS then the requirements of this RFP shall take precedence and shall be adhered to.

The Contractor shall provide extended parts and labor warranties on all equipment, products, and items, including roofs, HVAC equipment, pumps, motors, transformers, fire protection and fire alarm equipment, lightning protection equipment, and all other equipment as specified in the Unified Facilities Guide Specifications (UFGS). In addition to submitting warranty information when specified in the Unified Facility Guide Specifications, all product warranty information shall also be provided at the time product data information is submitted to the Government for review.

Parts and labor warranties shall be provided for the maximum number of years specified in the Unified Facilities Guide Specifications for all products.

Room numbers physically located in the facility may deviate from the room numbers specified in the appendix. Contractor shall refer to room numbers specified in the appendix where discrepancies exist.

1.1.1 Bid Options

The contract also includes the following bid options:

Bid Option Number 1 - design and construction Control Room (102) and Lab Room (103) including lighting, power, LAN, Voice and AC.

Bid Option Number 2 – Demolish existing (2) roll up doors (100C & 100D) and install (2) new motorized coiling insulated metal overhead doors.

Bid Option Number 3 – Install new interior metal siding from top of existing metal siding to underside of roof deck. Spray fire proofing (1 Hour) on all exposed structural ceiling.

Bid Option Number 4 – Install new ADA compliant toilet room.

1.2 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK

The Contractor shall be required to:

a. commence work under this contract within the time allotted under the Request for Proposal (RFP),

b. complete the 65 Percent Design submittal and 100 Percent Design submittal (Not including Ventilation System), including addressing all Government comments, not later than 10-DEC-2012.

c. complete the entire project design (Not including Ventilation System) ready for construction (Released for Construction Design submittal), including addressing all Government comments, not later than 06-FEB-2013.

d. complete all construction (Not including Ventilation System) to be ready for use not later than 06-APR-2013. The time stated for completion shall include final inspection punch list item completion and Government acceptance, final cleanup, and completion of all requirements to authorize beneficial occupancy.

e. complete the entire work not later than 08-JUL-2013. The time stated for completion shall include as-built drawings, operation and maintenance manuals, operational tests, reports, equipment lists, training, instructions, and all other required project closeout documents.

Schedule for the Design, Demo, and Installation of Ventilation System:

a. Complete 100 Percent Design submittal for Ventilation System, including addressing all Government comments, not later than 1 APR 2013.

b. Complete the entire project design for Ventilation System Modification ready for construction (Released for Construction Design submittal), including addressing all Government comments, not later than 1 APR 2013.

c. complete all construction for Ventilation System Modification to be ready for use not later than 25 JUN 2013. The time stated for completion shall include final inspection punch list item completion and Government acceptance, final cleanup, and completion of all requirements to authorize beneficial occupancy.

d. complete the entire work not later than *30 September 2014.* The time stated for completion shall include as-built drawings, operation and maintenance manuals, operational tests, reports, equipment lists, training, instructions, and all other required project closeout documents.

1.3 APPLICABLE CRITERIA

Applicable design and construction criteria are specifically indicated in Department of Defense (DoD) Unified Facilities Criteria (UFC) and the Unified Facilities Guide Specifications (UFGS). Criteria shall be taken from the most current references as of the date of issue of the RFP, unless noted otherwise. Referenced codes and standards are minimum acceptable criteria. Administrative, contractual, and procedural features of the contract shall be as described in other sections of the RFP.

1.4 PERMITS

The Contractor shall be responsible for preparing, filing, and paying for any fees required to obtain all necessary permits for the construction of this project.

1.5 FINAL CLEANING

Clean the premises in accordance with FAR clause 52.236-12 and additional requirements stated here. Remove stains, foreign substances, and temporary labels from surfaces. Clean equipment and fixtures to a sanitary condition.

Clean or replace filters of operating equipment if cleaning is not possible or practicable. Remove waste, surplus materials, and rubbish from the site. Remove all temporary structures, barricades, project signs, fences, and construction facilities.

1.6 COORDINATION

The Contractor shall coordinate, through the COR, with the proposed tenant for the placement, installation, finish selections, of tenant furnished material and equipment. The Contractor shall coordinate with other contractors to prevent interference with their work and to allow them access to the work areas.

If it becomes necessary to interrupt work activities in buildings and/or areas for construction purposes, permission to do so must be requested in writing to the Contracting Officer fourteen (14) calendar days prior to commencing work and shall be subject to COR approval. Written requests for street closing shall be submitted for approval by the COR fourteen (14) calendar days prior to closing the street.

Work in connection with this contract which requires utility outages (electrical, water, gas, steam,…) which will close down or limit (as determined by the Contracting Officer) normal activities in the building, onstruction area, or other affected areas, shall be performed by the Contractor at a time other than regular working hours of the organization occupying the facility. Work in connection with this contract which requires road closures shall be performed by the Contractor at a time other than regular working hours. Work required by the Contractor on non-standard basis or at premium pay shall be done at no additional cost to the Government. Request for utility outages and road closures shall be submitted to the COR, in writing, fourteen (14) calendar days prior to commencing work and shall be subject to COR approval.

The Contractor shall coordinate work efforts with all affected utility companies. This includes initial contact to each utility company and coordination prior to and during construction.

1.7 CONSTRUCTION SITE PLAN

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

Show locations of safety and construction fences, site trailers, construction entrances, trash dumpsters, temporary sanitary facilities, and worker parking areas.

All Contractor staging areas and storage areas shall be limited to areas within five (5) feet of the project area boundaries.

The Contractor shall comply with UFGS Specification Section 01 50 00, TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS.

PART 2 DESIGN AND CONSTRUCTION REQUIREMENTS

2.1 FUNCTIONAL AND AREA REQUIREMENTS

Not Used

2.2 CIVIL AND SITE

2.2.1 Technical Requirements

2.2.1.1 Design and Installation Standards and Codes

The civil design and construction shall conform to the current versions of all applicable Unified Facilities Criteria (UFC). The project civil design and construction shall be in accordance with the latest edition of the Department of Defense (DoD) and Unified Facilities Guide Specifications (UFGS).

2.2.1.2 Scope of Work

The work includes completion of civil and site design and construction as described herein and as detailed by the Civil Designer of Record.

2.2.1.3 Specific Requirements

Soil media relocation restrictions exist, and must be observed. Soil sampling analysis identified criterion exceeding MDEQ Part 201 criteria (Final No Further Action Decision Document Site 13, April 2003, MWH Americas). All soils from the immediate area of IRP Site 13 must remain on site or be properly collected and transported to a licensed disposal facility.

Groundwater media relocation restrictions exist, and must be observed. Groundwater sampling analysis identified criterion exceeding MDEQ Part 201 Criteria (Final No Further Action Decision Document Site 13, April 2003, MWH Americas). All groundwater removed from the immediate area of IRP Site 13 must be properly collected and transported to a licensed disposal facility or groundwater removed from the immediate area of IRP Site 13 can only be discharged into the sanitary sewer when a special discharge permit is obtained. Harrison Township must give approval for this permit because of the media traveling in the sanitary sewer lines through the township sanitary sewer system.

All piping shall be photographed by the Contractor and shall be inspected by the Contractor and COR prior to burying, covering, or concealing. The Contractor shall provide all photographs to the COR in electronic Adobe Acrobat Portable Document Format (PDF).

All underground piping, conduit, and fiber optic lines shall be provided with tracer wire. Tracer wire shall be provided in conformance with UFGS specifications.

2.2.1.4 Grading and Drainage

The proposed site grading shall maintain existing topography while recognizing standard gradients. There shall be a balance of the quantity of cut and fill soils to create a smooth transition of graded areas into the existing natural site. The plan shall reflect selective site clearing that preserves as many trees as possible. Grading and site design shall manage site runoff to maintain rate of flow and quantity to pre-construction levels or reduce site runoff where possible. The principles of positive drainage shall be applied to control the conditions that remove rainfall away from facilities and functions. Site designs shall seek to minimize the disturbance of land and utilize natural drainage paths where possible. Final site design and surface grading shall allow positive drainage at completion of the project and shall allow for changes to the surface due to subsequent years of maintenance.

2.2.1.5 General Site Engineering

Site development associated with Building 1437 consists of the earthwork, paved areas for three automobile parking lots, an unloading access drive, two security access gates, sidewalks, curbs and gutters, sanitary sewer and storm sewer systems. For guidance relating to the site planning and design, refer to UFC 3-210-06A Site Planning and Design. Slopes away from the structures that are part of this project shall be in accordance with UFC 3- 210-06A Site Planning and Design. Contours shall not be used for the grading of any paved access ways or parking areas.

The use of contours for grading is acceptable for turfed areas. Any borrow soil required shall be acquired from an off-site location.

2.2.1.6 Site Survey

A site survey is not included in this RFP Package. The Contractor shall be responsible for conducting a complete site survey. This survey shall include all planimetric features such as buildings, sidewalks, roadways, parking areas (including type such as gravel, paved, concrete, etc.), visible utilities, trees (including trunk diameter), road culverts (including type, size and inverts). Rim, ground surface and invert elevations and pipe sizes at sanitary manholes, cleanouts, storm manholes, inlets and catch basins, location of fire hydrants and water valves, location and type of fences and walls shall be shown.

2.2.1.7 Notification Prior to Excavation

The Contractor shall notify the COR a minimum of 14 calendar days prior to the planned excavation to allow processing. The Contractor shall submit the excavation permit, and obtain approval prior to excavation. The Contractor shall follow the SANG excavation permit process. A copy of the current excavation permit process can be obtained from the COR upon request. The Government will provide courtesy utility identification of known existing underground utilities in the work area. The marked location of the existing utilities is approximate and is a courtesy. Excavation by power driven equipment is not permitted within three (3) feet of either side of the marked utility. Hand excavate each side of the indicated obstruction and continue until uncovered or clearance for the new grade is assured.

The Contractor shall field verify the location of the existing installation utilities in the contract work areas. The Contractor shall hire a proficient subcontractor to locate utilities within excavation, boring, or tunneling area.

For locations of underground facilities, obtain digging permits prior to start of excavation by contacting the Contracting Officer's Representative 14 calendar days in advance. Follow the procedures specified in the contract to obtain excavation permits.

Report damage to underground utilities or subsurface construction immediately to the Contracting Officer's Representative, the SANG Base Operations Contractor, and the SANG Fire Department. Damage to marked or unmarked utilities shall be satisfactorily repaired or replaced by the Contractor at no additional cost to the Government. Repair is defined as permanent, code compliant measures as approved by the Contracting Officer's Representative.

Excavation that interrupts traffic, parking, or pedestrian circulation requires notification to the SANG by contacting the Contracting Officer at least fourteen (14) calendar days in advance.

2.2.1.8 Demolition

This project requires the demolition of some sidewalks that cross the driveways to the parking lots. Any existing light poles that interfere with the new driveways shall be relocated by the Contractor as indicated by the Designer of Record. Any waste excavation shall be disposed of off-site.

2.2.1.9 Sanitary Sewer System

The sanitary sewer system shall consist of a new sized 3-inch service from the building to an existing sanitary sewer service located outside the building. Sewer profiles shall be developed for proper description of the sewer system. The existing sanitary sewer system is shown on the Utility Site Plan.

The new sanitary sewer collection system shall be designed in accordance with UFC 3-240-07FA Sanitary and Industrial Wastewater Collection: Gravity Sewers and Appurtenances and UFC 3-240-09A Domestic Wastewater Treatment.

2.2.1.24 Soil Compaction

Soil compaction shall be achieved by equipment approved by a professional geotechnical engineer. Material shall be moistened or aerated as necessary to provide the moisture content that shall readily facilitate obtaining the compaction specified with the equipment used. Each layer of fill placement shall be no greater than 10 inches

thick. Compact each layer to not less than the percentage of maximum density specified in Table 1, determined in accordance with ASTM D 1557.

TABLE 1 Soil Compaction

Subgrade Preparation, Fills, Embankments, and Backfills	Compaction Requirements (Percentage of Maximum Density)
Structures & Building Slabs	90
Streets, Paved Areas	90
Sidewalks	85
Grassed Areas	80

The requirements shall be verified or modifications recommended by the consulting professional geotechnical engineer in the report wherever engineering, soils, or climatic factors indicate the necessity. Any modification to the stated compaction requirements shall require the approval of the Contracting Officer.

2.2.1.28 Sediment and Erosion Control

Sediment and erosion control plans shall be provided by the Contractor. Diversion dikes and silt fences shall be placed around drainage structures to prevent sediment from entering the existing storm sewer system. Perimeter silt fence shall be placed to prevent sediment from leaving the site via sheet flow.

2.2.1.29 Lawn Establishment

All disturbed areas of the site shall be hydro seeded with a blend of regionally appropriate grass seed, mulch and fertilizer. The hydro seeding mulch shall be spread by machine to cover the soil completely to establish a lawn and prevent erosion.

2.2.2 Drawings

Generally, the corrected and approved 65 Percent Design plans may be used as the basis for the final plans. However, all details necessary for complete construction must be included. The 100 Percent Final Design submittal shall include all the information presented in the 65 percent submittal, updated to final design status and corrected to reflect any changes made in response to review comments. Any concerns in developing the final design documents shall be resolved prior to starting the final design stage.

2.2.2.1 Location Plan and Vicinity Map

A vicinity map consists of a small scale drawing of the project location, similar to a road map. A location plan consists of a small scale drawing showing the Government property or reservation limit with the construction project site shown. The drawing shall show the facility approved Contractor Access and Haul Routes.

2.2.2.2 Survey Plan

The information depicting existing conditions used to generate site drawings shall be shown on this drawing. An engineering survey of the site will be presented to the Contractor selected as a result of this RFP process. Any additional survey information required by the Contractor for design above that shown in the prepared engineering survey shall be procured and paid for by the Contractor.

2.2.2.3 Removal Plan

The removal plan will show the existing physical features and condition of the site before construction. This information shall include the field survey to show all above and below ground utilities; buildings, drives, roads and parking areas, walks, and vegetation; and such facilities as retaining walls, underground storage tanks, and

foundations. Each physical feature to be removed shall be as indicated on the standard legend sheet, a legend on the removal plan, and properly noted; to be removed, to remain, or to be relocated.

2.2.2.4 Site Plan

The site plan shall show all the site layout information necessary to field locate the building, walks, parking lots, and all other appurtenances to be constructed on the project. All site related work to be constructed will be located by dimensions. The site plan will identify all site related items such as: curbs, pavements, walks, plazas, bollards, trash enclosures, and retaining walls in accordance with a standard legend sheet or with additional legends or notes.

Site plans shall be at a scale of 1:250 or 1:300(1 Inch = 20 Feet or 1 Inch = 40 Feet). North arrows shall be oriented the same direction on all plan sheets and by all disciplines. No existing or proposed contours shall be shown on this plan. The site plan, prior to adding the dimensions, shall serve as the base sheet to the other plans; such as, the utilities plan, the grading and drainage Plans, and the landscape plan. The site plan shall show all existing physical features and
utilities within and adjacent to the work site that will remain after the proposed construction has been completed. This plan will also show any free zones, construction limits, and storage areas. Whenever the site plan occupies more than one sheet of drawings, a key plan shall be included. Additional plans, showing specific areas of the site in smaller scales can be included if more detail is necessary.

2.2.2.5 Grading and Drainage Plan

A final grading and drainage plan shall be provided at the same scale as the site plan; 1:250 or 1:300(1 Inch = 20 Feet or 1 Inch = 30 Feet). In addition to the requirements for the preliminary plan, the final plan shall show the final location of all storm drains, culverts, and sub-drains. Storm drainage lines and structures shall be labeled. The rim elevation of all manholes, curb inlets, and area inlets shall be indicated.

2.2.2.6 Composite Utilities Plan

A composite utilities plan shall be provided at a scale of 1 Inch = 20 Feet or 1 Inch = 30 Feet. New and existing utilities shall be indicated. Plans shall show layout of the new and existing storm drainage systems, gas systems, sanitary systems, electrical systems, communication systems, water systems, steam systems, and any other utilities which need to be provided. Include new and existing contours.

2.2.2.14 Erosion Control Details

Provide details of best management practices used to control erosion.

2.2.3 Specifications

Provide complete edited UFGS specifications for all items. For all specific state requirements, provide completely edited MDOT specifications. Technical specifications shall be complete and fully coordinated with the drawings. All specification indexes shall be completely edited to reflect the paragraphs retained in the body of the specification. All references that have not been used in the body of the specification shall be edited from the technical specification.

2.3 GEOTECHNICAL

See Structural Design Requirements.

2.4 ARCHITECTURAL

2.4.1 Technical Requirements

2.4.1.1 Design and Installation Standards and Codes

The architectural design and construction shall conform to the current versions of all applicable Unified Facilities Criteria (UFC). The project architectural design and construction shall be in accordance with the latest edition of the Department of Defense (DoD) Unified Facilities Guide Specifications (UFGS). The design and construction shall conform to all standards and codes referenced in the UFGS specifications under the applicable architectural specification sections.

Major criteria references for building design are listed below (additional requirements are included throughout the UFGS specification sections):

National Fire Codes, published by the National Fire Protection Association (NFPA), including NFPA 101 Life Safety Code

International Building Code (IBC)

UFC 3-600-01 Design: Fire Protection Engineering for Facilities

2.4.1.2 Scope of Work

The work includes completion of architectural design as described herein and as detailed by the Architect Designer of Record.

2.4.1.3 Interior Walls and Partitions

Non-combustible construction shall be provided, even where combustible materials are allowed by code. Wall finish materials shall be as specified in functional and area requirements listed in this specification section.

2.4.1.4 Metal Wall Support Systems

Non-load bearing metal studs and furring for interior walls shall comply with ASTM C 645; stud gauge shall be as required by height and loading, but 20 gauge stud thickness is minimum thickness permissible. Maximum stud spacing is 16 inches on center. Provide galvanized finish. Metal wall support systems shall be provided in accordance with UFGS Specification Section 09 22 00, SUPPORTS FOR PLASTER AND GYPSUM BOARD.

2.4.1.5 Gypsum Wallboard

Comply with ASTM C 1396. Minimum panel thickness shall be 5/8-inch. All gypsum wallboard panels shall be Type X fire-rated panels. Provide moisture resistant panels in toilet room where ceramic tile is used. Joint treatment shall be per ASTM C 475. Screws shall be per ASTM C 1002. Drywall installation shall be per ASTM C 840.

2.4.1.6 Ceilings

Non-combustible construction shall be provided, even where combustible materials are allowed by code. All new acoustical ceiling systems shall be fire resistive ceilings and shall be provided in accordance with UFGS specifications. Ceiling finish materials shall be as specified in functional and area requirements listed in this specification section. Minimum ceiling height shall be 8 feet unless otherwise indicated or shown. New acoustical ceilings shall have a minimum NRC of 0.55, a minimum CAC of 35, and a minimum LR of 0.85.

2.4.1.7 Interior Doors and Frames

Provide flush hollow core metal doors with hollow metal door frames for all interior doors. All frames shall be hollow metal. All new control room and lab doors shall be provided with locksets.

