SECTION 01 10 00
STATEMENT OF WORK

1.0 PROJECT OBJECTIVES

1.1. SECTION ORGANIZATION

2.0 SCOPE

2.1. Ammunition Storage

2.2. SITE

2.3. GOVERNMENT-FURNISHED GOVERNMENT INSTALL EQUIPMENT (GFGI)

2.4. FURNITURE REQUIREMENTS

3.0 Ammunition Storage

3.1. GENERAL REQUIREMENTS

3.2. FUNCTIONAL AND AREA REQUIREMENTS

4.0 APPLICABLE CRITERIA

4.1. INDUSTRY CRITERIA

4.2. MILITARY CRITERIA

5.0 GENERAL TECHNICAL REQUIREMENTS

5.1. SITE PLANNING AND DESIGN

5.2. SITE ENGINEERING

5.3. ARCHITECTURE AND INTERIOR DESIGN

5.4. STRUCTURAL DESIGN

5.5. THERMAL PERFORMANCE

5.6. PLUMBING

5.7. ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

5.8. HEATING, VENTILATING AND AIR CONDITIONING

5.9. ENERGY CONSERVATION

5.10. FIRE PROTECTION

5.11. SUSTAINABLE DESIGN

5.12. CONSTRUCTION AND DEMOLITION (C&D) WASTE MANAGEMENT

5.13. SECURITY (ANTI-TERRORISM STANDARDS)

6.0 PROJECT SPECIFIC REQUIREMENTS

6.1. GENERAL

6.2. APPROVED DEVIATIONS

6.3. SITE PLANNING AND DESIGN

6.4. SITE ENGINEERING

6.5. ARCHITECTURE

6.6. STRUCTURAL DESIGN

6.7. THERMAL PERFORMANCE

6.8. PLUMBING

6.9. SITE ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.10. FACILITY ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.11. HEATING, VENTILATING AND AIR CONDITIONING

6.12. ENERGY CONSERVATION

6.13. FIRE PROTECTION

6.14. SUSTAINABLE DESIGN

6.15. ENVIRONMENTAL

6.16. PERMITS

6.17. DEMOLITION

6.18. ADDITIONAL FACILITIES

1.0 PROJECT OBJECTIVES

1.0.1 The project objective is to design and construct facilities for the military that are consistent with the design and construction practices used for civilian sector projects that perform similar functions to the military projects. For example, a Company Operations Facility has the similar function as an office/warehouse in the civilian sector; therefore the design and construction practices for a company operations facility should be consistent with the design and construction of an office/warehouse building.

Comparison of Military Facilities to Civilian Facilities

Military Facility	Civilian Facility
Ammunition Storage	Not Applicable

1.0.2 It is the Army's objective that these buildings will have a 50 year useful life. The design and construction should provide an appropriate level of quality to ensure the continued use of the facility over that time period with the application of reasonable preventive maintenance and repairs that would be industry-acceptable to a major civilian sector project OWNER. The facility design should consider that the Army may repurpose the use of the facility over the 50 year life. The Army's intent is to install products and materials of good quality that meet industry standard average life that corresponds with the period of performance expected before a major renovation or repurpose. The design should be flexible and adaptable to possible future uses different than the current to the extent practical while still meeting the operational and functional requirements defined within. Flexibility is achieved through design of more flexible structural load-bearing wall and column system arrangements. The site infrastructure will have at least a 50-year life expectancy with industry-accepted maintenance and repair cycles. Develop the project site for efficiency and to convey a sense of unity or connectivity with the adjacent buildings and with the Installation as a whole.

1.0.3 Requirements stated in this contract are minimums. Innovative, creative, and life cycle cost effective solutions, which meet or exceed these requirements are encouraged. Further, the OFFEROR is encouraged to seek solutions that will expedite construction (panelization, pre-engineered, etc.) and shorten the schedule. **The intent of the Government is to emphasize the placement of funds into functional/operational requirements. Materials and methods should reflect this by choosing the most economical Type of Construction allowed by code for this occupancy/project allowing the funding to be reflected in the quality of interior/exterior finishes and systems selected.**

1.1. SECTION ORGANIZATION

This Section is organized under 6 major “paragraphs”.

(1) Paragraph 1 is intended to define the project objectives and to provide a comparison between the military facility(ies) and comparable “civilian” type buildings.

(2) Paragraph 2 describes the scope of the project.

(3) Paragraph 3 provides the functional, operational and facility specific design criteria for the specific facility type(s) included in this contract or task order.

(4) Paragraph 4 lists applicable industry and government design criteria, generally applicable to all facility types, unless otherwise indicated in the Section. It is not intended to be all-inclusive. Other industry and government standards may also be used, where necessary to produce professional designs, unless they conflict with those listed.

(5) Paragraph 5 contains Army Standard Design Criteria, generally applicable to all facility types, unless otherwise indicated in the Section.

(6) Paragraph 6 contains installation and project specific criteria supplementing the other 5 paragraphs.

2.2. SITE:

Provide all site improvements necessary to support the new building facilities. Refer to Paragraph 6.

Approximate area available 9.00 acres

2.3. GOVERNMENT-FURNISHED GOVERNMENT-INSTALLED EQUIPMENT (GFGI)

Coordinate with Government on GFGI item requirements and provide suitable structural support, brackets for projectors/VCRs/TVs, all utility connections and space with required clearances for all GFGI items. Fire extinguishers are GF/GI personal property, while fire extinguisher brackets and cabinets are Contractor furnished and installed CF/CI. All Computers and related hardware, copiers, faxes, printers, video projectors, VCRs and TVs are GFGI.

The following are also GFGI items: Not applicable

2.4. FURNITURE REQUIREMENTS

Provide furniture design for all spaces listed in Chapter 3 and including any existing furniture and equipment to be re-used. Coordinate with the user to define requirements for furniture systems, movable furniture, storage systems, equipment, any existing items to be reused, etc. Early coordination of furniture design is required for a complete and usable facility.

The procurement and installation of furniture is NOT included in this contract. Furniture will be provided and installed under a separate furniture vendor/installer contract. The general contractor shall accommodate that effort with allowance for entry of the furniture vendor/installer onto this project site at the appropriate time to permit completion of the furniture installation for a complete and usable facility to coincide with the Beneficial Occupancy Date (BOD) of this project. The furniture vendor/installer contract will include all electrical pre-wiring and the whips for final connection to the building electrical systems however; the general contractor shall make the final connections to the building electrical systems under this contract. Furthermore, the general contractor shall provide all Information/Technology (IT) wiring (i.e. LAN, phone, etc.) up to and including the face plate of all freestanding and/or systems furniture desk tops as applicable, the services to install the cable and face plates in the furniture, the coordination with the furniture vendor/installer to accomplish the installation at the appropriate time, and all the final IT connections to the building systems under this contract.

The Government reserves the right to change the method for procurement of and installation of furniture to Contractor Furnished/Contractor Installed (CF/CI). CF/CI furniture will require competitive open market procurement by the Contractor using the Furniture, Fixtures and Equipment (FF&E) package. Reference applicable appendix for Preliminary FF&E Information including furniture dimensions sizes as shown in the Standard Design.

2.5. NOT USED

3.0 Ammunition Supply Point Improvements

3.1 General Requirements:

The upgrade of the existing Ammunition Supply Point (ASP), located within the 2700 Area of Fort Drum, facing on Munns Corner Road, shall include a new administration building and four (4) new earth-covered magazines. The project shall include the appropriate lightning protection, as well as supporting facilities including water, sewer, electric, communications, paving, sidewalks, storm drainage, POV parking, and site improvements. Handicapped access will be provided at the administration facility only.

3.1.2 Administration Building Programmatic Requirements

Space Name:	No. of Spaces:	Unit SF:	Total SF:	No. of Occupants:	Remarks:
Vestibule	3	2 @55 1@35	145	0	Provide airlocks at each entrance
Customer Area	1	210	210	8-10	Provide counter space for customer paperwork
Open Office	1	460	460	4-6	Provide counter between Customer Area and Open Office. Provide counter for warehouse staff
Office	3	130	390	1 EA.	
Office	1	140	140	1	
Office	1	220	220	1	
Work Room	1	175	175	2	
Conference & Training Room	1	445	445	20-25	Room can function as an overflow break room
File Room	1	250	250		
Storage & Supply	1	95	95		
Break Room & Kitchen	1	150	150		Provide kitchen with casework, range & refrigerator
Men's Bathroom	1	140	140		Provide ADA compliant stall and 2 urinals
Men's Lockers	1	175	175		Provide 2' x2' x 6' metal lockers
Women's Bathroom	1	140	140		Provide ADA compliant stall