Provide interior door acoustical sound seals along entire perimeter of all interior doors. Sound seals shall consist of silicon or neoprene type jamb and head seals and automatic door bottom seals mortised into the bottom door edge. Provide other hardware as necessary for a complete installation.

2.4.1.8 Hollow Metal Doors

Comply with ANSI A250.8/SDI 100. Doors shall be Level 2, physical performance Level B, Model 2; factory primed. Anchors and accessories shall be zinc coated.

2.4.1.9 Hollow Metal Frames

Comply with ANSI A250.8/SDI 100. Frames shall be Level 2, 16 gauge, with continuously welded corners and seamless face joints; factory primed. Anchors and accessories shall be zinc coated. Frames in masonry shall have bituminous back-coating, plaster guards, and shall be grouted solid.

2.4.1.10 Interior Door Hardware

Interior door hardware shall include the following items. Items not specifically identified shall be provided based on suitability of use, durability, aesthetic character, and cost efficiency. Finishes on hardware shall match throughout facility, shall be coordinated with SID, and shall not be a surface finish that shall rub off with extended use.

2.4.1.11 Interior Door Hinges

Hinges shall comply with ANSI/BHMA A156.1; template, full mortise, heavy duty, ball bearing, minimum size 4-1/2" x 4-1/2", non-ferrous base metal, non-removable pins.

2.4.1.12 Interior Door Locksets

Locksets shall comply with ANSI/BHMA A156.2; series [4000], Grade 1, non- ferrous base metal, removable core. Lever handles shall be provided per Architectural Barriers Act (ABA) Standard for Department of Defense (DoD) Facilities.

2.4.1.33 Interior Door Closers

Closers shall comply with ANSI/BHMA A156.4; series C02000, Grade 1, hydraulic, factory-sized, adjustable to meet field conditions, mounted on interior of doors.

2.4.1.14 Interior Door Auxiliary Hardware

Auxiliary hardware shall comply with ANSI/BHMA A156.16. Provide wall or floor stops and door silencers for all interior doors. Provide other hardware as necessary for a complete installation.

2.4.1.15 Interior Door Kick Plates

Kick plates shall comply with ANSI/BHMA A156.6 and shall be non-ferrous metal. Provide on all doors except closets, janitor closets, and small storage space doors.

2.4.1.16 Exterior Overhead Coiling Door

Exterior overhead doors shall be of the motorized insulated steel rolling door type. The doors shall be in accordance with UFGS Section 08 34 19.10 20, ROLLING SERVICE AND FIRE DOORS with the following requirements and options:

Curtains: Bottom Bar: Attach a combination compressible seal and fail-safe safety device for stopping and reversing the travel of the door to the bottom bar of doors that are electric-power operated.

Hoods: Hoods for openings more than 12 feet in width shall have intermediate supporting brackets. Provide a weather baffle at the lintel or inside the hood of each exterior door.

Locking Devices: Electric Operation/ Operator Features: Provide operators complete with electric motor, machine-cut reduction gears, steel chain and sprockets, magnetic brake, overload protection, brackets, pushbutton controls, limit switches, magnetic reversing contactor, and other accessories necessary for proper operation.

Minimum interior finishes are indicated in this specification for each space in the project. Items not specifically identified shall be coordinated in the SID and provided based on suitability of use, durability, and aesthetic character.

2.4.1.17 Ceramic Tile

Ceramic tile shall comply with ANSI A 137.1, Section 6.3. Installation shall follow the recommendations of Tile Council of America (TCA) Handbook for Ceramic Tile Installation.

Mounting of 2-inch x 2-inch tiles shall require factory mounting. Grout release shall be used. Provide cultured marble thresholds under doors where a ceramic tile floor meets a different floor finish. Substrate for wall tile shall be mortar setting bed or cement backer board; gypsum board shall not be used as a substrate for wall tile. Ceramic tile shall be provided in accordance with the SANG Vision 2020.

Paver tile shall comply with ANSI A 137.1. Installation shall follow the recommendations of Tile Council of America (TCA) Handbook for Ceramic Tile Installation. Paver tile shall have a smooth finish to resist trapping dirt and shall have a coefficient of friction, wet of 0.60. Paver tile shall be minimum 12" x 12". Paver tile shall be provided in accordance with the SANG Vision 2020. Paver tile shall be provided in accordance with UFGS Specification Section 09 30 00, CERAMIC TILE, QUARRY TILE, AND PAVER TILE.

2.4.1.18 Epoxy Floor

Hover Wells, REZ-STONE 9327 Three coat epoxy and urethane floor system. Color: #432 Gray, Texture: #36 Light

2.4.1.19 Vanities for Toilets, Restrooms, and Locker Rooms

Sinks provided for restroom shall be wall-hung. Exposed piping at accessible lavatories shall be insulated in conformance with Architectural Barriers Act (ABA) Standard for Department of Defense (DoD) Facilities.

2.4.2 Drawings

The drawings shall be complete, include all necessary and required details, shall be thoroughly checked, and shall be fully coordinated with the technical specifications and all other construction documents. Previous comments and applicable criteria changes shall have been incorporated into the design. Removal work and details shall be shown on separate drawings. The contract drawings shall fully describe the type and the scope of work required. The layout of individual sheets and the organization of the assembled set shall follow and communicate a logical sequence. General information shall be presented first which shall then progress to more detailed information. When assembling details, begin in the upper left-hand corner of the sheet and have letters progress to the right and down. When dimensioning, use arrowheads, not dots or slashes. Where major structural elements are included as parts of architectural detailing do not indicate sizes. These elements must be fully defined in the structural design documents.

Provide drawings listed below (in addition to drawings required by the Designer of Record):

Floor Plans
Reflected Ceiling Plans and Ceiling Details
Door Details
Window Details

Wall Plan Details and Sections
Fire Wall Details and Penetration Conditions
Fire Protection Plans

2.4.2.1 Floor Plans

Provide a double line composite floor plan of the entire building, drawn at the largest scale practicable to include the entire building on a single sheet. This building is of a size that will require the floor plans to be divided into multiple areas. Floor plans shall essentially be complete with the exception of large scale detail referencing. Floor plans shall be scaled double-line drawings showing the functional arrangement and location of all openings and plumbing fixtures, all section cuts, wall types, all notes and leaders, all general notes, and all dimensions. The plans shall indicate door swings, door numbers and window type; door and window schedules are required. A north arrow shall be shown on each floor plan. Enlarged toilet and stair plans shall also be included. The first composite plan sheet shall include a gross area tabulation comparing the actual square feet with the authorized square feet of the facility. The Architect Designer of Record suggestions for plan improvement shall be fully shown and justified. Include the following:

Overall, control, and door and window opening dimensions
Match lines for combining individual portions of floor plans
Room names and numbers
Structural column or bay indicators
Wall and building section cuts
Door swings and door numbers Window types
Area in square feet
General notes

When dimensioning, use arrowheads, not dots or slashes. Where major structural elements are included as parts of architectural detailing the sizes shall not be indicated. These elements shall all be fully defined as part of the structural design documents. Major elements of mechanical and electrical equipment affecting room size or shape, shall be shown on the architectural plans to a practicable extent and coordinated with other respective disciplines. When applicable, Government furnished and contractor installed items or Government furnished and Government installed items shall be shown as dashed lines.

2.4.2.2 Reflected Ceiling Plans

Reflected ceiling plans shall be complete including all notes, complete legends, and all materials to be used. Reflected ceiling plans shall be provided for all spaces in the building. Reflected ceiling plans shall show the ceiling tile layout and location of gypsum wallboard and other ceiling types. All light fixtures, air diffusers, grilles, registers, PA speakers, sprinkler heads, smoke and heat detectors, and other ceiling mounted items shall also be shown on the reflected ceiling plans. The fixtures and other equipment shall be laid out in a regular pattern symmetrical with the ceiling tile grid or symmetrical with the room centerlines, columns, windows, or other features that dominate. All ceiling mounted items shown shall be fully coordinated with all other disciplines.

2.4.2.3 Room Finish Schedules

Room finish schedules for each room in the project area shall be provided to include flooring type and color, base type and color, wall type and color, ceiling type and color, and all other necessary information as determined by the Designer of Record.

2.4.2.4 Door and Window Schedules

Schedule shall include door and frame types, except referencing to door details and hardware sets. Window schedules shall be complete including window types except referencing to details.

2.4.2.5 Fire Ratings

Wall ratings and fire hazards shall be clearly indicated as required by fire protection criteria. Wall fire ratings shall be graphically shown by a continuous symbol within the wall on a fire protection and life safety plan. When other functions coexist with the fire protection functions, their integration shall be clearly indicated, with an analysis that describes how both functions will be served. Provide a separate composite type floor plan which makes an accurate presentation of these various features and functions.

2.4.2.6 Drawing Scales

Architectural work shall be drawn at the scales listed below. Other scales may be used only by written authorization through the Contracting Officer's Representative (COR). Units of measurements shown on the drawings shall be done in English units. All disciplines shall use the same scale for plan sheets.

The following is a comparison guide to establish equivalent scaling of drawings:

Composite Plans (Note 1)	Varies
Floor Plans	1/4-Inch = 1'-0"
Reflected Ceiling Plans	1/8-Inch = 1'-0"
Detail Plans (Note 2)	1/2-Inch = 1'-0"
Roof Plans	1/8-Inch = 1'-0"
Details (Note 2)	3-Inches = 1'-0"
Wall Types	3/4-Inch = 1'-0"
Fire Protection Plans (Note 1)	(Varies)

Notes:

1. Scale of composite plan shall be as required so that the entire facility is drawn on one sheet without break lines.

2. The goal of this requirement is that the details be large enough to show all fixtures, accessories, equipment, materials, manner of construction, clearances required for proper maintenance, and complete dimensions. Toilet rooms and equipment rooms are examples of the kind of spaces which shall be drawn as a detail plan.

2.4.2.7 Legends

Standard architectural material symbols used on the drawings shall be provided as a separate architectural legend drawing located just in front of the architectural drawings in the set. Additional material symbols shall be added to the legend sheet for the project.

2.4.2.8 North Arrows

North arrows shall be oriented the same direction on all plan sheets and by all disciplines; including site and civil drawings. Plan north shall be "up" or to the left on the drawings. Indicate true north on composite plan drawings.

North arrows shall be located approximately at the same location on all sheets.

2.4.2.9 Modular Design

Modular Design practices shall be followed in the design of all masonry buildings or components of buildings. Dimensions shall be figured to whole or half-unit lengths of standard units in order to reduce on-site cutting of masonry.

2.4.2.10 Symbols

The room and door numbering system shall be consistent. The standard symbols for amendments (a triangular box) or modifications (a type of circular box) to the contract shall not be used for any other purpose, and care must be taken to avoid using even similar appearing but technically different symbols.

2.4.2.11 Schedules

Schedules for room finish, doors, windows, and louvers shall be clear and complete. As many columns as necessary shall be provided in order to present the essential information. The "Remarks" column shall not be used as a substitute for an information column. Normally a single item shall be presented on each schedule line. Other scheduling methods as standard with the Design-Build Contractor may be used if approved by written authorization from the COR.

Color schedule, in accordance with UFGS Specification Section 09 06 90, shall be provided. Color references shall include the manufacturer, pattern name (when applicable), and color name of the finish (example: Vinyl Composition Tile: XYZ Co., Pattern Stonegate, Color Tourmaline #136). The Color Schedule may contain a reference to another specification section where the color is designated. (Example: Signage: See Section 10 14 02 INTERIOR SIGNAGE for color). When multiple colors of the same material are specified, add finish color codes and notes within the color listing to identify location of different material colors. For instance, Vinyl Composition Tile (VCT-1): XYZ Co., Pattern Stonegate, Color Shale #18 shall be located in offices and Vinyl Composition Tile (VCT-2): XYZ Co., Pattern Stonegate #39, Color Grey shall be located in storage rooms. To further clarify location of finish colors used in floor and wall patterns or other details, use the finish color code in the specification and on the drawings as a cross-reference tool.

2.4.2.12 Notes

Notes may be placed on drawings to reduce the amount of repetitive drafting, provided that clarity is not lost. General notes shall be placed at the right-hand edge of the sheet and, if possible, shall be located on the first sheet in the set. Notes that pertain to each drawing, however, shall be placed on each drawing.

2.4.2.13 Dimensions

Dimensions must be complete, accurate and fully coordinated. Dimensions shall be to points easily measurable in the construction and shall be laid out to eliminate refiguring in the field.Dimensions shall be tied-in to column lines, and other similar building elements, to facilitate checking. Plan dimensions for frame construction shall be to face of stud for exterior walls, to one face of stud for interior partitions, and to centerline of openings. For masonry construction, dimensions shall be to one or both nominal faces of masonry and to jambs of openings.

2.4.2.14 Facility Elevation

The level of finished floor shall be indicated as EL. = 100 000. Elevations for footings, and other similar building elements, shall be related to this figure. Sea level elevations shall not be shown on the building drawings.

2.4.2.15 Access to Utilities

All utilities within the building, such as piping, ductwork, electrical work, shall be concealed in finished areas. Provide plumbing chases in toilet areas. The clear space above ceilings and the size of chases must be carefully figured to accommodate piping slopes and connections, ductwork crossovers, and similar situations. Access must be provided to valves, cleanouts, and other similar appurtenances. Space provided for utility systems must be adequate but shall not be excessive.

2.4.3 Specifications

The technical specifications shall be complete and fully coordinated with the drawings. Special sections shall be prepared to cover those subjects for which no pattern guide specifications are available. Notes to the designer that accompany specifications shall be used in editing technical guide specifications. All specification indexes shall be completely edited to reflect the paragraphs retained in the body of the specification. All UFGS specifications shall be edited in accordance with the requirements stated in this RFP.

2.4.4 Common Deficiencies

Some repeated errors have occurred in the preparation of design documents in the past. Subsequently these errors have been identified and the Contractor directed to make corrections. The work involved in such corrections becomes lost effort and time for the designer. The Contractor shall:

a. Use correct abbreviations or terminology on the drawings. Abbreviations must match what is used on the standard abbreviation sheet and terminology must match what is used in the standard technical guide specifications.

b. Use the correct scales, north arrow designation, section cut system, or incomplete dimensioning on the drawings.

c. Provide sufficient space for door operation hardware at doors which swing into a wall running perpendicular to the opening.

d. Correctly present or coordinate (to avoid interference) features of
Fire Protection..

e. Correctly reference and cross-reference building sections, wall sections, and details.

f. Read and use technical notes in editing the Technical Guide Specifications.

g. Coordinate all disciplines prior to submittal of projects for review.

h. Properly use fire-retardant wood. Fire-retardant wood is combustible; its use in buildings that are of noncombustible construction is extremely limited (see the International Building Code (IBC) for the minor allowable uses). Because of the potential for severe degradation, fire retardant plywood shall not be used in a roof or roofing system, or in structural applications.

i. Correctly list trade names in door hardware specifications in lieu of ANSI numbers and correctly specify hardware finishes.

j. Show control joints in CMU walls and brick expansion joints in face brick on architectural plans, elevations, and structural plans. Note control joint locating and coordination for floor tile per Tile Council of America recommendations.

k. Delete all publications which do not apply to the particular project.

l. Orientate north the same direction on all sheets.

2.5 STRUCTURAL

2.5.1 Technical Requirements

2.5.1.1 Design and Installation Standards and Codes

The structural design and construction shall conform to the current versions of all applicable Unified Facilities Criteria (UFC). The project structural design and construction shall be in accordance with the latest edition of the Department of Defense (DoD) Unified Facilities Guide Specifications (UFGS). The design and construction shall conform to all standards and codes referenced in the UFGS specifications under the applicable structural specification sections.

Major criteria references for building design are listed below (additional requirements are included throughout the UFGS specification sections):

International Building Code, IBC

Building Code Requirements for Structural Concrete and Commentary, American Concrete Institute (ACI) 318

Building Code Requirements for Masonry Structures and Specifications for Masonry Structures and Commentaries, ACI 530

Steel Deck Institute Design Manual

2.5.1.2 Scope of Work

The work includes completion of structural design as described herein and as detailed by the Structural Designer of Record.

No particular structural system is selected or recommended by the Government; therefore, the structural design is the Contractor's responsibility within the parameters given in this section.

The criteria established herein shall be used for the determination of structural loads, the analysis and design of all structural systems, and the construction of all structural systems. All structural calculations shall be checked and initialed by a registered engineer other than the original design engineer. Construction documents (drawings and specifications) shall be sealed and signed by a professional engineer registered to perform work in the jurisdiction.

2.5.1.3 Minimum Live Load Requirements

Minimum live load requirements shall be computed using the project design standards, codes and criteria, but shall not be less than the following:

First Floor Corridors 100 psf

2.5.1.4 Concrete

All structural reinforced concrete shall be normal weight. The 28-day minimum ultimate compressive strength shall be 4000 psi. Calcium chloride shall not be used in any concrete. All concrete exposed to weather shall be air-entrained.

2.5.1.5 Concrete Masonry Units

The compressive strength of masonry on the net area shall be 1500 psi.

2.5.1.6 Concrete Masonry Grout

The 28-day minimum compressive strength of grout used in masonry shall be 2000 psi.

2.5.1.7 Reinforcing Steel

Reinforcing steel shall be Grade 60 and conform to ASTM A615 or A706.

2.5.1.8 Structural Steel

Structural Steel shall conform to the following specifications:

Steel Deck ASTM A653, 33 ksi

2.5.1.9 Joints in Slabs (Contraction Joints)

Contraction joints, whether sawed, grooved, or preformed, shall extend into the slab to a depth of one-fourth the slab thickness.

2.5.1.10 Joints in Walls (Contraction Joints)

Reinforced Masonry Walls: Joints shall be placed at the greater of 24 inches or 40 bar diameters from the edge of an opening. Joints shall not be placed at the edges of openings. The maximum spacing of joints in masonry walls shall be as specified in the following tables:

TABLE 2 Spacing for Joints in CMU Walls

Vertical Spacing of Joint Reinforcement(2-#9 Wires) (in)	Maximum Ratio of Panel Length To Wall Height (L/H)	Maximum Spacing Of Contraction Joints (ft)
Unreinforced	2	18
16	3	24
8	4	30

Notes: 1. These spacings are based on moisture-controlled, type 1, concrete masonry in intermediate humidity conditions (ASTM C 90). The designer shall adjust the joint spacing for local conditions. The recommended spacing may be increased 6 ft in humid climates and decreased 6 ft in arid climates.

2. Joint reinforcement shall be cold-drawn deformed wire with a minimum 9- gage longitudinal wire size.

3. L is the horizontal distance between joints. H is generally the vertical distance between structural supports.

4. The spacing shall be reduced 50% near masonry-bonded corners or other similar conditions where one end of the masonry panel is restrained.

5. Unreinforced walls are not recommended for walls exposed to view where control of cracking is important.

TABLE 3 Maximum Spacing of Vertical Expansion Joints in Brick Walls

Expansion Joint Width (in)	W x in	Maximum Spacing of Joints
3/8	3/16	22
1/2	1/4	30
3/4	3/8	44
1 (max)	1/2	60

Notes: 1. Provide expansion joints at 6 to 10 ft from corners.