Space Name:	No. of Spaces:	Unit SF:	Total SF:	No. of Occupants:	Remarks:
Women's Lockers	1	100	100		Provide 2' x2' x 6' metal lockers
Customer's Bathroom	1	50	50		Provide ADA compliant stall and lavatory
Mechanical & Electrical Room	1	130	130		Mechanical could be located in a mezzanine above the main area
Telecom. Room	1	40	40		
Janitor's Closet	1	25	25		Provide sink, mop rack, & storage shelving

3.1.3 The administration building shall be oriented with the long axis running northwest to southeast so that the north and south walls face the blast zone (based on assumed north). This will allow for the maximum use of daylight in the design. The project will integrate sustainable design principles by retaining and using existing topography to advantage, and to reduce overall project impact on the site.

3.2 Site Planning Requirements

Administration Building:

3.2.1 The new administration building site is located northwest of the existing administration building. The existing site is currently developed with small, metal-frame buildings, paved roads, some utilities, a well and septic system. Located within the current site are electrical transmission lines, telecommunications lines, domestic water mains, and trunk sanitary sewer lines. The site topography is flat with the majority of the project site pitched to the south.

3.2.2 This project shall provide a pedestrian-friendly site with sufficient parking for staff and customers. A minimum of fourteen spaces, plus two handicapped accessible spaces shall be provided. The building shall be designed to be outside of the blast zone as indicated on the site plan. In addition, the building shall be sited to comply with Antiterrorism/Force Protection requirements.

3.2.3 Water, wastewater, and electrical lines will be servicing the administration building. There is also a proposed wastewater lift station adjacent to the administration building under another separate project.

3.2.4 The sanitary sewer will be discharged into a new, 1000-Gallon septic system located to the north of the building if a new wastewater pump station and force main are not available at the time of construction.

3.2.5 Domestic water will be supplied to the administration building using the existing well, located northeast of the existing administration building. The contractor shall remove the existing chlorination system from the existing building and place in the new building in the mechanical room at time of turnover. Domestic hot water will be supplied by a wall-hung instantaneous heater, fired by propane or electric depending upon the available services at the time of construction.

3.2.6 Natural gas is not currently available on the project site. The government will provide a Liquid Propane tank a month prior to turnover the contractor shall provide an acceptable concrete pad.

3.2.7 A 200 amp, single-phase service will be provided to the administration building from the 13.2 KVA, three-phase service, located at the street, which is to be upgraded under a separate contract.

3.2.8 Telecommunications and intrusion detection will be facilitated by a fiber optic duct bank from the new administration building to the existing guard station. This system shall include two new multiplexers. The multiplexers are to be supplied by the Contractor and will need to meet the requirements to run the cameras located in the ASP.

3.2.9 Parking has been included for fifteen spaces, plus two handicapped accessible spaces at the administration building. There are to be no additional parking spaces located at the ammunition magazines. In order to facilitate fire apparatus access, a looped access drive to the building shall be provided. The new access drive shall include removable bollards at each driveway end so that general vehicle access is prevented.

3.2.10 The site shall be graded in a way that directs the storm water away from the building. The water will enter the drainage system adjacent to the site. Porosity of the existing soil will allow a majority of the water to infiltrate the ground.

3.2.11 The pavement design shall be in accordance with seasonal frost penetration depths for the Fort Drum region. As a minimum, the bituminous asphalt pavement shall consist of the following (access drives, parking areas, and the formation area):

1 ½-inch Asphalt Top Course (NYSDOT Item # 403.170, Type 7f)

2 ½-inches Asphalt Concrete Binder Course (NYSDOT Item # 403.170, Type 3)

12-inches Crushed Stone Base (NOT Type 2) in 6-inch lifts, at 95% density by the modified proctor test

16-inch Total depth of pavement section

3.2.12 Reinforced concrete sidewalks shall be provided on the site as indicated on the site plans to allow for walking from the site buildings to the parking areas. Sidewalks are to consist of 4500 psi concrete with welded wire mesh reinforcing. The minimum concrete thickness of the sidewalks is 6-iches over 8-inches of compacted, crushed stone.

3.2.13 Site lighting shall be provided to properly illuminate the site for safety and function during night and evening hours.

Ammunition Magazines:

3.2.14 The new magazines shall be located between the existing magazines as indicated on the site plan. The magazines shall be concrete, oval-arch.

3.2.15 The ammunition magazines are constructed as pairs per the Department of Defense Explosives Safety Board, Technical Paper No. 15, Approved Protective Construction, Revision 3, 10 May 2010. The inner wall of magazine to inner wall of magazine is greater than seventy-feet between the new pairs and existing magazines. The new pairs are to be centered between the two existing magazines to provide maximum construction clearance from the existing magazines.

3.2.16 The ammunition magazines are located on the southern most road of the ASP area. The terrain is relatively flat with a slight pitch to the south.

3.2.17 No sanitary sewer, domestic water, or natural gas lines will be supplied to the magazines.

3.2.18 Electricity will be supplied by a 120/230 volt, single-phase, three-wire service with a ground bus, surface-mounted in a weather-proof enclosure. All C/Bs shall be rated 20 Amp, IP, CL, 120 except as may be noted otherwise. A solid, neutral bus shall be connected to the ground bus only in the panel board. The panel board enclosure shall be grounded to the ground bus.

3.2.19 Intrusion detection systems at the magazines shall be facilitated by a fiber optic duct bank from the front of the magazines to new utility poles at the street.

3.2.20 The magazine areas shall be graded in a way that directs the storm water away from the structures. A six-inch perforated footing drain shall be installed on both sides of the magazines. The drains will be site adapted to drain either to the front or to the rear of each magazine.

3.2.21 Pavement design shall be in accordance with the seasonal frost penetration in the Fort Drum area. The pad from the road to the magazine blast doors shall be eight-inches of reinforced concrete on a six-inch crushed stone base (NOT Type 2) in six-inch lifts to 95% density by the modified proctor test.

3.2.22 Site lighting shall be provided to properly illuminate the site for safety and function during night and evening hours. The exterior fixtures shall be incandescent type WBTH-414. The exterior lights shall be connected to the same circuit for control at the panel board. Not more than eight fixtures shall be connected to any one 20 Amp circuit.

3.3 Architectural Requirements

Administration Building:

3.3.1 The design of the building shall enhance the visual environment of the installation. Spaces located along the north and west walls shall be low occupancy uses such as storage rooms, locker rooms, and service spaces to minimize the sizes of windows facing the blast zones. Occupied spaces, such as offices, and the customer area, shall be located on the south side of the building to provide maximum day lighting.

3.3.1.1 The building shall be designed and constructed to meet a sustainable design minimum LEED-NC 2009 Silver certification from the USGBC (Version 3.0).

3.3.2 Use durable, low-maintenance materials. Exterior materials shall be metal roofing, metal siding, and metal windows and doors as indicated in the Fort Drum Installation Design Guide. The exterior environment shall include Fort Drum’s standard building signage.

3.3.2.1 The exterior walls shall be composed of load-bearing, insulated metal panels on steel stud construction.

3.3.2.2 Doors shall comply with UFC 4-010-01. Service doors shall be painted hollow metal. Exterior windows and doors shall have insulated glazing.

3.3.2.3 Sloped roofs shall be a 4/12 slope. Roofing material shall be a standing seam metal with color to comply with the Fort Drum Installation Design Guide. The cold roof, roofing systems shall have a Underwriters Laboratory (UL) Class A rating for fire resistance, UL 90 wind resistance ratings, and a Factory Mutual (FM) I-90 fire and wind resistance rating. Roofs shall have snow guards. All roof penetrations shall match the roof construction and be discretely located.

3.3.3 The interior design shall use durable materials and furnishings that can be easily maintained and replaced. The design shall also incorporate interior surfaces that are easy to clean and that are light in

color and will avoid trendy or bright color schemes. All materials shall meet the requirements of the Fort Drum Installation Guide.

3.3.3.1 Interior doors in public areas shall be solid-core wood. Wall bases in public areas shall be vinyl; in wet areas, it shall be ceramic tile; and in storage areas it shall be vinyl. Chair rail and wainscot and wood wall base shall be used in the conference room. Where acoustic separation is required, partitions shall be extended to the roof, or have a ceiling that maintains the acoustic rating.