2. Recommended joint locations:

a. At regular intervals as noted in table above.

b. At changes in wall height or thickness.

c. Near wall intersections in "L", "T", and "U"-shaped buildings at approximately 6 to 10 ft from corners.

d. At points of stress concentration. e. At edges of openings.

2.5.1.11 Joints in Slabs (Construction Joints)

Construction joints shall be butt-type with continuous reinforcing through the joint, butt-type with dowels, or butt-type with tie bars.

2.5.1.12 Joints in Walls (Construction Joints)

Wall construction joints shall not detract from the appearance of the structure. Joints shall be inconspicuous or hidden by rustification strips. Rustification strips shall be V-shaped, rectangular, or beveled. In reinforced masonry walls, joints shall be placed at the greater of 24 inches or 40 bar diameters from the edge of an opening. Joints shall not be placed at the edges of openings.

2.5.1.13 Joint Material (Isolation Joints)

Isolation joint fillers shall consist of 1/8" thick strips of neoprene, synthetic rubber, or approved substitute, extending the full depth of the slab.

Expansion/Contraction joint filler shall consist of minimum 1/2" premolded material.

Bituminous joint fillers are suitable for use with hot-applied elastic or cold-applied mastic joint sealing compound. Provide nonextruding and resilient bituminous type filler strips conforming to ASTM D1751.

Nonbituminous joint fillers are suitable for use with cold-applied elastomeric polymer sealing compound. Provide nonextruding and resilient nonbituminous type filler strips conforming to ASTM D1752, Type I or II.

2.5.2 Drawings

Final drawings shall be complete, thoroughly checked, and fully coordinated with the other disciplines, other specifications, and all other construction documents. Previous comments and applicable criteria changes shall have been incorporated into the design. The drawings shall be complete with all plan view drawings, elevations, sections, details, schedules, diagrams, and notes necessary for the construction of the project. Drawings shall be at a scale appropriate for the design, in no case, however, shall plan type drawings be done at a scale smaller than (1/8" = 1'-0")1:100 or detail type drawings at scale smaller than (1/2" = 1'-0")1:20.

2.5.2.1 Elevation Views, Sections, and Details Sheets

Elevation views, sections, and details necessary to illustrate the design fully shall be provided. Some requirements peculiar to the various structural materials are described below.

a. Concrete

Drawings shall include elevation views as necessary, plus, sections and details to show the outlines of concrete cross-sections, reinforcing bar arrangements, concrete cover for rebar, installation of embedded items, and joint construction. All lap splice and embedment lengths for reinforcing bars shall be clearly indicated on the drawings. A sill detail for each foundation condition at exterior and interior doors shall be provided.

b. Masonry

Wall reinforcing shall be located and identified on plans, in section cuts, elevation views, or in schedules. Structural elevations shall be included to clarify the construction requirements for masonry reinforcement, especially the reinforcement around wall openings. Details applicable to the project shall be shown on the structural drawings. Listed below are some frequently required masonry details, most of which are shown in UFC 3-310-05A, Masonry Structural Design for Buildings. Additional details as required shall be extracted from other sources and incorporated into the final drawings. All details shall be fully edited to reflect the specific requirements of this project. Supplemental details shall be added as necessary to complete the design.

Masonry Details Frequently Used

- Masonry Control Joint (MCJ)

- Brick Expansion Joint (BEJ)
- Control Joint at Bond Beam
- Bond Beam Corner Reinforcement
- Wall Reinforcement Details for l and/or 2 Bar-per-Cell Stiffeners
-Doweled or Other Connection of Masonry to Foundation, Floor, Roof, or Bond Beam
- Bond Beam (or Steel) Lintels and Bearing Details
- Lateral Support Detail for Top of Masonry Partition Walls (lateral support locations must be shown on framing plan sheets)

c. Steel Decking

Notes, details, or schedules on the drawings shall indicate the steel deck attachment method to be used and shall give the size and spacing for perimeter, side lap, intermediate supports and end lap attachments.

2.5.2.2 Notes

a. Design Notes

To be listed are the ASTM designations and stress grades of the applicable structural materials: structural steel, masonry, cold-formed metal framing, concrete for each usage, reinforcing bars, welds, and bolts.

b. General Notes

Other notes, which direct the work to be performed and the materials to be used shall be grouped under the heading of "General Notes."Included in these notes shall be a description of the building's structural system, if necessary.

2.5.3 Specifications

Technical specifications for final design shall be prepared in accordance with the instructions stated in this RFP. The technical specifications shall be complete and fully coordinated with the drawings. All specification indexes shall be completely edited to reflect the paragraphs retained in the body of the specification. All references that have not been used in the body of the specification shall be edited from the technical specification.

2.6 PLUMBING

2.6.1 Technical Requirements

2.6.1.1 Design and Installation Standards and Codes

Plumbing systems shall be designed and installed in accordance with UFC 3-420-01 Plumbing Systems, the International Plumbing Code, and in accordance with UFGS Specification Section 22 00 00 PLUMBING, GENERAL PURPOSE.

2.6.1.2 Scope of Work

The work includes completion of plumbing system design and construction to provide completely functional plumbing systems as described herein and as detailed by the Plumbing System Designer of Record. The plumbing scope of work shall consist of, installing an air compressor system, compressed air piping with hose reel, installing a 2 gallon hot water heater, 2 hose bibs with new cold water lines, water closet, lavatory including all associated piping, valves, sanitary sewer line, vent and accessiors.

2.6.1.3 Specific Requirements

All abandoned plumbing systems, equipment, piping, equipment pads, and any other abandoned plumbing system component within the project area boundaries shall be removed.

All piping shall be photographed by the Contractor and shall be inspected by the Contractor and COR prior to burying, covering, or concealing. The Contractor shall provide all photographs to the COR in electronic Adobe Acrobat Portable Document Format (PDF).

Match the pipe material when tapping into existing plumbing piping.

Design and construction shall be in accordance with the Safe Drinking Water Act. Design and construction shall be in accordance with "Reduction of Lead in Drinking Water Act."

2.6.1.4 Equipment

Plumbing equipment to be installed in this project shall be in accordance with the requirements of UFGS Specification Section 22 00 00 PLUMBING, GENERAL PURPOSE.

2.6.1.5 Fixtures

Plumbing fixtures for this project shall be provided in accordance with the requirements of UFGS Specification Section 22 00 00 PLUMBING, GENERAL PURPOSE. Provide service valves at each fixture.

All new water closets shall be floor mounted dual-flush water closet and flush valve combination type and shall be provided in accordance with UFGS Specification Section 22 00 00 PLUMBING, GENERAL PURPOSE. All new dual- flush valve water closets shall provide 1.6 gallons per flush with a second flushing water volume not to exceed 1.1 gallons per flush.

2.6.1.6 Non-Water Use Urinals

Not Used

2.6.1.7 Piping Systems

Piping for the plumbing systems and compressed air piping shall be provided as required by UFGS Specification Section 22 00 00 PLUMBING, GENERAL PURPOSE and as specified below (flush all piping):

Piping System	Material	Type	Joining
Domestic Water, Above Ground	Copper	Type L	95-5
Domestic Water, Underground	Copper	Type K	Seamless

Underground waste piping shall be cast iron, hub and spigot. If an existing pipe is planned to be tapped then the new underground waste piping shall match the existing pipe material.

Aboveground waste pipe shall be cast iron, hubless. If an existing pipe is planned to be tapped then the new aboveground waste piping shall match the existing pipe material.

2.6.1.8 Piping Insulation

Insulation for the plumbing systems shall be installed in accordance with the requirements of UFGS Specification Section 22 07 19 PLUMBING PIPING INSULATION and UFGS Specification Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS.

2.6.2 Plumbing Drawings

The design drawings shall be fully coordinated with the design analysis and specifications. Depict all items to be removed, for instance, plumbing piping and any other plumbing system components, on plumbing demolition drawings. Unless otherwise indicated, all floor plans shall be drawn at (1/8" = 1'-0")1:100 scale and shall show all room names and numbers. Sheet reference number sequencing shall be in accordance with the U.S. National CAD Standard requirements.

An index sheet identifying all plumbing drawings shall be provided. The index shall include drawing design file numbers, drawing numbers, sheet numbers, and drawing descriptions.

A plumbing abbreviation, legend, and general notes sheet shall be provided. This sheet shall include all plumbing abbreviations and symbols that will be used on the drawings. Symbols shall be grouped into sections.

Design drawings shall include the following (in addition to drawings required by the Designer of Record):

a. Plumbing Plans

Plumbing plans showing the design and tentative layout of the domestic hot and cold water distribution systems, make-up water piping, soil, waste, vent piping, and storm water drainage systems shall be provided. Plans shall show all anticipated routing of piping systems from the connections within the structure to a point 5 feet outside the structure. The grade of all drain lines shall be calculated and invert elevations established. All electrical panels and equipment and pertinent HVAC equipment (expansion tanks, boilers, air handling units (AHU's), pumps, lawn sprinkler systems, etc. shall be outlined in half-tone on the plumbing plans. Plans may combine building areas and be drawn at (1/8" = 1'-0")1:100 scale as long as legibility is not compromised. Plumbing fixtures and drains shown on the drawings shall be designated by the same identification system used in the technical specifications and plumbing fixture schedule.

b. Enlarged Mechanical Room Plumbing Plan

An enlarged mechanical room plumbing plan drawn at a minimum (1/4" = 1'-0")1:50 scale shall be provided. The plan shall show layout of all plumbing equipment and piping within the rooms. In addition to all the plumbing systems required, the plan shall show half-toned outlines of all HVAC equipment located in the room, gas service, lawn sprinkler apparatus', the fire protection entrance and risers, and the outline of any electrical panels or equipment located in the room.

c. Plumbing Detail and Schedule Sheet

The following details shall be provided: water heaters and water service entrance. A plumbing fixture schedule and a water heater schedule shall be provided.

d. Enlarged Toilet Room Plans

Enlarged toilet room plans showing all fixtures, water, waste, and vent piping shall be provided for each toilet area. Enlarged plans shall be drawn at a minimum (1/4" = 1'-0")1:50 scale.

2.6.3 Specifications

The Contractor's plumbing engineer shall provide edited UFGS DIVISION 22 – PLUMBING specifications. Technical specifications for final design shall be prepared in accordance with the instructions stated in this RFP. The technical specifications shall be complete and fully coordinated with the drawings. All specification indexes shall be completely edited to reflect the paragraphs retained in the body of the specification. All references that have not been used in the body of the specification shall be edited from the technical specifications.

2.6.4 Design Analysis Narrative

The design analysis shall contain a description and analysis of the plumbing system design. Special features and unusual requirements shall be noted.

2.6.5 Design Analysis Calculations

Detailed calculations for the plumbing systems shall be included in the Design Analyses.

Hot water heater design shall be based on the methods described in the American Society of Plumbing Engineers (ASPE) Volume I, Fundamentals of Plumbing Design. Submit calculations for determining storage capacity and recovery rate. Hot water delivered to toilet facilities shall not exceed 100 F and hot water delivered to showers shall not exceed 110 F. A hot water circulating system shall be designed for all hot water systems.

Piping design shall be based on UFC 3-420-01 Plumbing Systems and the International Plumbing Code for domestic water, sanitary waste, and vent piping. All domestic water piping shall be sized in accordance with methods outlined in UFC 3-420-01 Plumbing Systems and the International Plumbing Code and limit the water velocity in the pipe to a maximum of 8 ft/sec for cold water and 5 ft/sec for hot water. An isometric diagram of the water system shall be included in the design submittal. An isometric diagram of the sanitary sewer system (including vent piping) shall be included in the design submittal.

2.7 HEATING, VENITILATING, AND AIR-CONDITIONING (HVAC)

2.7.1 Technical Requirements

2.7.1.1 Design and Installation Standards and Codes

The HVAC design and installation shall conform to the current versions of all applicable Unified Facilities Criteria (UFC), the International Mechanical Code, National Fire Protection Association (NFPA) 90A Standard for the Installation of Air-Conditioning and Ventilating Systems, the National Electrical Code, and ASHRAE Standard 62.1 Ventilation for Acceptable Indoor Air Quality. All new heating, ventilating, and air-conditioning (HVAC) systems and equipment shall conform to the Energy Policy Act (EPAct) of 2005. The selection of new HVAC systems shall be based on life cycle cost analysis. The project HVAC design and construction shall be in accordance with the latest edition of the Department of Defense (DoD) Unified Facilities Guide Specifications (UFGS). The design and installation shall conform to all standards and codes referenced in the UFGS specifications.

2.7.1.2 Scope of Work

The work includes completion of HVAC system design and construction to provide completely functional HVAC systems as described herein and as detailed by the HVAC System Designer of Record. The HVAC work shall consist of 1 exhaust unit with ductwork for the toilet room, 1 exhaust system to serve the fire box and 1 three ton AC to serve the control room.

2.7.1.3 Specific Requirements

All ductwork and piping shall be photographed by the Contractor and shall be inspected by the Contractor and COR prior to burying, covering, or concealing. The Contractor shall provide all photographs to the COR in electronic Adobe Acrobat Portable Document Format (PDF). Floor or ground placed HVAC equipment shall be mounted on equipment pads. The Contractor shall provide temporary heating, cooling, and ventilation to all occupied spaces during construction.

All new air-conditioning condensate water shall discharge to the storm sewer system in accordance with Harrison Township.

Only equipment utilizing refrigerants listed by the U.S. Environmental Protection Agency (EPA) Strategic New Alternatives Program (SNAP) are acceptable. Equipment must be labeled with type of chemical used and date installed.

All new or relocated space temperature sensors shall be installed in locations that are accessible and provide a good representation of the space temperature. Space temperature sensors shall not be placed near heat sources; such as, copy machines, or locations by supply air outlet drafts. Mount the center of the space temperature sensor 54-inches above the floor to meet ABA requirements. Space temperature sensors shall not be placed behind furniture partitions which obstruct the sensor.

The indoor design temperature for comfort cooling shall be sized for 72°F. The indoor temperature set-point for comfort cooling shall be 74°F. The indoor design temperature and set-point for comfort heating shall be 72°F. The unoccupied heating indoor temperature for administrative office type occupancies shall be 55°F. The unoccupied cooling indoor temperature for administrative office type occupancies shall be 85°F.

2.7.1.4 Ventilation Air

Ventilation air quantities shall be calculated using the Indoor Air Quality Procedure outlined in the current version of ASHRAE Standard 62.1 Ventilation for Acceptable Indoor Air Quality. Ventilation air for mechanical rooms shall be introduced into the space using supply fans. Mechanical room supply fans shall be operated by a thermostat so that the fan operates when the space temperature rises above 85ºF. Storage areas shall be ventilated using air intake louvers with exhaust fans controlled by a thermostat so that the fan operates when the space temperature rises above 85ºF. Toilets, lockers, and utility closets shall be at a negative pressure relative to adjacent areas by exhausting air transferred from these adjacent areas to the outdoors. Where possible, the heating equipment capacity or energy consumption shall not be increased by these areas.

2.7.1.5 Air Distribution Central Equipment

Air handling units and exhaust fans shall be installed in accordance with the requirements of UFGS Specification Section 23 00 00 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM.

2.7.1.6 Central Heating Equipment

Not Used

2.7.1.7 Liquid Chillers

Not Used

2.7.1.8 Cooling Towers

Not Used

2.7.1.9 Dry Coolers

Not Used

2.7.1.10 Air Distribution Systems

Ductwork and ductwork components (including diffusers, registers, and grilles) shall be installed in accordance with the requirements of UFGS

Specification Section 23 00 00 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM.

Take-offs shall be SMACNA 45° take-offs (spin-in types are not acceptable). Volume dampers shall be provided at all take-offs. Ductwork pressure class and sealing requirements are 2-inch minimum. Conform to SMACNA ductwork construction standards.

Provide flexible duct in accordance with UFGS requirements. Flexible ductwork length shall not exceed 5 feet. For round/oval ducts, secure the flexible material by, stainless steel or zinc-coated, iron clinch-type draw bands. For rectangular ducts, install the flexible material locked to metal collars using normal duct construction methods.

Supply air diffuser noise criteria (NC) rating shall not exceed 30 in administrative areas, offices, and conference rooms.

2.7.1.11 Hydronic Distribution Systems

Pumps, air separators, expansion tanks, and miscellaneous specialties shall be installed in accordance with the requirements of UFGS Specification Section 23 52 00.00 10 WATER AND STEAM HEATING; GA OR BOTH; UP TO 20 MBTUH and UFGS Specification Section 23 64 26 CHILLED, CHILLED-HOT, AND CONDENSER WATER PIPING AND ACCESSORIES.

2.7.1.12 Piping Systems

Piping systems shall be installed in accordance with the requirements of UFGS Specification Section 23 52 00.00 10 WATER AND STEAM HEATING; GA OR BOTH; UP TO 20 MBTUH, UFGS Specification Section 23 64 26 CHILLED, CHILLED- HOT, AND CONDENSER WATER PIPING AND ACCESSORIES, and UFGS Specification Section 23 00 00 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM and based on the material, type, and joining specified below (all piping shall be flushed):

Piping System	Material	Type	Joining
Heating Water	Copper	Type L	95-5
Refrigeration	Copper	Type ACR	95-5

2.7.1.13 Insulation

Pipe, ductwork, and equipment insulation shall be installed in accordance with requirements of UFGS Specification Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS.

All new refrigerant piping shall be insulated with rubber insulation with UV protection.

2.7.1.14 Direct Digital Control (DDC) System

Not Used

2.7.1.15 Testing, Adjusting, and Balancing

Testing, adjusting, and balancing of each HVAC system shall be accomplished in accordance with the requirements of UFGS Specification Section 23 05 93.00 10 TESTING, ADJUSTING, AND BALANCING OF HVAC SYSTEMS.

2.7.1.16 Commissioning

Commissioning of all HVAC systems and equipment, including controls, shall be in accordance with the requirements of UFGS Specification Section 23 08 00.00 10 COMMISSIONING OF HVAC SYSTEMS.

The Commissioning Agency shall be independent from the Mechanical Contractor.

2.7.1.17 Training

The Contractor shall conduct a training course for the operating of all HVAC operating systems and individual items of equipment in accordance with the requirements of UFGS Specification Section 23 52 00.00 10 WATER AND STEAM HEATING; GAS OR BOTH; UP TO 20 MBTUH, UFGS Specification Section 23 64 00.00 10 LIQUID CHILLERS, UFGS Specification Section 23 00 00 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM, and UFGS Specification Section 23 09 23 DIRECT DIGITAL CONTROL FOR HVAC AND OTHER LOCAL BUILDING SYSTEMS.