3.3.3.2 Interior Finishes

Space Name:	Dwg. Room #:	Ceiling:	Flooring:	Base:
Vestibule	100	ACT	C.T.	C.T.
Customer Area	101	ACT	VCT	4" Vinyl
Open Office	103	G.B Painted	VCT	4" Vinyl
Work Room	104	G.B Painted	VCT	4" Vinyl
Vestibule	119	ACT	Carpet	4" Vinyl
Office	120	ACT	Carpet	4" Vinyl
Office	121& 122	ACT	Carpet	4" Vinyl
Office	106	ACT	Carpet	4" Vinyl
Office	107	ACT	Carpet	4" Vinyl
Conference & Training Room	116	ACT	Carpet	4" Vinyl
File Room	109	ACT	VCT	4" Vinyl
Storage & Supply	110	ACT	VCT	4" Vinyl
Break Room & Kitchen	117	ACT	Carpet	4" Vinyl
Men's Bathroom	111	G.B Painted	C.T.	C.T.
Men's Lockers	112	G.B Painted	C.T.	C.T.
Women's Bathroom	114	G.B Painted	C.T.	C.T.
Women's Lockers	115	G.B Painted	C.T.	C.T.
Customer's Bathroom	102	G.B Painted	C.T.	C.T.
Mechanical & Electrical	118	G.B Painted	Conc	4" Vinyl

Space Name:	Dwg. Room #:	Ceiling:	Flooring:	Base:
Telecom. Room	105	G.B Painted	VCT	4" Vinyl
Janitor's Closet	113	G.B Painted	C.T.	C.T.
Staff Vestibule	108	ACT	C.T.	C.T.

3.3.3.3 Wall Finishes

Space Name:	Dwg. Room #:	Walls			
		North	East	South	West
Vestibule	100	Storefront	G. B. Painted	Storefront	G. B. Painted
Customer Area	101	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted
Open Office	103	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted
Work Room	104	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted
Vestibule	119	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted
Office	120	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted
Office	121& 122	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted
Office	106	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted
Office	107	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted
Conference & Training Room	116	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted
File Room	109	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted
Storage & Supply	110	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted
Break Room & Kitchen	117	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted
Men's Bathroom	111	C.T.	C.T.	C.T.	C.T.

Space Name:	Dwg. Room #:	Walls			
		North	East	South	West
Men's Lockers	112	C.T.	C.T.	C.T.	C.T.
Women's Bathroom	114	C.T.	C.T.	C.T.	C.T.
Women's Lockers	115	C.T.	C.T.	C.T.	C.T.
Customer's Bathroom	102	C.T.	C.T.	C.T.	C.T.
Mechanical & Electrical Room	118	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted
Telecom.. Room	105	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted
Janitor's Closet	113	C.T.	C.T.	C.T.	C.T.
Staff Vestibule	108	G. B. Painted	G. B. Painted	G. B. Painted	G. B. Painted

Ammunition Magazines:

3.3.4 The design of the magazines shall be in compliance with the Department of Defense Explosives Safety Board, Technical Paper No. 15, Approved Protective Construction, Revision 3, 10 May 2010.

3.4 Structural Requirements

The structural work for this project consists of providing foundations and superstructure framework and supports for the administration building and ammunition magazines.

3.4.1 All structural design and construction shall be in accordance with UFC 1-200-01, General Building Requirements, UFC 3-310-02A, Structural Design Criteria for Buildings, and UFC 4-010-01, Minimum Antiterrorism Standards for Buildings. Unless otherwise noted, all structural design and construction shall be in accordance with the latest version of the codes, standards and references cited in Paragraph 4. If a dispute arises regarding the structural loadings computed, using one or more of the codes, standards or references cited, the most severe case shall govern and be used for the design and construction. Additionally, all structural systems shall be designed and constructed to support all loads and forces imposed by mechanical, electrical equipment and architectural systems. Provisions shall be incorporated into the design and construction that allow for the maintenance and removal of all mechanical and electrical equipment. In no circumstance will tapered beams or columns be allowed.

3.4.1.1 Minimum Design Live Load Requirements: All building live loads shall be computed and applied in accordance with the ASCE 7 “Minimum Design Loads for Buildings and Other Structures”, using the live load data shown in the Fort Drum Design Standards as applicable.

3.4.1.2 Minimum Design Dead Load Requirements: All building dead loads shall be computed and applied in accordance with ASCE 7.

3.4.1.3 Minimum Design Wind Load Requirements: All wind loads will be computed and applied in accordance with ASCE 7 using a design wind speed of 45 m/s (100 mph) as shown in the Fort Drum Design Standards.

3.4.1.4 Minimum Design Seismic Load Requirements: Seismic design loads shall be computed and applied in accordance with ASCE 7 using earthquake load data as shown in UFC 3-310-01.

3.4.1.5 Minimum Design Snow Load Requirements: All snow loads shall be computed and applied in accordance with ASCE 7 using a ground snow load of 3.35 kPa (70 psf) as shown in the Fort Drum Design Standards.

3.4.1.6 Other Load Requirements: All other loads shall be computed and applied in accordance with ASCE 7 and the governing building codes.

3.4.1.7 Minimum Design Loads During Construction: All loads on temporary construction works and on the project during construction shall be computed and applied in accordance with ASCE 37, “Design Loads on Structures During Construction”.

3.4.1.8 Serviceability and Deflection: All structural loads shall address serviceability and deflection requirements for human occupancy of the building.

3.4.2 It is anticipated that the proposed building will incorporate special foundations consisting of spread footings for columns and continuous footers for exterior walls. All exterior wall footings will be a minimum of five feet-six inches below grade for frost protection. The floor slab will be placed over a polyethylene vapor barrier and six-mil thick capillary water barrier. Exterior footings and the underside of the slabs will be insulated.

3.4.2.1 It is anticipated that the ammunition magazines will utilize spread footings with exterior footings being a minimum of five feet-six inches below grade for frost protection. The floor slab will be placed over a polyethylene vapor barrier and six-mil thick capillary water barrier.

3.4.3 The administration building may be any materials allowed by UFC 1-200-01 and UFC 3-600-01. The building shall be a one-storey, metal-framed structure with metal joists. The floor structure shall be concrete slab-on-grade.

3.4.3.1 The ammunition magazines shall be cast-in-place concrete arch, earth-covered structures constructed in accordance with the Department of Defense Explosives Safety Board, Technical Paper No. 15, Approved Protective Construction, Revision 3, 10 May 2010. The blast doors are the steel, sliding type with a chain operator. The approach from the road will be an eight-inch plain concrete pad on a six-inch stone base.

3.5 Plumbing and Mechanical Requirements

3.5.1 Air handling equipment shall be located in the mechanical room. Ventilation will conform to the latest ASHRAE Standard 62. Per B-4.1.1 of UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings, all air intakes shall be located at least ten-feet above the ground, based on finished grade at the completion of construction.

3.5.2 In the administration building exhaust fan systems shall be provided for the latrines, break room, and mechanical room. Air conditioning will be provided to occupied rooms using a slip system unit that

will also be used as a fresh air supply. The building HVAC system will be controlled through a Direct Digital Control (DDC) system tied into the base-wide DDC system. The building will have a self-contained control panel.

3.5.2.1 The ammunition magazines shall only have passive vent stacks installed as per the requirements of, the Department of Defense Explosives Safety Board, Technical Paper No. 15, Approved Protective Construction, Revision 3, 10 May 2010.

3.5.3 Domestic water to the administration building shall be supplied using the existing well, located northeast of the existing administration building. A central water filter system shall be used and shall be located in the mechanical room. Domestic hot water shall be supplied by a wall-hung instantaneous heater, fired by propane or electric, depending upon available services at the time of construction. Sanitary sewer shall be discharged into a new septic system to the north of the building, pending sanitary sewer improvements that are planned which would bring sanitary sewer service to the site.

3.5.3.1 There is no plumbing or mechanical service for the ammunition magazines.

3.6 Electrical Requirements

3.6.1 The primary electrical services for the administration building and the ammunition magazines will be 120/240 volt, single-phase, three-wire.

3.6.1.1 Individual service transformers shall be provided, one for the administration building and one for the magazines. The size will vary with the load.

3.6.1.2 Secondary service will be run underground from the transformers to each respective building.

3.6.2 Power distribution to the administration building will emanate from the electrical room. Surge suppression will be provided for the main electrical service. Feeders for sub-panels shall be provided. Convenience receptacles will be provided for all areas of the building and power will be provided to all mechanical and electrical equipment. Power for exterior lighting will be provided from the closest building.

3.6.2.1 Power distribution for the magazines shall emanate from a centrally located, common panel. A surge arrestor, compliant with NFPA 70-280 and 780-4.18 shall be provided for each magazine. Feeders for sub-panels shall be provided as required. Each service line shall be run underground form a point at least fifty-feet from the magazine.