2.7.2 HVAC Drawings

The design drawings shall be fully coordinated with the design analysis and specifications. Depict all items to be removed, for instance, HVAC equipment, chilled water piping, ductwork, HVAC systems and components, and any other HVAC system components, on HVAC demolition drawings. Provide plans, piping diagrams and isometrics, mechanical room sections, water and air flow diagrams, details, schedules, control diagrams, sequences of operation, and other applicable details as necessary to define the design requirements. Large-scale plans of congested areas shall be provided. Coordinate with architectural design for provision of access panels for all concealed valves, traps, and air vents. Floor plans shall use the architectural floor plans as a basis, with the building outline half-toned. Unless otherwise indicated, all floor plans shall be drawn at (1/8" = 1'-0")1:100 scale and shall show all room names and numbers. An exception to this are administrative areas being air-conditioned shall be (1/4" = 1'-0")1:50 scale and mechanical room plans shall be (1/2" = 1'-0")1:20 scale. Sheet reference number sequencing shall be in accordance with the U.S. National CAD Standard requirements.

Show on mechanical HVAC drawings, all items of mechanical equipment, including boiler room equipment, HVAC equipment layout, air handling units, air distribution and exhaust systems, and any other applicable HVAC equipment to determine proper space allocation within the intent of the architectural layout requirements. Plans, elevations, and sections shall be developed to insure that major equipment items, piping, and ductwork cause no interference with structural members, electrical equipment, or other
building or system elements.

An index sheet identifying all HVAC drawings shall be provided. The index shall include drawing design file numbers, drawing numbers, sheet numbers, and drawing descriptions.

An HVAC abbreviation, legend, and general notes sheet shall be provided. This sheet shall include all HVAC abbreviations and symbols that will be used on the drawings. Symbols shall be grouped into sections.

All existing exterior mechanical utilities and utilities which are to be removed shall be indicated on the Site Removal Plan located in the civil section of the drawing package.

All existing and new mechanical utilities shall be indicated on the Site Composite Utilities Plan located in the civil section of the drawing package. The location of existing exterior utilities shall be thoroughly checked and indicated on plans and profiles, thus preventing interference with new services. The utility drawing shall indicate all new utilities, including tie-in points, and existing utilities which are to be abandoned.

In addition, the following HVAC drawings shall be provided:

a. HVAC Plans

HVAC plans showing the design and layout of the hot water piping distribution system and equipment, the air supply and distribution systems, and the ventilation and exhaust systems shall be provided. Air supply and distribution systems shall show all ductwork, including supply and return ductwork, ductwork to diffusers, and all diffusers. For the 65 percent submittal, all ductwork may be shown as single-lined. The final design submittal shall show all ductwork as double-lined. All electrical panels, electrical equipment, and pertinent plumbing equipment shall be outlined in half-tone on the HVAC plans.

b. Enlarged Mechanical Room HVAC Plans

Enlarged mechanical room HVAC plans showing all mechanical systems and drawn at a minimum (1/2" = 1'-0")1:20 scale shall be provided. Plans shall show layout of all equipment, piping, and ductwork located within the rooms. Equipment shall include air handling units with associated outside air intakes, relief air, supply and return air ductwork, exhaust and supply fans, mechanical room ventilation intake and relief openings, gas service entrance, combustion air opening, unit heaters, hot water (HW) pumps, boilers, expansion tanks, and temperature control panels. Plans shall show dedicated access space for items requiring maintenance.In addition to all the mechanical HVAC systems required, the plan shall show half-toned outlines of all major plumbing equipment, the water service entrance, fire protection entrance and riser, lawn sprinkler apparatus, and any electrical equipment or panels located in the room.

c. Mechanical Room Sections:

Not Used

d. Chilled Water System Flow Diagram:

Not Used

e. Hot Water System Flow Diagram:

Not Used

f. Mechanical Detail Sheets:

Installation details showing all specification requirements such as isolation and balancing valves, thermometers, pressure gauges, equipment pads, strainers, vents, hangers, vibration isolation, and other system components shall be provided for each item of mechanical equipment. As a minimum, the following mechanical details shall be provided to the extent they are included in the design:

Refrigerant Piping Diagram
Exhaust Fans
Mounted and Suspended Equipment

g. Mechanical Schedule Sheets

Schedules shall be provided for each item of mechanical equipment. Furnished typical equipment schedules shall be used whenever possible and shall be revised and completed as necessary to suit the project requirements. In addition to the furnished schedules, damper and control valve schedules shall also be provided.

2.7.3 HVAC Control Drawings

Simplified, one-line type control schematics, showing all control system interface points and detailed sequences of operation shall be provided for all mechanical equipment and systems. Sequence of operation for each item of equipment and system shall be sub-sectioned into paragraphs describing discreet operational requirements. The following drawings shall be provided:

HVAC Controls Legend:

This sheet shall include all control abbreviations and symbols that will be used on the drawings. Furnished controls legend sheet shall be used as a basis for all abbreviations and symbols used on the final control drawings.

a. Miscellaneous Systems

These sheets shall include all miscellaneous equipment items, such as, exhaust fans, air compressor controls, and any other miscellaneous equipment items that are not interlocked to the main HW or air handling unit systems. Provide control schematic and sequence of control for each item of equipment on the same sheet.

b. Hot Water System

c. Air-Conditioning System

Provide a condensing unit, evaporator, and chilled water pumping system control schematic and sequence of operation.

2.7.4 Specifications

UFGS specification sections shall be edited and coordinated with the drawings and design analysis to identify the proposed product and installation requirements.

The HVAC UFGS specification sections shall include (in addition to additional HVAC UFGS specifications required by the Designer of Record):

23	00	00	AIR-SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM
23	05	93	TESTING, ADJUSTING AND BALANCING OF HVAC SYSTEMS
23	07	00	THERMAL INSULATION FOR MECHANICAL SYSTEMS
23	08	00	COMMISSIONING OF HVAC SYSTEMS
23	23	00	REFRIGERANT PIPING
23	52	00	WATER AND STEAM HEATING; OIL, GAS OR BOTH; UP TO 20 MBTUH
23	82	02	UNITARY HEATING AND COOLING EQUIPMENT

Proposed HVAC and Temperature Control System Performance Test and Functional Performance Checklists shall be included in the appropriate specification sections.

The specifications shall be updated, shall be completely edited, and shall be fully coordinated with the drawings to accurately and clearly identify the final product and installation requirements for the facility.

2.7.5 Design Analysis Narrative

The narrative portion of the design analysis shall contain a narrative description and analysis for the HVAC portions of the design. The basis and reasons for specific engineering decisions, special features, and unusual requirements shall be explained or summarized. If it is necessary to deviate from criteria or standard practice, reasons shall also be included. Design statements shall be provided in sufficient detail to enable the reviewer to get a clear picture and understanding of all included work. Narrative shall be complete relative to scope and intended design approaches.

The total scope projected to final design shall be outlined in a form that will be conveniently adapted, expanded, and detailed at the final design stage. If alternatives were to be evaluated and selected by the designer, findings, and conclusions shall be included. The design analysis shall carry a complete narrative for every item and system covered in the design, and shall include the following:

2.7.5.1 Index

Provide a design analysis index identifying all main and sub-paragraph headings.

2.7.5.2 Project Summary

Provide a brief description of the HVAC design objectives.

2.7.5.3 Applicable Criteria

A list of all applicable criteria used for basis of design.

2.7.5.4 Technical Specifications

Provide a list of specifications that will be used for the project.

2.7.5.5 Design Conditions

A list of HVAC design conditions including elevation, latitude, heating and cooling degree days, winter and summer outside design temperatures, inside design temperatures for all spaces, and ventilation rates, shall be provided.

2.7.5.6 System Descriptions

Provide a complete description of all building systems; include the designer's reasons for selecting specific materials and systems in which the reason for selection is not obvious. System descriptions shall include the following:

Hot Water Heating Systems
Exhaust Hoods
Ventilation and Exhaust Systems
Refrigeration Systems

2.7.6 Design Analysis Calculations

The Design Analysis Calculations shall provide an estimate of the heating, cooling, and ventilation loads to determine a selection of the type and size of mechanical equipment to be used. Design calculations shall be provided in sufficient detail to enable the reviewer to get a clear understanding of all work. Data shall be furnished to support basic design decisions related to sizing of major equipment and materials and performance of specific systems or equipment. Calculations shall be performed by computerized procedures. Use of standardized charts, curves, tables, and graphs shall generally be acceptable for portions of required calculations. Such data must be from a recognized source which is identified in the design analysis and shall be included with the calculations.

Design calculations and computations shall be provided for all systems and shall include the following:

2.7.6.1 Index

Provide a design analysis index identifying all calculation items.

2.7.6.2 Design Conditions

A list of HVAC design conditions including elevation, latitude, heating and cooling degree days, winter and summer outside design temperatures, inside design temperatures for all spaces, and ventilation rates shall be provided.

2.7.6.3 Zone Air-Conditioning Loads

Cooling calculations shall be prepared using the Cooling Load Temperature Differential/Cooling Load Factors (CLTD/CLF) Method as described in the ASHRAE Fundamentals Handbook.

2.7.6.4 Block Air-Conditioning Loads

Preliminary block cooling load calculations, compassing the air-conditioned areas, shall be prepared using the CLTD/CLF Method.

2.7.6.5 Chilled Water Pump Selections

Not Used

2.7.6.6 Heating Loads

Not Used

2.7.6.7 Heating Load Summary

Not Used

2.7.6.8 Boiler Selection

Not Used

2.7.6.9 Hot Water Pump Selection

Not Used

2.7.6.10 Combustion-Air Requirements

Not Used

2.7.6.11 Unit Heater Selections

Not Used

2.7.6.12 Mechanical Ventilation

For each area or room requiring mechanical ventilation for cooling, provide calculations similar to zone air-conditioning, louver selection, and catalog fan data.

2.7.6.13 Toilets and Janitor Room Ventilation

Provide calculations, catalog fan data, and louver selections, for each toilet area.

2.7.6.14 Air Handling Units

A tabular summary of all airflow calculations for each area or room shall be provided on each air distribution system for fan sizing.

2.7.6.15 Electrical Load Summary

A summary of all mechanical equipment and the associated electrical load requirements shall be provided.

2.7.6.16 Miscellaneous Calculations

The following calculations shall also be provided:

a. Pipe sizing calculations for the chilled water and heating hot water, plumbing, and gas piping systems.

b. External static pressure calculations for all fans. e. Control Valve Cv calculations.

2.7.7 Energy Conservation

Mechanical designs shall be economical, maintainable, and energy conservative with full consideration given to the functional requirements and planned life of the facility. Emphasis shall be given to heat reclamation, outside air usage, and other energy conservation measures for mechanical systems.

2.7.8 Air Pollution Control

Air pollution control shall be incorporated in all designs. The Designers of Record shall investigate the latest regulations and standards using service, local, state, and Federal regulations and standards, analyze and report on requirements in the design analysis, and include requirements in the design. The most stringent of all regulations and standards shall be implemented into the design.

2.8 ELECTRICAL

2.8.1 Technical Requirements

2.8.1.1 Design and Installation Standards and Codes

The electrical design and installation shall conform to the current versions of all applicable Unified Facilities Criteria (UFC), all applicable National Fire Protection Association (NFPA) standards, all applicable Institute of Electrical and Electronics Engineers (IEEE) standards, all applicable National Electrical Manufacturers Association (NEMA) standards, all applicable Illumination Engineering Society (IES) standards, all applicable Electronic Industries Alliance/Telecommunications Industry Association (EIA/TIA) standards, and all standards and codes referenced in the UFGS specifications. All distribution equipment/devised shall be UL listed and conform to NEC and the standards of IEEE, ANSI, and NEMA. Publications, codes, specifications, and standards shall be used as the basis for the project design. Publications and codes that imply recommendations shall be taken to be mandatory. Where there are conflicting criteria, the most stringent requirements take precedence.

2.8.1.2 Scope of Work

The work includes completion of electrical system design and construction to provide completely functional electrical systems as described herein and as detailed by the Electrical Designer of Record. The electrical system shall be designed under the supervision of a registered professional electrical engineer for quality assurance.

2.8.1.3 Specific Requirements

All abandoned electrical systems, equipment, lighting, conduit, equipment pads, and any other abandoned electrical system component within the project area boundaries shall be removed.

All conduit, wiring, and cabling shall be photographed by the Contractor and shall be inspected by the Contractor and COR prior to burying, covering, or concealing. The Contractor shall provide all photographs to the COR in electronic Adobe Acrobat Portable Document Format (PDF).

Each service entrance shall be metered for kilowatt demand. Provide a Vectron kWh/Demand meter for each metering location. All facilities greater than 20,000 square feet shall have electrical, natural gas and water system Smart Meters with Automated Logic Corporation (ALC) Local Area Network (LAN) Gate Routers (LGR-250) and ALC compatible equipment which connect to 127th Wing CES where feasible. All other facilities are required to have standard gas, water and electric meters by 2015. All natural gas meter and meter communication system interface installations shall be coordinated with Consumer’s Energy. All Meters shall be approved models or an ALC compatible equivalent Approved Meters are: Electric Smart Meter: Veris E51 or Electric Meter: Iltron Sentinel.

2.8.1.4 Coordination of Electrical Criteria

Electrical criteria provided in this section shall be coordinated with the architectural section, mechanical section, fire protection section, structural section, interior design section, civil and site section, force protection and security

section, and all other sections of this RFP. The number and location of electrical equipment indicated in the electrical requirements are approximate. Contractor design shall meet the intent of the electrical requirements provided in this section. Contractor shall coordinate the final locations of electrical equipment with the Contracting Officer.

2.8.1.5 Primary Electrical Power Distribution

Primary electrical power distribution, 4.8KV, 3-phase, delta, shall be run in underground. Work shall be in accordance with UFC 3-550-01 Exterior Electrical Power Distribution, and shall be coordinated with the 127th.

2.8.1.6 Service Entrance

Facility service entrance power supply shall be installed in accordance with
UFC 3-550-03, UFGS DIVISION 26, and NFPA 70.

2.8.1.7 Transformers

Transformers shall be pad-mounted type, 4.8KV delta primary and 208V wye secondary. Service transformers, for all 3-phase underground fed installations, shall be of the pad-mounted type. The medium voltage compartment shall be dead-front construction. Primary switching and protective devices shall include load-break switching, fuse protection, medium-voltage separable load-break connectors, universal bushing wells and inserts - or - integral one piece bushings and surge arresters. The nameplate rating for the transformer shall not be less than 90 percent of the KVA demand load calculated for the transformer. Provide copper windings only, not aluminum. Transformer enclosure shall be lockable using a padlock cored to match existing SANG transformer installations. Transformers and transformer installation shall be in accordance with UFC 3-550-03 and UFGS DIVISION 26.

2.8.1.8 Materials and Equipment

All material and equipment shall conform to the requirements of the American National Standards Institute (ANSI), the American Society of Testing and Materials (ASTM), or other national trade associations.

2.8.1.9 Electrical Space Requirements

Electrical space shall be provided for all electrical equipment. Space shall provide clearances and working areas as required by the latest edition of NEC, article 110.26 and article 110.27. Coordinate locations to consider factors such as ease of maintenance, proximity to loads being served, and accessibility.

2.8.1.10 Interior Branch and Control Wiring

Interior branch and control wiring shall be stranded copper, THHN/THWN, and shall be run in rigid metal conduit (RMC) or electrical metallic tubing (EMT). Interior branch and control wiring running in hollow metal stud partitions or running through non-masonry walls may be metal clad cable (MC) if #6AWG or smaller. Metal clad cable shall be a maximum of 6-feet in length. In areas where walls are not disturbed or reconstructed and wiring cannot be run within existing walls, surface metal raceway may be used
within the habitable space of the room. All above ceiling and in wall wiring shall be in conduit and sized according to the NEC. Minimum conductor size for branch and control circuit wiring shall be No. 12AWG.
All equipment and circuit grounds shall be provided, installed and connected with green wire in strict accordance with the requirements of NFPA 70 (NEC). Minimum interior conductor raceway size shall be 3/4". If existing control wiring in the project area located above plenum ceilings is plenum rated without conduit then the Contractor shall install plenum rated control wiring without conduit. Interior branch and control wiring installation shall be in accordance with UFC 3-520-01 and UFGS DIVISION 26.

All existing circuits that are replaced shall be demolished including associated wiring and conduit which shall be removed back to the source.

2.8.1.11 Receptacles

Unless otherwise indicated, provide white, specification grade, 20A duplex receptacles and coordinating cover plates and provide white surface mounted raceway. All duplex receptacles dedicated for workbench use shall be of the isolated ground type. Isolated ground circuits shall feed no more than two workbench dedicated duplex receptacles. The neutral conductor shall be #10AWG minimum from the source circuit breaker to all modular furniture workstations. Housekeeping receptacles shall be provided every 25 feet in open, non-administrative areas. Unless otherwise indicated, wall mounted duplex receptacles shall be mounted 18 inches above the finished floor.

2.8.1.12 Motors

Motors shall be of the high energy efficient type. Motors larger than one- third horsepower shall be three phase. Motors one-third horsepower and smaller shall be single phase. Motor starters for mechanical and special equipment shall be furnished as an integral part of the mechanical or special systems. Motor installation and control shall be in accordance with UFGS DIVISION 26.

2.8.1.13 Motor Efficiencies

Minimum motor efficiencies shall be either Energy Star rated or in accordance with the Department of Energy (DOE) Buying Energy Efficient Products Recommendations. Applications that require definite purpose, special purpose, special frame, or special mounted polyphase induction motors are excluded from these efficiency requirements. Motors provided as an integral part of motor driven equipment are excluded from this requirement if a minimum seasonal or overall efficiency requirement is indicated for that equipment.

2.8.1.14 Distribution Panels and Panel Boards

Receptacle and other miscellaneous loads shall be served from 208/120V, 3- phase, 4-wire panel boards centrally located or as required. Panel boards shall be for molded case thermal magnetic circuit breakers and shall be sized for 42 single pole breakers. Distribution panel and panel board over- current protective device interrupting ratings shall be fully rated for the maximum available fault current and shall have a UL Listed interrupting rating of 66kA maximum and minimum interrupting rating of 22kA. Panel boards shall be NEMA 3R type construction. Install surface mounted panel boards in unfinished areas of buildings. Panel boards shall be provided and installed in accordance with UFC 3-520-01 and UFGS DIVISION 26.

2.8.1.15 Interior Lighting

Interior lighting systems shall be established in accordance with NFPA 101 and the IES Lighting Handbook. For energy conservation, occupancy sensors shall be provided. All lighting design shall incorporate the latest techniques of energy savings applied to lighting systems. All wires associated with replaced and relocated light fixtures shall be checked for degradation and discoloration and be replaced where necessary.

Interior lighting shall be provided by two independent systems. Normal overhead space lighting shall be powered by the building equipment power system and controlled by the facility's energy management system. Occupancy sensors shall be appropriate to the area and shall be rated for the square footage of the space. Occupancy sensors shall be ultrasonic or passive infrared technologies. Dual band occupancy sensors are not accepted. Programming for the lighting controls will be 0500 to 1900 hours M-F, 0600 -
1200 Saturday, off Sunday with an override on the graphics with a 3 hour time limit. Also included shall be an "ALL OFF" program at midnight, every night, unless there is an override.

Emergency egress lighting shall be powered by 90-minute battery pack style emergency light fixtures; low-profile thermoplastic housing, with white finish, 24 hour recharge time, and low-voltage disconnect. Incandescent lamps shall not be allowed.