3.6.3 A complete grounding system shall be provided for the administration building. Due to the nature of the sandy soils, it is anticipated that a ground ring will be installed, with the building connected at each steel column. Neutrals of the electrical distribution system shall be bonded at the main distribution panels.

3.6.3.1 Magazine grounding shall be provided as per the requirements of, the Department of Defense Explosives Safety Board, Technical Paper No. 15, Approved Protective Construction, Revision 3, 10 May 2010, and the DA Pamphlet 385-64, Chapter 12. A written certification of meeting this standard will be required to provide to the Command Safety Office as a deliverable of the contract. Additional earth electrodes shall be provided as necessary beyond that required by the requirements of, the Department of Defense Explosives Safety Board, Technical Paper No. 15, Approved Protective Construction, Revision 3, 10 May 2010, in order to meet the DA Pamphlet 385-64.

3.6.4 Lightning protection for the administration building shall be in accordance with NFPA 780.

3.6.4.1 A lightning protection system shall be installed for the ammunition magazines provided as per the requirements of, the Department of Defense Explosives Safety Board, Technical Paper No. 15, Approved Protective Construction, Revision 3, 10 May 2010, and the DA Pamphlet 385-64, Chapter 12. A written certification of meeting this standard will be required to provide to the Command Safety Office as a deliverable of the contract. The lightning air terminals shall be extended four-feet above the magazine structure. An intermediate air terminal shall be provided for each magazine.

3.6.5 Interior lighting for the administration building shall be provided in accordance with the Illuminating Engineers Society (IES) standards. All interior luminaires will have fluorescent lamps. Luminaires shall be dimmable to 1% in the conference/training room. Occupancy sensors shall be provided in public toilets, private and semi-private offices, multi-purpose and the conference/training rooms.

3.6.5.1 For the ninety-foot ammunition magazine structures, the number of interior lights shall be eight. The outlet box shall be four-inch, cast metal with two mounting lugs and gasket. The outlet box shall be mounted to the concrete ceiling with two each, one-quarter-inch machine screws and masonry anchors. The fixture is Type 7wF2 and shall be complete with one seventy-watt, H.P.S. ANSI Code S62MF-70 lamp and one auxiliary, one hundred-watt. D.C. base quartz lamp fixture shall be single fused. Fixture circuitry shall be arranged to provide power to the auxiliary lamp during the ignition period of the H.P.S. lamp.

3.6.6 Exterior lighting for the administration building shall be provided by a combination of pole-mounted and building-mounted, high-pressure, sodium fixtures. The averaged, maintained illumination shall be one foot-candle on sidewalks, 0.5 foot-candles on main and access roads and in parking areas. The minimum illumination at any point shall be 0.2 foot-candles. The average to minimum illumination uniformity ratio shall not exceed 6:1.

3.6.6.1 All exterior lights for the ammunition bunkers shall be connected on the same circuit to facilitate control at the panel board. Not more than eight fixtures shall be connected to any one, twenty-amp circuit. For exterior lighting, use Fixture Type WBTH-414, a weatherproof, incandescent wall-mounting fixture.

3.6.7 All areas of the administration building shall be provided with emergency and exit lighting in accordance with NFPA 101. Emergency light fixtures and exit signs shall have battery backup.

3.6.7.1 Emergency and exit lighting is not required in the ammunition magazines.

3.7 Telecommunications Requirements

Space Name:	No. of Spaces:	Telephone Jacks:	Data Jacks:	Remarks:
Customer Area	1	1	2	
Open Office	1	4	7	Requires power pole
Office	1	1	4	
Office	1	1	2	Radio Remote Drop
Office	1	1	2	Radio Remote Drop
Office	1	1	6	SAS Server
Office	1	1	4	
Work Room	1	2	2	
Conference & Training Room	1	2	2	
File Room	1	1	2	
Break Room & Kitchen	1	1	1	

3.7.1 Telephone communications to the administration building shall be provided by copper cables with the number of pairs required by I3A. Data shall be provided via fiber optic cables. The point of connection shall be in Building 2700 for both fiber (switch node 1) and copper.

3.7.1.2 Telephone communications to the ammunition magazines will be installed by others. Two each, one and one-half-inch conduits with pull wire, two-feet below finished grade, and terminated with a plugged coupling, not less than five-feet beyond the paved area shall be installed.