Exit lighting shall be white housing with red lettering, UL listed with a 100-foot visibility; LED type with a minimum of 1.5 hour battery backup. Incandescent lamps are not allowed.

Emergency/Exit combo units are allowed.

Interior lighting and controls shall be provided and installed in accordance with UFC SERIES 3-500: ELECTRICAL and UFGS DIVISION 26.

2.8.1.16 Normal Lighting

Normal lighting branch circuits shall be fed from 208/120V breaker panels with 20A single pole circuit breakers loaded to no more than 16A maximum. Wiring for lighting branch circuits shall be #12AWG minimum.

2.8.1.17 Lamping

For all suspended ceilings with lay-in troffer fixtures, surface mounted fixtures, and pendent fixtures, 28 Watt T5 fluorescent linear tubes shall be used with a color rendering index (CRI) of 86, color temperature of 4100K with a mean lumen rating of 2900 unless otherwise indicated.

For all high bay lighting applications, 32 Watt T8 fluorescent linear tubes shall be used with a color rendering index (CRI) of 86 and color temperature of 4100K with a mean lumen rating of 2800, unless otherwise indicated.

U-shaped and circular shaped fluorescent lamps and incandescent lamps shall not be used in any fixtures.

2.8.1.18 Emergency Egress Lighting

Emergency egress lighting shall generally be provided by incandescent fixtures with integral battery packs and chargers. Lighting shall be provided in accordance with NFPA 101 Life Safety Code. Exit signs shall be red LED type.

2.8.1.19 Exterior Lighting

Existing exterior lighting fixtures (parking lots, buildings, etc.) shall contain high-pressure sodium lamps - 250W for parking lot and street lighting and 150W for building security lighting. Parking lot and security lighting shall be provided at a maintained level of 1.0 foot-candle. All building entrances shall be illuminated to 10 foot-candles. Parking lot lighting shall be by fixtures mounted on poles. Control shall be by means of one photocell per fixture. Contractor shall submit a photometric layout of exterior areas showing point-by-point light intensity levels for the designed lighting layout. Exterior lighting shall be provided and installed in accordance with UFC 3-530-01 and UFGS DIVISION 26.

New installation of exterior lighting fixtures (parking lots, buildings, etc.) shall contain Solid State Lighting (SSL) LED lamps. All lighting shall be provided at a maintained level of 1.0 foot-candle. All building entrances shall be illuminated to 10 foot-candles. Parking lot lighting shall be by pole mounted fixtures. Control shall be by means of one photocell per fixture. Contractor shall submit a photometric layout of exterior areas showing point-by-point light intensity levels for the

designed lighting layout. Exterior lighting shall be provided and installed in accordance with UFC 3-530-01 and UFGS DIVISION 26.

2.8.1.20 Security Lighting

High pressure sodium light fixtures shall be installed on the exterior of the building and over personnel doors to provide security lighting. All exterior security light fixtures shall be individually controlled with photocells.

2.8.2 Drawings

Drawing scale shall match architectural drawing requirements. Drawings shall be complete and accurate in every detail and shall include arrangements and types of light fixtures, receptacles, switching, location of special features, and necessary details. Drawings shall also include legends, fixture schedules, panel schedules, one-line diagrams, layout or functional diagrams for each of the various systems, riser diagrams if applicable, estimated maximum demand for each panel and for the entire building, and any other relative information which will help clear up any questionable items on the plans or in the specifications.

All drawings provided to the Contractor shall be field verified for accuracy.

2.8.2.1 Lighting Layout and List of Fixtures

Complete lighting layouts of all areas shall be provided. The type of fixture shall be indicated on the drawing. A complete list of fixtures proposed with type of lamp and wattage shall be provided.

2.8.2.2 Receptacle Layout

Complete receptacle layouts shall be provided for all areas to indicate project requirements.

2.8.2.3 Power Equipment Layout

Power equipment layouts, such as, switchboard, panel boards, and large motor driven items shall be provided.

2.8.2.4 Power One Line Diagram

Power one line diagrams shall be shown to indicate arrangement of the system.

2.8.2.5 Floor Plans

All rooms must be identified by name and number. Plans must be legible. Plans shall be developed using the same scale and areas as the architectural floor plans. Separate floor plans must be provided for lighting, power, and fire detection.

2.8.2.6 Schedules

Provide panel board and lighting fixture schedules. Panel board schedules shall include the designation, location, mounting (flush or surface), number of phases and wires, voltage, ampacity total connected load, and demand load. Indicate the trip rating, frame size, interrupting rating and number of poles for each circuit breaker in the panel boards. List the circuit number, circuit description, and load for each branch circuit.

2.8.2.7 Exterior Drawings

Drawings shall be complete and accurate in all details and shall include the routing of all feeder and branch circuits.

2.8.3 Specifications

Submit prescriptive specification sections to specify the quality, characteristics, installation procedures, and testing requirements for all items of the proposed electrical design.

2.8.5 Design Analysis Calculations

Data shall be furnished to support basic design decisions related to sizing of major equipment and materials, selection of economic alternatives, and performance of specific systems and equipment. Calculations may be performed by manual or computerized procedures. Use of standardized charts, curves, tables, graphs will generally be acceptable for portions of required calculations or in lieu of specific calculation procedures. Such data must be from a recognized source which is identified in the design analysis. If possible, a copy of applicable

sheets or pages shall be included with the calculations. For given equipment, the calculations must conform to requirements identified under subsequent paragraphs herein pertaining to the equipment.

2.8.5.1 Service

Provide sizing of building service.

2.8.5.2 Transformers

Provide sizing of all transformers. Generally, for dry type transformers, one or two samples of detailed calculations to identify the method are sufficient (if input data for remaining units can be derived from panels or feeder sizing data).

2.8.5.3 Feeders

Provide sizing of feeders. One detailed sample calculation is sufficient to establish the procedure. Remaining data shall be included on schedules and tables.

2.8.5.4 Panel Boards

Provide sizing and loading of panel boards and distribution equipment.

2.8.5.5 Voltage Drop Determination

Provide voltage drop calculations in accordance with IEEE Standard 241 to demonstrate that the voltage drop requirements of National Fire Protection Association (NFPA) 70 are satisfied.

2.8.5.6 Illumination Calculations

Data shall identify target and calculated illumination levels for all rooms and areas. Calculations shall be adjusted to compensate for special applications, such as, irregularly shaped rooms, open sides, ceiling obstructions (beams and ductwork), corridors, and any other special application. If the lumen method is used for corridor calculations, the calculations shall be performed using a module in which the length does not exceed three times the width (a 2:1 ratio is preferred).

Provide calculations for each room or area for both normal and for emergency/egress lighting, if so equipped. Standard lighting levels shall be in accordance with IES recommendations and the emergency/egress lighting levels shall be in accordance with NFPA 101. The emergency/egress lighting calculations shall indicate the average, the minimum, and the uniformity of each area.

2.8.5.7 Exterior Lighting Calculations

Provide calculations for all site lighting to include parking areas, walkways, and security. Lighting levels shall be in accordance with IES recommendations and the emergency/egress lighting levels shall be in accordance with NFPA 101.

2.8.5.8 Short Circuit Evaluation

Calculate the fault current in accordance with IEEE Standard 242 for each node in the electrical distribution system.

2.8.5.9 Protective Coordination Analysis

A protective coordination study shall be performed to show that the power system is selectively coordinated and is fully coordinated with the upstream breakers. In addition, the study shall include all existing and new devices in the base power plant affected by the installation of the space test and evaluation facility. The protective coordination

and short circuit study shall be complete and approved by the Government before any changes are made to the existing equipment.

2.8.5.10 Specialized Applications

Additional engineering data shall be included to address special requirements such as accommodation of nonlinear loads, harmonics analysis, and energy studies.

2.9 TELECOMMUNICATIONS

2.9.1 Technical Requirements

2.9.1.1 Design and Installation Standards and Codes

The telecommunications design and installation shall conform to the current versions of all applicable Unified Facilities Criteria (UFC), Technical

Criteria for Installation Information Infrastructure Architecture (I3A), ANSI/TIA/EIA specifications and all standards and codes referenced in the UFGS specifications. Publications, codes, specifications, and standards shall be used as the basis for the project design. Publications and codes that imply recommendations shall be taken to be mandatory. Where there are conflicting criteria, the most stringent requirements take precedence.

2.9.1.2 Scope of Work

The work includes completion of telecommunications system design and installation to provide completely functional telecommunication systems as described herein and as detailed by the Designer of Record.

2.9.1.3 Specific Requirements

All abandoned telecommunication systems, equipment, wiring, conduit, and any other abandoned telecommunication system components associated with this project and within the project area boundaries shall be removed by the Contractor.

All conduit, wiring, and cabling shall be photographed by the Contractor and shall be inspected by the Contractor and COR prior to burying, covering, or concealing. The Contractor shall provide all photographs to the COR in electronic Adobe Acrobat Portable Document Format (PDF).

Category 3 telephone cable may NOT be reused if existing. All existing Category 3 telephone cable found to be part of the project shall be replaced with Category 6 rated cabling. All new telephone cabling shall be Category 6 as specified below.

The Network 127WG/SC requires only qualified and experienced telecommunications contractors perform installation services in the construction of the project. The Contractor, by responding to a bid, represents that their company possesses the qualifications, certifications, capabilities, test equipment, expertise, and personnel necessary to provide an efficient and successful installation of properly operating components. It is required that the Telecommunications Contractor supervisor/foreman must be a Building Industry Consulting Service International (BICSI) certified ITS Technician and a BICSI member in good standing. It is also required that a minimum 25% of the Telecommunication Contractor’s installers must be BICSI certified ITS Installers and BICSI members in good standing.

2.9.1.4 Telecommunications

Installation shall be in accordance with the Technical Criteria of the TIA/EIA and other requirements as follows.
Cable and jacks shall be Category 6 per EIA/TIA 568B, Commercial Building elecommunications Cabling Standard. Provide wiring from outlet jack to termination on applicable patch panel. All components within cabling

system shall conform to the category rating specified herein. Follow requirements of ANSI/TIA/EIA-569-B for telecommunications closets and equipment rooms. Telecommunications work shall be in accordance with UFC 3-580-01 and UFGS DIVISION 26. All cable ties installed within telecommunications rooms shall be Velcro strap type, no Nylon tie wraps will be accepted.

2.9.1.5 Telephone Distribution System

The telephone distribution system shall be plenum rated, Category 6, unshielded twisted pair (UTP) cable, blue in color, to support voice connectivity requirements.

All jacks shall be provided and installed in locations as required. Category 6 UTP voice cables shall be terminated on Category 6 rated, 110/RJ-45, 568A/B patch panels. Voice and LAN cables from the same outlet shall be terminated in the same equipment rack to either the same or separate patch panels and shall be individually identified. Reference I3A Sections 2.4.1.1, 2.4.2.2, Figures B-2 and B-3A.All components within cabling system shall conform to the category rating specified herein.

The user end of the Category 6 UTP voice cables shall be terminated 568B standard on RJ-45 jacks (white).

2.9.1.6 Local Area Network (LAN) Distribution System

The LAN distribution system shall be plenum rated, Category 6, unshielded twisted pair (UTP) cable, yellow in color, to support data connectivity requirements.

All jacks shall be provided and installed in locations as required.

As required, 48 port Category 6, 110/RJ-45, 568A/B patch panels shall be provided and installed in Government furnished equipment racks (if existing). If new racks/cabinets are required as part of the installation, these shall be supplied and installed by the Contractor with COR representative approval of product submittals.

Voice and LAN cables from the same outlet shall be terminated in the same equipment rack to either the same or separate patch panels and shall be individually identified. Reference I3A Sections 2.4.1.1, 2.4.2.2, Figures B-2 and B-3A.

The user end of the Category 6 UTP data cables shall be terminated 568B standard on RJ-45 jacks (orange). Each LAN drop location shall receive one individual Category 6 UTP data cable.

All Category 6 UTP data cables shall be run continuous, without splices, and shall not exceed 295 feet in total length. Above the false ceiling at each LAN jack drop location, for each individual data cable run, a three foot slack coil of cable shall be provided to facilitate future moves.

2.9.1.7 Testing Criteria

Horizontal Cable:

All Category 6 circuits, to include both data and voice cables, shall be tested with a Category 6 rated tester, stated by the manufacturer as being capable of testing to 350MHz. All category 6 circuits shall be tested using a test set that meets the accuracy requirements stated within ANSI/TIA/EIA-568-B.1 and ANSI/TIA/EIA-568-B.2.

The Category 6 rated test set utilized shall be able to measure and report the following link parameters for permanent link test configurations as specified within ANSI/TIA/EIA-568-B.1 and ANSI/TIA/EIA-568-B.2:

- Wire map, including shield connection if present
- Insertion loss
- Length
- NEXT loss, pair-to-pair, measured from local end

- NEXT loss, pair-to-pair, measured from far end
- NEXT loss, power sum, measured from local end
- NEXT loss, power sum, measured from far end
- ELFEXT, pair-to-pair
- ELFEXT, power sum
- Return loss, measured from local end
- Return loss, measured from far end
- Propagation delay
- Delay skew

The cables shall be tested and certified that they meet the maximum requirements for Category 6 performance standards as specified in the Electronic Industry Association/Telecommunications Industry Association (EIA/TIA) specifications. Printed certification of all Category 6 drops shall be provided. All Category 6 drops shall meet the manufacturer's specification for acceptance.

All RG-6 coaxial cabling shall be tested for continuity, shorts, and opens. Characteristic impedance and attenuation shall be verified over the range of intended operation. Cable length shall be verified and documented. Printed test results shall be provided.

Backbone Cable: Multi-Pair Copper Voice Backbone cables shall be tested for proper identification and continuity on all metallic cable pairs. All opens, shorts, crosses, grounds, and reversals shall be corrected. Correct color- coding and termination of each pair shall be verified at both termination points. Upon testing completion, provide diagrams and test records on all cables to the 127WG/SC representative.

2.9.1.8 General Notes

Telecommunication drop location drawings and telecommunication rack drawings shall be provided, two of each (30" x 42"), prior to final acceptance. Each telecommunications drop shall be annotated with the drop location, for example "B1". The rack drawing shall depict the equipment installed in an elevation view.

All installed telecommunications cabling shall meet the latest editions of ANSI/EIA/TIA specifications, the Institute of Electrical and Electronic Engineers (IEEE) 802 series standards, and the NEC National Electrical Code (NFPA 70).

Telecommunications system labeling shall be completed in accordance with ANSI/TIA/EIA-606-A and shall conform to the Network Enterprise Center standard. All cabling shall be labeled on both ends, within 12 inches of the end of the cable jacket with the horizontal link identifier, which shall be visible on the exposed part of the cable jacket. This shall include each cable end in the telecommunications room and at the work area. Labels shall be made using commercially available label makers. Handwritten labels shall not be used for the final configuration and will not be accepted.

For cable management, open top J-hook style and closed ring cable supports shall be required to route the data telecommunication cables above the suspended ceiling which shall be provided and installed. Cabling shall be installed within existing pathways if available, or new pathways shall be established and installed. Cabling shall be installed in a perpendicular and parallel pattern to building steel and shall not be installed in diagonal runs. The cable supports shall be installed on 5 foot centers maximum to adequately support and distribute cable weight. No cable support shall carry more than 50 cables. Cables shall be installed with minimum 8- inches of clear vertical space above the ceiling tiles and ceiling support channels. Open top and closed ring cable supports shall be suspended from or attached to the building structure. Cables shall not be run through structural members or in contact with pipes, electrical conduits, suspended ceiling supports, ductwork, or other potentially damaging items. Placement of cables parallel to power conductors shall be avoided where possible; a minimum separation of 12 inches shall be maintained when such placement cannot be avoided.

If necessary, cable racks/cabinets shall be provided and installed by the Contractor. All cabling shall follow one path and branch out to the different end points in a "tree" pattern.

All faceplate terminations shall be installed in accordance with ANSI/EIA/TIA and IEEE 802 series standards.

All termination components; such as, RJ-45 connectors, punch down blocks, patch panels, shall meet or exceed the quality standards for Category 6 testing. All telecommunications system components shall be rated as Category 6 by the manufacturer. Cables shall have Category 6 factory markings on the cable sheath.

2.9.2 Drawings

Drawing scale shall match architectural drawing requirements. Drawings shall be complete and accurate in every detail and shall be coordinated with all other work. Drawings shall be sufficiently cross-referenced to other drawings and specifications and shall include appropriate notes, schedules, diagrams, and details. Drawings shall be organized and shall demonstrate that the work complies with all requirements of the RFP as follows:

2.9.2.1 Outside Plant Distribution

Manhole and duct bank system layouts shall show all exterior features including quantity and sizes of ducts, manhole types, cable types, cable labeling, routing, detail cross-references, and other notes.

2.9.2.2 Details

Provide installation details that fully define installation requirements for typical and special conditions including all termination enclosures, break- out boxes, and consolidation point or box which includes termination or cable management hardware. Provide manhole details and elevations. Provide duct bank configuration and construction details.

2.10 FIRE PROTECTION

2.10.1 Technical Requirements

2.10.1.1 Design and Installation Standards and Codes

The fire protection design for all facilities shall be in accordance with the current version of UFC 3-600-01 Fire Protection Engineering for Facilities and with the current versions of the International Building Code and the National Fire Protection Association (NFPA) standards and codes.

2.10.1.2 Scope of Work

The work includes completion of fire protection system design and construction to provide completely functional fire protection systems as described herein and as detailed by the Fire Protection Engineer. The fire protection system shall consist of installing a Monaco fire alarm panel and heat detection sensors to serve building 1437.

2.10.1.3 Specific Requirements

Not Used

2.10.1.4 Fire Alarm and Detection Systems

Provide a complete fire alarm and detection system, conforming to requirements of UFC 3-600-01, NFPA 72, and NFPA 101. Horns integrated with strobes shall be used for annunciation. Manual pull stations shall be located near each exit, adjacent to the fire alarm control panel (FACP), and along each path of egress. An alarm shall release magnetic door holders and shall activate dampers and shutdown fans. Smoke detectors shall be located throughout the building, including one located above the FACP as required. Air handling unit starters shall be equipped with normally closed contacts for fire alarm system interface to avoid unit shutdown with electrical power

removed from the fire alarm panel. Initiation of a detector or manual pull station shall sound all alarms in the building, shut down air handlers, and signal the Selfridge Fire Protection and Prevention Division.

All new initiation devices shall be addressable devices, unless specifically approved otherwise by the Government.

Addressable smoke detectors and pull stations shall be provided in accordance with UFC 3-600-01 and NFPA 72 requirements.

All new fire alarm control panels shall be Monaco panels. The central alarm panel shall be located in an occupied central location. Addressable smoke detectors and pull stations shall be utilized in accordance with UFC 3-600-01 and NFPA 72. All new fire alarm control panels shall have 25 percent spare capacity for adding circuits. Locate all end-of-line resistors in the fire alarm system control panel for maintenance purposes. In addition, provide fire alarm outputs for control of HVAC equipment shutdown, door release, and elevator recall to be controlled by the fire panel rather than directly by the initiation devices in the field. Such releases, recalls, and shutdowns shall be arranged such that loss of 120VAC or 24VDC power by the fire panel will not activate the release, recall, or shutdown functions.

The circuitry configuration for initiation and notification devices may be Class B unless specified otherwise by the Government.

All fire alarm wiring shall be in 3/4-inch red conduit and all junction boxes that contain fire alarm wiring shall be painted red. All fire alarm related work shall meet Monaco specifications for installation and operation.

Utilize wire types and gauges as recommended by the equipment manufacturer. Copper conductors shall be used.

AC power or AC control wiring are not to be run in the same conduit as 24VDC fire alarm wiring or fire alarm communication wiring.

Personnel responsible for making final connections at the fire alarm panel and personnel responsible for supervision of final connections at all field devices shall be National Institute for Certification in Engineering Technologies (NICET), Fire Alarm Systems Level II certified, in accordance with NFPA standards.

The Contractor shall coordinate routing of the fire alarm system with the COR, the SANGB Fire Protection and Prevention Division.

Prior to final acceptance, the Contractor shall verify that all new and existing fire alarm initiation devices tied to the fire alarm control are fully functional for the entire system reporting back to the fire station. The Contractor shall coordinate this verification test with the SANGB Fire Protection and Prevention Division.

The fire alarm transmitter shall be fully compatible with the existing proprietary supervising station receiving equipment manufactured by Monaco presently in use at the SANG.

The system shall be connected to the head end equipment by two (2) 6-strand dedicated fiber optic circuits. Programming is required to fully integrate the facility into the existing Fire Department Central Reporting System. Provide all head end programming and graphics to make the system fully operational and functional. This includes data entry for all the new points connected to the system as well as making any additions or changes in the system configuration files. The Contractor must provide all the graphics development and entry to include attaching the proper points to each graphic display. All graphics shall match the existing system graphics; including, color, layout, legend, and all other existing graphic schemes.

2.10.2 Drawings

Features of fire protection, their ratings, and the hazards requiring them, shall be clearly indicated. Fire alarm systems and fire detection systems shall all be clearly indicated on the drawings. Fire detection shall be laid out and detailed sufficiently to indicate the designers understanding of UFGS DIVISION 21 – FIRE SUPPRESSION and

the fire alarm, fire detection and system specification sections. When other functions co-exist with the fire protection functions, their integration shall be clearly indicated, with an analysis that describes how both functions will be served. Provide a separate, composite type floor plan which makes an accurate presentation of these various features and functions. As part of the submittal, provide a set of plans that show emergency egress for the facility. Depict all items to be removed, for instance, fire alarm panels and any other fire protection system component, on the fire protection demolition drawings.

2.10.3 Specifications

The shall provide edited UFGS DIVISION 21 – FIRE SUPPRESSION and edited UFGS fire alarm system, fire detection system and specification sections from UFGS DIVISION 28 – ELECTRONIC SAFETY AND SECURITY. Specification sections shall be coordinated with the drawings to accurately and clearly identify the product and installation requirements for the facility.

All items identified in the specifications that are not required shall be marked for deletion in accordance with the requirements stated in this RFP. Those items of equipment, materials, or installation requirements that are required are not permitted to be modified or changed from that presently shown.

2.10.4 Design Analysis

The design analysis shall include a separate fire protection report containing review statements and comments on the following items:

a. Location and rating of fire walls and fire partitions
b. Column, floor, and roof protection
c. Path of travel for emergency egress and operation of panic exits
d. Access to building for fire fighting
e. Design and placement of fire and smoke stop doors
f. Venting of smoke
g. Placement of hand fire extinguisher cabinets
h. Building exterior fire protection facilities and building clearances i. Type of occupancy
j. Zoning of fixed fire protection systems
k. Complete description, including type and adequacy of fire alarm systems (including fire alarm zones) and detection systems
l. Zoning of fire alarm and detection systems
m. Number of zones of fire alarm and detection systems that are separately transmitted to the base or installation fire department
n. List of design criteria o. Design conditions
p. Design calculations
q. Complete description of the building fire protection features
r. Other pertinent information of value for future use in construction contract administration, substantiation of design methods, or permanent record shall be included

2.11 SAFETY

2.11.1 Technical Requirements

The Contractor shall adhere to the current installation safety requirements, MIOSHA safety requirements, OSHA safety requirements, the safety requirements included in UFGS Specification Section 01 35 26 GOVERNMENT SAFETY REQUIREMENTS, and the United States Army Corps of Engineer’s codes and standards.

The Contractor shall provide preparation and submittal of a site specific Accident Prevention Plan and/or a Health and Safety Plan. The Contractor safety plan shall comply with Michigan OSHA requirements and the latest edition of U.S. Army Corps of Engineers Manual EM-385-1-1. The safety plan shall establish a comprehensive training program which consists of engineering, education, training, and enforcement of safety standards and shall comply

with regulatory directives regarding accident prevention and control and safety education and promotion. The Contractor shall construct dust barrier partitions as required to separate construction areas from occupied areas.

Exits shall be clear of equipment, materials, and debris. Construction partitions shall be provided in accordance with EM-385-1-1.

2.11.2 Drawings

The drawings shall clearly identify the amounts and locations of hazardous material.

2.11.3 Specifications

At a minimum, the pertinent UFGS specifications shall be completely edited and coordinated with the drawings.

01 35 26	GOVERNMENTAL SAFETY REQUIREMENTS
01 35 30	SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW/UST)
01 35 29	SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS
02 82 14.00 10	ASBESTOS HAZARD CONTROL ACTIVITIES
02 82 33.13 20	REMOVAL/CONTROL AND DISPOSAL OF PAINT WITH LEAD
02 83 13.00 20	LEAD IN CONSTRUCTION
02 84 16	HANDLING OF LIGHTING BALLASTS AND LAMPS CONTAINING PCBS AND MERCURY
02 84 33	REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCBS)
31 21 13	RADON MITIGATION

Any interference with the civil, mechanical, electrical, geotechnical, and environmental specifications shall be addressed and reviewed to extract the list of sampling and analysis requirements.

2.11.4 Design Analysis Narrative

The Design Analysis Narrative shall list all conditions impacting safe work on the project for each of the sections listed above. Potentially hazardous conditions, such as, materials shall be identified. The basis and reasons for specific decisions, special features, and unusual requirements shall be explained or summarized. If it is necessary to deviate from criteria or standard practice, reasons shall be included. Design statements shall be provided in sufficient detail to enable the reviewer to get a clear picture and understanding of all included work.

Narrative shall be complete relative to scope and design approaches. The design analysis shall carry a complete narrative for every item covered in the design.

2.11.5 Design Analysis Calculations

Amount and location of hazardous materials (asbestos, lead paint, PCBs, and other hazardous materials) shall be addressed.

2.11.6 Basis, Specific Goals, Objectives, and Priorities for Hazardous Material

The Design Analysis shall establish specific goals, objectives, and priorities for safety (including the removal, handling, and disposal of hazardous materials). Identify, explain, and document use of design criteria and state how the design meets goals, objectives, and priorities. Identify the preferred site development concept. Show how systematic planning has been used in the design and will meet the objectives. Systematic planning ensures high decision confidence and stakeholder satisfaction. It shall list various regulatory, scientific, and engineering decisions that must be made in order to achieve the desired outcome. List unknowns that stand in the way of making those decisions and strategies to eliminate or manage the unknowns.

2.12 COST ENGINEERING INSTRUCTIONS

The Contractor shall submit a professional quality cost proposal in accordance with the policies and procedures stated in the “Cost Estimates” paragraph of the contract.

PART 3 NOT USED

-- End of Section --

SECTION 01 03 00.00 06

DESIGN AND CONSTRUCTION SUBMISSION REQUIREMENTS
06/10

PART 1 GENERAL

1.1 INTRODUCTION

a. Design

This section includes general requirements for developing and submitting a design including preparation of drawings, specifications, design analyses and other design deliverables conforming to the requirements contained in this section. Distribution requirements for design deliverables is also covered in this section.

b. Construction

This section includes distribution requirements for the construction set of design deliverables and distribution requirements for DD Form 1354 and as- built drawings. Included also are the construction submittal classifications for use in editing the technical guide specifications and instructions on revisions to accepted design during construction.

1.2 DESIGNER OF RECORD

The Design-Build (D-B) Contractor shall identify the Designer of Record for each area of work, also to be indicated in the Design Quality Control Plan. One Designer of Record may be responsible for not more than two design disciplines. All areas of design disciplines including civil, architectural, structural, heating, ventilating, and air conditioning (HVAC), plumbing, electrical, communications, and fire protection shall be accounted for by a listed, Professional Registered, Designer of Record. The Designers of Record shall stamp, sign, and date each design drawing submitted under their responsible discipline for the 100 Percent Design; Corrected Final Design; and Released for Construction Design submittals.

Designers of Record shall be employees of, or contracted directly by, the Prime Contractor, or shall be an employee of an independent design firm that is contracted directly by the Prime Contractor. The Designer of Record shall not be an owner, employee, agent, or consultant of a construction subcontractor hired for this project.

1.3 REFERENCES

1.3.1 The Construction Specifications Institute (CSI)

CSI MasterFormat (latest edition) Master List of Section Titles and Numbers

1.3.2 Web Sites

In addition to the web sites listed in this section, other Request for Proposal (RFP) Sections may list web sites where design criteria references used in this solicitation package may be found.

(a) UNIFIED FACILITIES CRITERIA (UFC), TECHNICAL MANUALS (TM), TECHNICAL INSTRUCTIONS (TI), AIR FORCE MANUALS (AFM), ENGINEERING TECHNICAL LETTERS (ETL), ARMY ARCHITECTURAL AND ENGINEERING DESIGN CRITERIA (AEI), SUSTAINABLE DESIGN DOCUMENTS, AND MILITARY HANDBOOKS (MIL HNDBK) can be obtained from the following internet addresses: http://www.hnd.usace.army.mil/techinfo/engpubs.htm. http://www.wbdg.org/ Additional web sites are as follows:

(1) TECHNICAL MANUALS, ETL's, ETC.: www.usace.army.mil/inet/usace-docs
Click on "Information", then the desired publication.
(2) AIR FORCE DESIGN CRITERIA: http://afpubs.hq.af.mil
(3) UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

http://www.wbdg.org/ccb/browse_org.php?o=70

Guide specification numbers and titles referenced in the solicitation may vary from the actual specification numbers and titles available at the website listed above.

SpecsIntact software may be downloaded at the following Internet address:

http://si.ksc.nasa.gov/SpecsIntact/software/software.htm

SI Version 4.0 (Version SI4.2.0.785) or later shall be used. The new unified submittal format shall be selected for file format.

1.4 ENGLISH UNITS REQUIREMENTS

Drawings shall be stated in English units of measure. Specifications shall be stated in English units of measure, unless the UFGS specifications provide only a metric unit followed by the English equivalency in parentheses or where requirements for equipment are only available in metric units.

1.5 SUBMISSION OF DESIGN DRAWINGS, SPECIFICATIONS, AND DESIGN ANALYSES

1.5.1 Design Certification

Within each design submittal, the Contractor shall certify that all items submitted in the design documents (after construction award) comply with this RFP, the Division 1 specifications and mandatory requirements of the UFGS.
The criteria specified in this RFP are binding contract criteria and in case of any conflict, after award, between the RFP criteria and Contractor's submittals, the RFP criteria will govern unless there is a written and signed agreement between the Contracting Officer and the Contractor waiving a specific requirement. The Contractor shall present

with the letter of transmittal for each design submittal (including the Released for Construction Design submittal) a certification that the submittal (plans, specifications, design analysis, etc.) complies with the requirements stated above, similar to that shown at Attachment A of this section. The Contractor’s Designers of Record shall confirm and be responsible for the technical accuracy and adequacy of all aspects of the project design.

1.5.2 Deviations

Deviations from the RFP technical requirements shall be identified in the letter of transmittal and design certification letter. Deviations from the RFP technical requirements will be considered and accepted by the Contracting Officer, if the changes result in a significant improvement to
the project or if the changes exceed the minimum RFP technical requirements.

1.5.3 Field Inspection

The Contractor shall verify field conditions which are significant to design, by field inspection, researching and obtaining all necessary existing facility as-built drawings and reproducing them for his own use as necessary, and discussing status with knowledgeable personnel. The information shall be reflected in the design documents.

1.5.3.1 Photographs

The Contractor shall furnish digital photographs on CD-ROM depicting the progress of work during construction and after final inspection by the Contracting Officer's Representative (COR) of the conditions at the completion of the contract.

The monthly photography shall be performed between the first and fifth of each month and the CD's with digital photographs shall be submitted no later than the 10th of each month during the construction phase of the contract (from start of construction through completion of final inspection). The photograph CD shall be submitted in accordance with the submittal requirements of this RFP. A minimum of six views from different positions shall be taken as direction to show, as much as possible, work accomplished during the previous month, and a minimum of six views shall be taken of the completed work. Additional views and positions may be required by the COR to depict the work done.

Photographs shall be a least 4 megapixels and shall be in JPEG format. Each CD shall be indentified with the date made, contract title and number, location of work, and a brief description of the work depicted.

No separate payment will be made for these services and all costs in connection thereto shall be considered a subsidiary obligation of the Contractor.

1.5.4 Drawings

1.5.4.1 Software Requirements

All design drawings shall be done by the Contractor using AutoCAD 2009 (.dwg) file format.

1.5.4.3 RFP Drawings

The drawings furnished with this solicitation will be furnished to the Contractor in AutoCAD 2009 (.dwg) file format.

1.5.5 Design Documents

Design documents, as required by the 65 Percent Design and 100 Percent Design submittals stated hereafter, shall include construction drawings, specifications, design analysis, and other design deliverables for categories; such as, civil, architectural, structural, heating, ventilating, and air conditioning (HVAC), plumbing, electrical, communications, and fire protection. Specifications shall be in sufficient detail to fully describe and demonstrate the quality of materials, the installation and performance of equipment, and the quality of workmanship. Detailing and installation of all equipment and materials shall comply with the manufacturer's recommendations. The design analysis shall be for each discipline of work and shall include all features with the necessary calculations, tables, methods and sources used in determining equipment and material sizes and capacities, and shall provide sufficient information to support the design.

1.5.6 Conferences

After contract award, the Prime Contractor and the Contractor Designer of Record representatives shall attend the Preconstruction Conference at the DTA 200C Facilities Planning Conference Room.

In addition, a minimum of one design review conference during design will be held at the DTA 200C Facilities Planning Conference Room at the 65 percent completion stage of the design. The Prime Contractor and the Contractor Designer of Record representatives shall attend the design review conference, visit the site, meet with key using agency points of contact, address any appropriate discussion items, and make additional trips as necessary during the design to accomplish the work.

1.5.7 Document Packaging

The 65 Percent Design submittal includes the site and utility design and the building design complete to a 65 percent level. These documents shall be packaged and stamped "For Review Only - 65 Percent Design"; and each sheet of the drawings shall also be stamped. The 100 Percent Design submittal includes 100 percent complete site and utility design and building design and shall be stamped "For Review Only - 100 Percent Design", and each sheet of the drawings shall also be stamped. The design submittal(s) after the Government review of the 100 Percent Design shall be stamped "Released for Construction Design"; and each sheet of the drawings shall also be stamped. The Released for Construction Design submittal is for making corrections resulting from review comments and for preparing the final project documents. No additional time for completion of the contract will be granted to the Contractor due to insufficient design submittals.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 CONTRACTOR'S GENERAL DESIGN SUBMITTAL REQUIREMENTS

The design submittals for this project shall be submitted as indicated below. The design submittals shall be submitted to the Distribution Addresses listed below and shall include specifications, drawings, and design analysis in hardcopy and electronic format on CD as described below.

65 Percent Design for all disciplines.
100 Percent Design for all disciplines.
Released for Construction Design for all disciplines.

3.2 CONSTRUCTOR'S ROLE DURING DESIGN

The Contractor's construction management key personnel shall be actively involved during the design process to effectively integrate the design and construction requirements of this contract. In addition to the typical required construction activities, the constructor's involvement includes actions such as: integrating the design schedule into the master project schedule to maximize the effectiveness of fast-tracking design and construction (within the limits allowed in the contract), ensuring constructability and economy of the design, integrating the shop drawing and installation drawing process into the design, executing the material and equipment acquisition programs to meet critical schedules, effectively interfacing the construction Quality Control (QC) program with the design QC program, and maintaining and providing the design team with accurate, up-to- date, redline and as-built documentation. The Contractor shall require and manage the active involvement of key trade subcontractors in the above activities. All work shall be performed in accordance with the Construction Quality Management (CQM) process in UFGS Specification Section 01 45 00.00
10 QUALITY CONTROL.

The project schedule shall be provided in accordance with UFGS Specification Section 01 32 01.00 10 PROJECT SCHEDULE. The Contractor shall, within five calendar days after contract notice to proceed, prepare and submit for approval the practicable project schedule. The project schedule shall show the order in which the Contractor proposes to perform the work and the dates on which the Contractor contemplates starting and completing the salient features of work. The work shall be scheduled so that, upon the start of design and the start of construction, work progresses in a continuous and diligent manner. A project schedule that does not reflect steady and reasonable progress throughout the design and construction periods will be rejected by the Government.

Weekly progress reports and contractor progress reports are required covering the period from notice to proceed through final inspection and contract closeout. The project schedule shall be submitted to the COR in hardcopy format, electronic Adobe Acrobat Portable Document Format (PDF), and electronic Microsoft Project format.

3.3 DRAWINGS

Prepare, organize, and present drawings in the format specified herein. Provide drawings complete, accurate and explicit enough to show compliance with the RFP requirements and to permit construction. Drawings illustrating

systems proposed to meet the requirements of the RFP performance specifications shall reflect proper detailing for each system to assure appropriate use, proper fit, compatibility of components and coordination with the design analysis and specifications required by this section. Coordinate drawings to ensure there are no conflicts between design disciplines and between drawings and specifications.

3.3.1 Drawings Format

Full size drawings are considered Arch D (24 inches x 36 inches). Half-size drawings are considered Arch C (18 inches x 24 inches). With written approval from the Contracting Officer's Representative, the Contractor may choose to consider the use of Arch 30 (30 inches x 42 inches), where size or scope of the project requires the use of larger drawing sheets. The Cover Sheet of the Contractor prepared drawings shall bear the stamp or seal and signature of the registered architect or appropriate engineer responsible for the work. One hard copy set of drawings shall be sent to the Activity Distribution Addresses listed below.

Electronic copies of drawings, provided on CD, shall be provided to the COR, in AutoCAD 2009 and Adobe Acrobat Portable Document Format (PDF). The drawings in Adobe Acrobat PDF format shall be provided in one single file containing all drawings in the design package. The drawings in Adobe Acrobat PDF format shall be directly converted from the source files and shall be searchable Adobe Acrobat PDF files (the drawing files shall not be scanned). The hard copy and electronic drawings shall be provided for the 65 Percent Design submission, the 100 Percent Design submission, the Released for Construction Design submission, and the As-Built Drawing submission.

3.3.2 Drawings Sequence

Arrange drawings by design discipline in accordance with the U.S. National CAD Standard.

3.3.3 Drawings Required

As a minimum, the Contractor shall prepare and submit the following design drawings:

a. Title Sheet, Index of Drawings, Legend and Abbreviations
b. Civil Drawings
c. Utility Drawings (Water Supply, Wastewater, Gas, and Electrical)
d. Architectural Drawings
e. Interior Design Drawings
f. Structural Drawings
g. Mechanical Drawings
h. Plumbing Drawings
i. Electrical Drawings
j. Communications Drawings
k. Fire Protection Drawings

3.4 SPECIFICATIONS

3.4.1 Project Specifications

3.4.1.1 General Requirements

The Contractor shall develop project specifications utilizing unedited Unified Facilities Guide Specifications (UFGS), designated specification sections furnished with this RFP, and the development of additional project specifications not covered by UFGS. UFGS may be downloaded in SpecsIntact SGML (zipped) file format at the internet address listed above. Specifications shall be edited utilizing the latest edition of MasterFormat numbering system. The Contractor shall utilize SpecsIntact software.

3.4.1.2 Technical Specifications

The Contractor shall be required to use unedited UFGS sections for developing project specifications. Specification paragraphs and subparagraphs shall not be rewritten to lessen the quality of the original technical specification sections, unless directed otherwise. The technical guide specifications describe the type and quality of material and installation normally acceptable for United States Army Corps of Engineers construction, and often represent specific agreement between the Government and the applicable industry. The provision of the technical guide specification shall not be changed without justification. Justifications and identification for additional materials shall be identified in the design analysis under the appropriate design discipline. Designer notes shall not appear in any design submittals. Only bracketed choices and inapplicable items shall be marked for deletion. These items shall be removed in the Released for Construction Design specifications submittal. The Contractor shall complete the editing of all options in these specifications. Where designer notes are provided, the Contractor shall edit the choice in accordance with the recommendations and guidance of the notes, except where specific guidance has been provided with this RFP (i.e. submittal paragraph).

3.4.1.3 Editing Technical Specifications

(1) Incorporating Established RFP Requirements into Guide Specifications

Where specific requirements in regards to materials, methods, and end function requirements are provided in the edited RFP Division 1 provided in this RFP, the unedited Unified Facilities Guide Specifications (UFGS) shall be edited to reflect these requirements. Variations to these requirements will not be permitted, unless authorized as a design deviation by the Contracting Officer.

(2) Requirements of Guide Specifications Not Established By RFP Requirements

Where specific direction has not been provided in regards to materials, methods, and end function requirements, the final requirements will be a result of the completed design by the Contractor.

The applicable unedited UFGS sections, Divisions 2 through 49, shall be edited to:

(a). Provide the highest quality that can be provided within the cost and time authorized;
(b). Meet or exceed the criteria requirements established by the solicitation;
(c). Meet applicable Federal, state, and local codes; and
(d). Do not sacrifice aesthetics, user requirements established by the solicitation, life-cycle economy, energy conservation, environmental protection or life safety.

Lessening the quality of the UFGS specifications shall not be made unless the Contractor provides the Contracting Officer documentation as to why the standards established by the UFGS sections cannot be made and the Contracting Officer approves. This documentation shall be included as a design deviation.

(3) ADDITIONS: If the specifications of the UFGS do not cover a feature that is in the project, new sentences and/or paragraphs shall be inserted in the proper locations to adequately cover the feature of work.
Additions shall not lessen the quality of materials indicated by the specifications.
If a new material is added, it shall be properly referenced in "Applicable Publications," "MATERIALS," "SUBMITTAL," "TESTS," and "INSTALLATION" paragraphs.

(4) DELETION OF INAPPLICABLE TEXT MATERIAL, AS NECESSARY, TO TAILOR THE SPECIFICATIONS TO FIT THE PROJECT: After deletion has been made to all inapplicable paragraphs, subparagraphs, choices, and schedules from the body of the specifications (including the correction of lists in "Submittals," "Tests," and "Installation" paragraphs), delete all non-applicable references listed in the preceding "APPLICABLE PUBLICATIONS" and "MATERIALS" paragraphs. Deletions shall not lessen the quality of materials indicated by the specifications.

(5) Do not remove any special code markings for submittals, references, tests or section references, unless the text is not required.

(6) REFERENCES TO SPECIFICATION SECTIONS: The Contractor shall be responsible for coordinating section references, along with the technical requirements, to specific specification sections (number and title) within the project specifications. Section references (title and number) shall be revised to reflect the titles and numbers of specification sections used.

(7) REFERENCES: The Contractor shall be responsible for coordinating references or publications referenced in the text of each specification with those references listed at the beginning of each section. See paragraph: Reports below. The SpecsIntact software removes references or publications not referenced in the text from the Reference Article, when printing from the Jobs menu.

(8) SUBMITTALS: Each section of the specifications includes a submittal paragraph which lists all applicable Contractor submittals. Submittals shall be properly marked as outlined in the SpecsIntact documentation and in this section. These codings are used for automatic generation of the Submittal Register in the SpecsIntact Software. These codings must not be deleted from the text, unless the submittal is not required. The Submittal Item text between the coding shall be identical (word for word, including punctuation and spacing) to the paragraph text in the reference paragraph(s). Text may be either upper or lower case letters. An example of a submittal paragraph is provided in Attachment C, "Sample Submittal Paragraph".

During the design phase, the Contractor's designer(s) shall develop a complete list of required construction submittals in each technical specification. The list is to be used in preparing the Submittal Register for approval by the Contracting Officer’s Representative (COR).

See UFGS Specification Section 01 33 00 SUBMITTAL PROCEDURES, for complete instructions related to submittal descriptions, classifications, numbers, and submittal process. Unless directed otherwise by the Contracting Officer, the words "Government Approval" associated with "G" designated submittals shall be interpreted as defined herein and in section 01 33 00
SUBMITTAL PROCEDURES.

Submittal Classifications defined in Section 01 33 00 are G-DO, G-AO, and FIO. One of these designations shall be used for all submittal requirements. For each submittal requirement in the guide specification, designers shall indicate a submittal type (G-DO, G-AO, or FIO) or shall delete the requirement for the submittal if it is not required. The references to "G-AE" and "G-PO" submittal types in the designer notes of the technical guide specifications shall be disregarded and submittals shall be designated G-DO, G-AO, or FIO as determined by the Designer in accordance with the instructions in this section and Section 01 33 00 SUBMITTAL PROCEDURES. There shall be no "G-AE" or "G-PO" submittals in the submittal register.

To designate a submittal item as FIO, mark the semi-colon following the submittal item and also the submittal tags up to the Item tag for deletion (i.e. "; [ ], [ ]"). Designers shall identify submittal classifications for all required submittals.

(9) USE OF UFGS SECTIONS: Unless directed otherwise, use UFGS sections. UFGS sections are joint effort of the U.S. Army Corps of Engineers (USACE), the Naval Facilities Engineering Command (NAVFAC), National Aeronautics and Space Administration (NASA) and the Air Force Civil Engineer Support Agency (AFCESA). In instances where more than one UFGS section addresses the same material or system requirement, use the section developed by the USACE specification proponent (general rule of thumb). Available UFGS sections with the numbers ending ".00 10", ".00 20" or ".00 40" following the section number are sections that have not yet been unified by the different Government design agencies. The ending numbers designate the specification proponent (".00 10" is for USACE, ".00 40" for NASA and ".00 20" is for NAVFAC). Where UFGS sections include tailoring options for both the various proponents (Army, NASA, and Navy) use the Army tailoring option unless otherwise indicated in this RFP. Where conflicts exist that cannot be resolved, the Contracting Officer shall be contacted to resolve the issue.

3.4.1.4 Developing Additional Project Specifications

If the need should arise for developing project specifications on materials and items not covered by the UFGS, the Contractor shall develop specifications utilizing commercial Construction Specifications Institute (CSI), 49 Division, 3 Part Section Format. These specifications shall conform to the applicable criteria requirements indicated in the solicitation. For these specification sections, write at the Mediumscope level of detail as described in CSI MasterFormat. Use Mediumscope level section numbers and titles as identified in CSI MasterFormat. Adjust section numbers which conflict with the specifications used in the project specifications. Each of these developed specification sections shall be in the same format as the CSI format specifications included in the UFGS (including the submittal paragraph). Commercially available guide specifications such as "SpecText" published by The Construction Specifications Institute and "MasterSpec" published by The American Institute of Architects may be used, subject to the format, coding and submittal paragraph requirements if UFGS specification sections are not available. References to the "Architect/Engineer" and the "Owner" shall be changed to refer to the "Government" or "Contracting Officer," as appropriate. The specifications shall clearly identify, where appropriate, the specific products chosen to meet the requirements of the specifications (manufacturers' brand names and model numbers or similar product information). The Contractor shall be responsible for coordinating references, along with the technical requirements, to specific specification sections (number and title) within the project specifications.

Section references (title and number) shall be revised to reflect the titles and numbers of specification sections used.

3.4.1.5 Division 0 and 1 Sections

Include Division 0 and 1 specification sections indicated below as part of the project specifications, unless directed otherwise:

01 32 01.00 10	PROJECT SCHEDULE,
01 33 00	SUBMITTAL PROCEDURES,
01 35 26	GOVERNMENT SAFETY REQUIREMENTS,
01 45 01	USACE QUALITY CONTROL,
01 57 20.00 10	ENVIRONMENTAL PROTECTION,
01 62 35	RECYCLED / RECOVERED MATERIALS,
01 74 19	CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT,
01 78 00	CLOSEOUT SUBMITTALS,
01 78 23	OPERATION AND MAINTENANCE DATA,

All other Division 1 Specifications required by the Contract shall be the responsibility of the Contractor.

3.4.1.6 Format for Project Specifications

Submit the project specifications, including a cover page and table of contents, printed with a word processor (using SpecsIntact software) using good quality white paper. For the 65 percent and 100 Percent Design submittals, editing of the UFGS shall be shown as indicated in the SpecsIntact documentation for text deletions and for text insertions (i.e. 65 percent and 100 percent review specifications shall be printed to show all insertions and deletions). The Released for Construction Design specifications with review comments incorporated shall be cleaned up (markings for insertion and deletion removed) and submitted in both hard copy and on electronic media (a Microsoft Windows compatible CD-ROM and compatible with the "SpecsIntact" micro computer software package). The cover page and attachments to specification sections shall be prepared in a Microsoft Word (compatible with Microsoft Word 2007) format. In addition to the electronic SpecsIntact formatted specifications, a single Adobe Acrobat PDF file, containing all specification sections for this project, shall be provided on CD with the 65 Percent Design, the 100 Percent Design, and the Released for Construction Design submittals.

Format shall be as outlined in the SpecsIntact documentation.

Each specification section shall include a Section Table of Contents which is combined with the page numbering of the specification section.

The Cover page shall be similar to the RFP Cover page and shall include:

a. Project title, project number, activity and location b. Construction contract number
c. Construction Contractor's name and address

d. Design firm's name and address

e. Names of design team members (Designers of Record) responsible for each Contractor prepared technical discipline of the project specification

f. Name and signature of a Principal of the design firm

The Table of Contents shall list the specification section numbers and titles contained in the project specifications.

3.4.1.7 Reports

The Contractor shall submit the following SpecsIntact reports with the 100 Percent Design and the Released for Construction Design submittals: Address Verification, Reference Verification, Section Verification, Bracket Verification, Submittal Verification, and Submittal Register. References shall be reconciled when printing reports.

The reports to be submitted for review shall be after the Contractor has corrected the errors generated by these reports. From the errors generated by the reference verification reports, fix only those errors where there is a discrepancy with the issue date of a publication (i.e., NFPA 70, revise to the latest code requirement). Address, Reference, and Submittal Reconciliation shall be
completed prior to submittal of the 100 Percent Design.

3.4.2 Construction Submittals

All construction submittals shall be in accordance with Specification Section 01 33 00, "SUBMITTAL PROCEDURES". Construction submittal types and products, including the submittal description numbers and data package numbers, shall be included in the specification sections, where required. When appropriate, use specific product terms instead of the generic product terms contained in the specifications sections (e.g., asphalt shingles, built-up roofing, EPDM single ply, etc. vs. roof covering; concrete masonry units, brick, metal siding, etc. vs. exterior skin; mineral fiber board, block, batt or blanket, polystyrene, polyurethane, polyisocyanurate board vs. insulation).

All construction submittals shall be provided in hardcopy format (one (1) hardcopy) and electronic Adobe Acrobat PDF format. Submittal review comments and submittal classification will be provided in hardcopy or electronic format by the Government.

The Government will have fourteen (14) calendar days to review and respond to construction submittals after date of receipt of the construction submittal.

3.4.2.1 Submittals Register (Form)

Prepare and maintain a Submittals Register. The Submittal Register (ENG Form 4288 "Submittal Register") shall be prepared using SpecsIntact Software. Additional instructions for completing the form are contained in Specification Section 01 33 00, "SUBMITTAL PROCEDURES."

Fill in columns "c" through "f" and submit with the 100 Percent Design submittal. The Submittal Register will be returned to the Contractor along with the reviewed and accepted design.

Resubmit the Submittal Register as a construction submittal as required in Specification Section 01 33 00, "SUBMITTAL PROCEDURES." The Contractor shall provide an electronic copy of the accepted submittal register (navy4288.txt file), generated by the SpecsIntact software, in both SpecsIntact file format and Adobe Acrobat Portable Document Format (PDF), seven (7) calendar days prior to the pre-construction conference. Remaining columns will be filled in at the appropriate time and by the appropriate authorities during construction.

3.5 DESIGN ANALYSES

Prepare design analyses (basis of design and calculations) for each design discipline. Specific requirements relative to the technical content to be provided are specified herein. The design analyses shall include a basis of design and calculations for each discipline. The design analyses shall be a presentation of facts to demonstrate that the concept of the project is fully understood and that the design is based on sound engineering. The design analysis for each discipline shall include:

a. A basis of design consisting of:

(1) An introductory description of the project concept which addresses the salient points of the design;

(2) An orderly and comprehensive documentation of criteria, rationale, assumptions, and reasoning for system selection.

b. Calculations required to support the design.

The Contractor shall not make reference to the RFP to avoid stating the requirements for the basis for design.

3.5.1 Format

The design analysis shall include: a cover page indicating the stage of design "PRELIMINARY DESIGN ANALYSIS" for 65 Percent Design submittal and "FINAL DESIGN ANALYSIS" for 100 Percent Design submittal, the project title, the fiscal year, the location, name of designer who prepared the design analysis ("Prepared By:") followed by the Name of A-E and Construction Contractor, location of A-E and Construction Contractor Office involved with the design, construction contract number, table of contents, and tabbed separations for each part of design analysis for quick reference. The cover sheet shall indicate the volume number and total number of volumes for the project. Provide a cover sheet for each volume. Submit design analyses prepared on 8 1/2 by 11 inch white paper. The design analysis for all disciplines shall be bound in one volume, excluding calculations.

Multiple volumes for individual disciplines, appropriately numbered, may be provided, when required. In addition to the hard copy design analysis submittal, an electronic copy shall be submitted in Adobe Acrobat PDF format. Narratives shall be provided in decimal paragraph numbering system (i.e. 1, 1.1, 1.1.1, 1.1.1.1 etc.). Narratives shall be an original document that does not copy the text from the RFP document sections, unless directed otherwise, and shall be written in the same tense (Past or Present) for the entire design analysis. Each part of the design analysis shall include part numbering and page numbering (consecutive page numbering for each part).

Organize design analysis narrative into the following parts, as follows:

3.5.1.1 Part 1 - General Description.

This part will provide statements of purpose, authority and applicable criteria. A description of the project and a summary of the economic factors influencing the choice of the civil, architectural, structural, heating, ventilating, and air conditioning (HVAC), plumbing, electrical, communications, and fire protection systems used in the project shall be provided along with an indication of how initial costs and life cycle costs were considered.

a. Purpose. Include the following statement under the heading of "PURPOSE": "Sample Statement: The purpose of this project is to provide a facility which allows for adequate comprehensive programs for both military personnel and their dependents. The anticipated average daily attendant for this facility will be 450 persons. The facility provides for adequate support for athletics, aerobic activities, auxiliary administrative support, parking and support area."

b. Authority. Provide the following authorization statement under the heading "AUTHORITY" for the project:

"Sample: The preparation of design documents was authorized by Design

Directive dated (31 January 2009)."

c. Applicable Criteria. Provide a list of the general criteria that pertains to all disciplines used in the design. Specific criteria used in a particular engineering/architectural discipline shall be listed in the text of the appropriate discipline in Part 2 of the design analysis. Such criteria shall be referenced accordingly.

d. Project Description. Provide a description of the project and summary of economic factors influencing the choice of materials and systems used in the project.

3.5.1.2 Part 2 - Design Requirements and Provisions.

This part of the design analysis shall provide statements of factors considered and provided in the design along with supporting justification of design decisions and design calculations. Include narratives for each of the following areas or disciplines; Civil, Architectural, Structural,

Heating, Ventilating, and Air Conditioning (HVAC), Plumbing, Electrical, Communications, Fire Protection.

3.5.2 Calculations

All calculations shall be placed in separate appendix volume(s). Calculations shall include a cover page similar to the design analysis narrative cover page, a table of contents, index page, a summary of criteria for each appendix, the project title, and the location identified on every page of the calculations. All calculation pages shall be clearly legible. Each discipline which requires calculations shall be consecutively numbered (Example: A-1, A-2, A-3 etc. for Water Supply and Wastewater Calculations and B-1, B-2, B-3, etc. for Structural Calculations) and the date. Cite criteria from which the calculations, rationale, and formulae are extracted by publication number, title, edition, and page number. The cover page and each page of calculations shall also include the names of the persons originating and checking the calculations. The person checking the calculations shall be a registered professional engineer other than the originator. In addition, the signature and seal of the appropriate registered professional engineer responsible for the work shall appear on the cover page of the calculations for each discipline. Each appendix index page shall list subtopics (e.g. for Structural - Loads, Materials, References, Wind Analysis, Footing Design, Wall Design, Column Design, etc.) with pages numbers where each of these subtopics can be found in the calculations. Computer printouts shall be consecutively page numbered and identified similar to the calculations. Identify the computer program name, source, and version. All schematic models used for computer input shall be provided.

3.5.3 Design Review Meetings

Formal design review meetings shall be held at DTA Building 200C G4
Facilities Planning Room for the following milestone meetings:

65 Percent Design Submittal
100 Percent Design Submittal

The design review meetings shall be scheduled after all comments have been received and addressed by the Contractor. The Contractor shall provide all design review comment responses to the COR. The COR will schedule the design review meeting with the Contractor and appropriate Government personnel.

Design review meetings shall not be taken as an approval or acceptance and do not relieve the Contractor from responsibility for compliance with the RFP solicitation, code regulations, or betterments, either listed with the Contractor's proposal or identified during the proposal evaluation.

For each design review meeting, the Contractor shall provide adequate copies of annotated comments to all conference participants. Unresolved comments and problems will be resolved by immediate follow-on action at the end of the meetings. Valid comments will be incorporated.

In addition, the Contractor shall request a design progress meeting to the COR after 35 percent design is complete. The COR may schedule the design progress meeting with the Contractor and appropriate Government personnel. The Contractor shall bring 35 percent design drawings and specifications to the meeting. The Contractor shall brief the Government personnel on all aspects of the 35 percent design package. The intent of the 35 percent design progress meeting is to address all design issues, conflicts, concerns, and questions. Additional design progress meetings may be requested by the Contractor or the COR and may be scheduled by the COR to address issues, conflicts, concerns, and questions.

3.5.4 Requests for Information, Meeting Minutes, and Comments

Copies of Requests for Information (RFIs) made by the Contractor to the Government shall be included as an appendix to the design analysis. An index of each RFI, which documents the RFI number, the date the RFI was given to the Government, the date the RFI was answered by the Government, and the response provided by the Government shall be provided. The Government will have fourteen (14) calendar days to respond to RFIs after date of receipt of the RFI.

The Contractor shall record meeting minutes at each meeting attended. The Contractor shall submit the meeting minutes to each person that attended the meeting via e-mail message no later than three (3) calendar days after the meeting occurs. Any RFI, from any meetings, shall be formally submitted separately by the Contractor. A copy of all meeting minutes and design review comments (if any) with responses shall be included as an appendix to the design analysis.

Appendices for RFIs, meeting minutes, and design review comments shall have page numbering that follows the same format as for Calculations listed above.

3.6 DESIGN CERTIFICATION

The Contractor shall provide certification signed by an officer of the Contractor's company attesting that the drawings, specifications, and design analyses prepared for construction meet the requirements of the RFP. The certification shall accompany the submission of the design documents along with names and disciplines for the Designers of Record. This design certification shall include a list of deviations (variations) from the solicitation or accepted final design. Prepare the design certification and transmittal letter in the format shown on Attachment A or Attachment B included at the end of this section.

3.7 65 PERCENT DESIGN SUBMITTALS

The 65 Percent Design submittal shall consist of 65 percent complete drawings and specifications for all areas of design disciplines including civil, architectural, interior design, structural, heating, ventilating, and air conditioning (HVAC), plumbing, electrical, communications, and fire protection. All design calculations for all disciples shall be provided with the 65 Percent Design submittal. The design calculations provided with the 65 Percent Design submittal shall be 100 percent complete. The design analysis shall be 100 percent complete and shall be provided with the 65 Percent Design submittal.

3.8 100 PERCENT DESIGN SUBMITTALS

The 100 Percent Design submittal shall consist of 100 percent complete drawings, specifications, and design analysis for all areas of design disciplines including civil, architectural, interior design, structural, heating, ventilating, and air conditioning (HVAC), plumbing, electrical, communications, and fire protection.

3.9 REVIEW BY GOVERNMENT

3.9.1 Distribution of Design Documents for Conformance Review

(a) The Government shall receive review documents fourteen (14) calendar days prior to review conferences. All documents must contain an index of contents. Work shall continue during the review period between the 65 Percent Design submission and the 65 Percent Design review conference. Work shall be 100 percent complete when the 100 Percent Design is submitted. All submittals shall be transmitted by express mail. Originals of transmittal letters shall be sent to the Army Contracting Command – Warren (ACC-WRN), and copies shall accompany each mail package. Transmittal letters shall indicate distribution by use of the "ATTN" code shown in the address. Design document sets shall include the items listed below. Some of the Construction submittals are also listed. Design submittals shall be submitted as a complete package (i.e. drawings, specifications, DA, etc). The distribution listed below also applies to all design reviews and design packages accepted for construction.

(b) For the 65 Percent Design and the 100 Percent Design review submittals, if the Government requires more time than the fourteen (14) calendar days given, prior to either of the review conferences, the Contractor will be granted an extension of time equal to the number of calendar days of delay.

(c) The Government requires fourteen (14) calendar days to review 100 Percent Design submittals after receipt of these documents. If the Government requires more than the days given, the Contractor will be granted an extension of time equal to the number of calendar days of delay.

3.9.1.1 Design Submittal Items

Electronic copies and hardcopies of each required submittal (unless specified otherwise in this RFP); Design Analysis, Specifications, Drawings (1/2 Size), Drawings (Full Size), Submittal Register, Review Comments, Requests For Information, Meeting Minutes, Design Certification Letter, Operation and Maintenance Manuals, As-Built Drawings, and DD Form 1354 – Transfer and Acceptance of Military Real Property, shall be sent to the Activity Distribution Addresses listed in the paragraph below as required for the 65 Percent Design submittal, the 100 Percent Design submittal, the Released for Construction Design submittal, and for the project completion submittals.

3.9.1.2 Activity Distribution Addresses

Department of the Army
TARDEC – Detroit Arsenal
6501 East Eleven Mile Road
Mail Stop 204 (Attn: Audra McDaniel) Warren, Michigan 48397-5000

Army Contracting Command – Warren (ACC-WRN)
6501 East Eleven Mile Road
Mail Stop 350 (Attn: Heather Mundt) Warren, Michigan 48397-5000

3.9.2 Review Comments

For each design review submittal, the Contractor will be furnished comments from Army Contracting Command – Warren (ACC-WRN), and other agencies involved in the review process, approximately fourteen (14) calendar days after receipt, unless indicated otherwise. Annotated comments, including the disposition of all comments, shall be furnished in writing by the Contractor within seven (7) calendar days of the review comments receipt.

The Government will review the 100 Percent Design submittal for a period of fourteen (14) calendar days after receipt of the documents. After this review, a formal letter will be sent to the Contractor allowing him to commence construction or rejecting the submittal.

In responding to review comments presented by the Government, the Contractor's designer shall state how and where comments were addressed.

Any Government review comments on the 100 Percent Design shall be resolved prior to distribution of the Released for Construction Design documents. The Contractor shall furnish copies of Annotated review comments indicating disposition of all comments with the Construction document set.

For each design review meeting, the Contractor shall provide adequate copies of annotated comments to all conference participants. Unresolved comments and problems will be resolved by immediate follow-on action at the end of the conferences. Valid comments will be incorporated.

After receipt of final corrected design documents, the Army Contracting Command – Warren (ACC-WRN), will recommend acceptance to proceed with construction.

3.9.3 Delays

Delays caused by the Contractor in completion of the 65 Percent Design, the 100 Percent Design, or the Released for Construction Design will not be considered as valid reasons to delay completion of the entire design. The Government may not be held liable for delays caused by re-submittal efforts caused by designs submitted which are rejected by the reviewers.

3.10 RELEASED FOR CONSTRUCTION DESIGN

Upon the Contractor's completion of the Released for Construction Design submittal, the Contractor shall reproduce copies of the design documents (accepted for the purposes of beginning construction) subject to the incorporation of the 100 Percent Design review comments. The Cover Sheet of the Contractor prepared drawings shall bear the stamp or seal and signature of the registered architect or appropriate engineer responsible for the work. The date on each drawing shall reflect the month and year that the drawings were cleared for the purposes of beginning construction. The cover sheet of the drawings, the cover sheet of the specifications, and the cover sheet of the design analysis shall include the date that the design
documents were cleared for the purposes of beginning construction. The Contractor shall provide the design analysis, the design drawings, and the specifications in hard copy and electronic formats as specified above. Distribution shall be as indicated above. The originals will be retained by the Contractor for recording of as-built conditions. Upon completion of the project, the accepted design documents corrected to reflect as-built conditions shall be supplied to the Government.

The Contractor will be notified in writing by the Contracting Officer's Representative (COR) of Construction Notice to Proceed (NTP) when the design has been cleared for construction, accepted by the Government, and therefore considered Released for Construction Design documents.

3.10.1 Accuracy and Completeness of Design

Reviews by the Government of the design documents shall not be construed to be an endorsement of the accuracy or completeness of the design. Design deficiencies or omissions in the accepted design shall be the responsibility of the Contractor.

3.11 REVISIONS TO THE ACCEPTED DESIGN

3.11.1 Minimization of Design Revisions

The accepted design will be used by all parties involved in construction and in administration of the contract. Therefore, it is imperative that the design documents be kept up to date and an effective system of making and distributing changes be implemented. Since changes to the design increase risk of construction errors and deplete available administrative resources, every effort shall be made to minimize revisions to the accepted design. One of the measures of the Contractor's effectiveness of management will be how well the goal of minimizing changes to the accepted design is met. The use of effective quality control during design and the utilization of experienced and capable designers are some of the means that are expected to be used to accomplish this goal.

3.11.2 Supplemental Design Package and Certification

If revisions to the accepted design (Released for Construction Design) become necessary, the Contractor shall submit a Supplemental Design Package using Attachment B "Supplemental Design Certification and Transmittal Form" attached at the end of this specification section. This Supplemental Design Package shall be submitted as a "G-DO" construction submittal in accordance with Section 01 33 00 SUBMITTAL PROCEDURES. The revisions will be considered a "Variation" and the list of deviations from the accepted design shall be identified on the Supplemental Design Certification and Transmittal Form and on the construction submittal form ENG Form 4025-R. Variations from the Released for Construction Design set must be approved by the Contractor's Designer and the Contractor's Quality Control Representative and shall be accepted by the Contracting Officer as conforming with the RFP before construction of items affected by these revisions may commence. The Contractor shall comply with all the requirements of paragraph "VARIATIONS" of Section 01 33 00 SUBMITTAL PROCEDURES in preparation of the Supplemental Design Package.

3.12 AS-BUILT DRAWING SUBMITTALS

An as-built drawing is a construction drawing revised to reflect the final as-built conditions of the project as a result of modifications and corrections to the project design required during construction. The final as-built drawings shall not have the appearance of marked up drawings. The final as-built drawings shall appear as professionally prepared drawings as if they were the "as-designed" drawings.

As-Built Drawings shall be provided in accordance with UFGS Specification Section 01 78 00 CLOSEOUT SUBMITTALS. Redline as-built drawings shall be provided to the Contracting Officer’s Representative (COR) prior to the pre- final and final inspections.

3.12.1 Maintenance of As-Built Drawings

The Contractor shall keep a record set of working as-built drawings at the job site, marked in red, of all changes and corrections from the contract drawings. The Contractor shall enter changes and corrections on drawings promptly to reflect "Current Construction". The CADD files shall be updated at least on a monthly basis. The marked-up set of drawings shall reflect any changes, alterations, adjustments, or modifications. Changes must be reflected on all sheets affected by the change. Changes shall include marking the drawings to reflect structural details, foundation layouts, equipment sizes, and other extensions of design. Both paper and electronic documents shall be available at all times and shall be provided promptly to the Contracting Officer when requested.

Final as-built drawings shall reflect actual room numbers adopted by the end user.

3.12.2 Computer-Aided Design and Drafting (CADD) As-Built Drawings

Only personnel proficient in the preparation of CADD drawings shall be employed to prepare and modify the construction drawings or prepare additional new drawings. As-Built drawings shall be provided in AutoCAD format. Conversions and corrections to the drawings provided by the Government to the Contractor shall be made by the Contractor. If additional drawings are required, they shall be prepared in AutoCAD format. The title block and drawing border to be used for any new final as-built drawings shall be identical to that used on the contract drawings.

All work by the Contractor shall be done on files in AutoCAD format. The Government will review final as-built drawings for accuracy and the Contractor shall make all required corrections, changes, additions, and deletions.

When final revisions have been completed, the cover sheet drawing shall show the wording "RECORD DRAWING AS-BUILT" followed by the name of the Contractor. All other contract drawings shall be marked in the bottom right-hand corner of each drawing either "AS-BUILT" drawing denoting no revisions on the sheet, or "REVISED AS-BUILT" denoting one or more revisions. Original contract drawings shall be dated in the revision block.

3.12.3 As-Built Conditions that are Different from Contract Drawings

All as-built conditions that are different, such as dimensions, road alignments and grades, and drainage and elevations, from the contract drawings shall be accurately reflected on each drawing. Any options shown on drawings and not selected shall be deleted and options selected shall be clearly reflected on final as-built drawings.

In addition, as-built information that exceeds the detail shown on the contract drawings include those that reflect structural details, foundation layouts, equipment, sizes, mechanical and electrical room layouts, and other extensions of design, that were not shown in the project design documents because the exact details were not known until after the time of approved shop drawings. It is recognized that these shop drawing submittals (revised showing as-built conditions) will serve as the as-built record without actual incorporation into the contract drawings. Furnish all such shop drawings in CADD format. Fire protection details shall be included such as wiring, piping, and equipment drawings.

3.12.4 Final As-Built Drawings

At the time of Beneficial Occupancy of the project or at a designated phase of the project, final as-built CADD files shall be provided to the Contracting Officer to include the following:

(1) On CD in AutoCAD format
(2) On CD in Adobe Acrobat PDF format (one file of all drawings)
(3) The record set of approved working as-built drawings (hardcopy)

In the event the Contractor accomplishes additional work after this submittal, which changes the as-built conditions, the Contractor shall furnish a new CD with all drawing sheets (AutoCAD and Adobe Acrobat PDF files) and a new full size set of affected sheets.
Title Blocks shall be clearly marked to indicate final as-built drawings. All other documents such as; design analysis, catalog cuts, and
certification documents, which are not available in native electronic format, shall be scanned and provided in an organized manner in Adobe Acrobat PDF format.

3.13 OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data specifically applicable to this contract and a complete and concise depiction of the provided equipment, product, or system, stressing and enhancing the importance of system interactions, troubleshooting, and long-term preventative maintenance and operation. The subcontractors shall compile and prepare data and deliver to the Contractor prior to the training of Government personnel. The Contractor shall compile and prepare aggregate O&M data including clarifying and updating the original sequences of operation to as-built conditions. Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Include an index preceding each submittal. The O&M Data shall be provided in accordance with the requirements of UFGS Specification Section 01 78 23 OPERATION AND MAINTENANCE DATA.

The Contractor shall provide one complete hardcopy of the final O&M data and one electronic copy of the final O&M data in Adobe Acrobat PDF format on CD to the COR.

3.14 DD FORM 1354, TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

The Contractor shall prepare and provide, for acceptance, completed DD Form 1354 "Transfer and Acceptance of Military Real Property." The DD Form 1354 shall be filled out in accordance with the latest edition of UFC 1-300-08, Criteria for Transfer and Acceptance of Military Real Property. The Contractor shall provide all three types of DD Form 1354; including, Draft, Interim, and Final, as described in UFC 1-300-08. Each submittal of the DD Form 1354 shall be provided electronically in Adobe Acrobat PDF format.

Attachment A - DESIGN CERTIFICATION AND TRANSMITTAL LETTER

[Contractor's Letterhead]
[Date:] [Contract No.]

[Reviewing Component Address]

Subj: DESIGN CERTIFICATION AND TRANSMITTAL LETTER
[Project Title] [Project Location] [Contract No.]

Gentlemen

Enclosed are the following documents, which I hereby certify are in compliance with the contract requirements and can be used to commence construction subject to Government Conformance Review:

1. Design Drawings
2. Project Specification
3. Design Analysis
    a. Civil
    b. Water Supply and Wastewater Collection
    c. Architectural
    d. Interior Design e. Structural
    f. Mechanical
    g. Fire Protection
    h. Electrical
    i. Communications
    j. Environmental Protection, Compliance and Permits
    k. Health and Safety
    l. Sustainable Design

4. Submittals Register
5. All other Design Deliverables
6. Deviations (List of Deviations with Justification Attached) [Typed Name and Signature of an Officer of the Contractor's Company]

Copy to:
[As standard with the Contractor]

Attachment B - SUPPLEMENTAL DESIGN CERTIFICATION AND TRANSMITTAL FORM [Contractor's Letterhead]
[Date:] [Contract No.]

[Reviewing Component Address]

Subj: SUPPLEMENTAL DESIGN CERTIFICATION AND TRANSMITTAL FORM
[Project Title]
[Project Location] [Contract No.]

Gentlemen:

The supplemental design items listed below and the attached documents, unless identified otherwise, I hereby certify are in compliance with the contract requirements and are compatible with other elements of work, subject to Government conformance review:

1. Nature and Features of the Design Variation(s):
2. Why each Design Variation is desirable and Beneficial to the Government:
3. List of any additional Deviations from the RFP:
4. List of Specific Documents Supporting Design Variation(s):

a. Design Drawings

(1) Sketches:
(2) Reissued Drawings:
(3) Descriptive Changes:

b. Project Specifications

(1) Reissued or New Sections:
(2) Descriptive Changes:

c. Design Analysis

(1) Reissued Pages:
(2) Reissued or New Calculations:

d. Any other Design Deliverable:

[Typed Name and Signature of an
Officer of the Contractor's Company]

Copy to:
[As standard with the Contractor]

ATTACHMENT C SAMPLE SUBMITTAL PARAGRAPH

The below listing is an example of a typical submittal paragraph as it may appear within the technical guide specifications and with the appropriate text for the submittal review designations, G-DO, G-AO, or FIO (blank).

1.4_ 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-02 Shop Drawings

Fire Sprinkler Design Drawings; G-DO SD-03 Product Data Meters

Regulators

SD-08 Manufacturer's Instructions

Dielectric Unions

Pressure Reducing Valves

SD-10 Operation and Maintenance Data

Wet Pipe Sprinkler System; G-AO

-- End of Section --

SECTION E - INSPECTION AND ACCEPTANCE

The following Acceptance/Inspection Schedule was added for CLIN 0011:

INSPECT AT	INSPECT BY	ACCEPT AT	ACCEPT BY
Destination	Government	Destination	Government

SECTION F - DELIVERIES OR PERFORMANCE

The following Delivery Schedule item has been added to CLIN 0011:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	UIC
POP 30-JUL-2014 TO 31-OCT-2014	N/A	TARDEC AUDRA MCDANIEL AUDRA MCDANIEL RDTA AUDRA.MCDANIEL@US.ARMY.MIL WARREN MI 48397-5000 586-282-4555 FOB: Destination	W91ATL

SECTION G - CONTRACT ADMINISTRATION DATA

Accounting and Appropriation

Summary for the Payment Office

As a result of this modification, the total funded amount for this document was increased by $20,000.00 from $559,556.61 to $579,556.61.

CLIN 0011:
Funding on CLIN 0011 is initiated as follows:

ACRN: AH

CIN: GFEBS001056802100001

Acctng Data: 021201420152040000066363323 R.0009803.2.23 6100.9000021001

Increase: $20,000.00

Total: $20,000.00

Cost Code: A60FL

SECTION I - CONTRACT CLAUSES

The following have been modified:

52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984)

The Contractor shall be required to:
(a) commence work under this contract within 7 calendar days after the date the Contractor receives the notice to proceed,
(b) complete all construction NLT 30 September 2014.
(c) complete the entire work not later than 31 October 2014. The time stated for completion shall include as-built drawings, operation and maintenance manuals, operational tests, reports, equipment lists, training, instructions, and all other required project closeout documents.

(End of clause)

(End of Summary of Changes)