3.7.2 Telephone and data communications for the administration building shall be distributed throughout the building from the communications closet. Punch-down blocks, Category 6, four-pair cable, and telephone jacks shall be provided and installed as part of this project. For data communications, patch panels, Category 6, four-pair cable, and data jacks will be provided and installed. All cables shall be numbered by room and jack for both telephone and data. Data cables will be color-coded. (Voice is white and data is blue.)

3.7.3 Controls shall be provided for all motors. Equipment will be provided with integral control systems. Individual controls shall be provided for equipment not having individual controls. All HVAC equipment shall be monitored and/or controlled through the Energy Management and Control System (EMCS).

3.7.4 The administration building shall be provided with a mass communication system as required by UFC 4-010-01. The system shall be installed and tested in accordance with UFC 4-021-01. The system shall have a dedicated control panel and the capability to connect a Monaco transceiver that can accept all messages, including live voice messages, from a central control station at Fort Drum.

3.7.4.1 All notification devices shall be combined with the fire alarm notification devices where the device has two strobes (white for fire alarm and amber for mass notification) and a common voice speaker. Separate strobes that are adjacent to each other are acceptable. The system shall be programmed such that when the mass notification system is in alarm, the fire alarm notification signals are temporarily overridden until the mass notification system has been reset. All supervisory signals shall be transmitted to the Emergency Dispatch Center during any event.

3.7.4.2 In addition to the mass notification system, a giant voice system, per UFC 4-021-01 shall also be provided.

3.8 Fire Protection Requirements

3.8.1 The administration building shall not require an automatic sprinkler system.

3.8.1.1 The administration building shall receive a completely addressable fire detection/alarm system installed in accordance with all applicable laws, codes, rules and standards. The fire alarm control panel shall be mounted in the building's main electrical room and an auxiliary annunciator panel capable of all control functions shall be mounted in the building's main entrance vestibule. The fire alarm control panel shall report to the Alarm Dispatch Center.

3.8.1.2 The kitchen range hood shall be provided with a fire extinguishing system and a detection system that is connected to the building's fire alarm system. Automatic utility shut-offs shall also be provided, which close when the fire extinguishing system is activated. The Contractor shall be required to provide two full sessions of fire system training to the Fort Drum Fire Department personnel. The Contractor shall also be required to provide seventy fire alarm panel keys to the Fort Drum Fire Department.

3.8.1.3 The ammunition magazines do not require a fire protection system.

3.9 Building Automation System Requirements

3.9.1 The Building Automation System (BAS) shall be a Direct Digital Control (DDC).

3.9.2 The DDC system shall be connected to the existing Fort Drum Utility Monitoring and Control System (UMCS) central work stations in Building T4000. Existing UMCS is an Andover Continuum DDC System. Communications protocol shall be in strict conformance to the Building Automation and Control Network (BACnet) Standards 135 as published by the American Society of Heating Refrigeration and Air Conditioning Engineers. (ASHRAE)

3.10 Sustainable Design Requirements

3.10.1 The Contractor shall submit the criteria that will be utilized to incorporated sustainable design principles into this project.

3.11 LEED Requirements

3.11.1 The minimum requirement for this project is to achieve the Silver level of Leadership in Energy and Environmental Design (LEED), New Construction and Major Renovation, 2009 rating. Each non-exempt facility must achieve this level. This project is required to be registered with the USGBC for validation of credits earned and registration and validation is the responsibility of the Contractor. Payment of fees and administration of the on-line project are also the responsibility of the Contractor. Solutions which conserve energy, improve livability, and that can be justified by life cycle analysis as cost effective are encouraged.

3.12 Optimize Energy Performance Requirements

3.12.1 This project must be in compliance with UFC 3-400 which is governed by EPAct 05.

3.13 Commissioning Requirements

3.13.1 This project shall include fundamental, enhanced, and whole-building commissioning.

4.0 APPLICABLE CRITERIA

Unless a specific document version or date is indicated, use criteria from the most current references, including any applicable addenda, unless otherwise stated in the contract or task order, as of the date of the Contractor's latest accepted proposal or date of issue of the contract or task order solicitation, whichever is later. In the event of conflict between References and/or Applicable Military Criteria, apply the most stringent requirement, unless otherwise specifically noted in the contract or task order.

4.1. INDUSTRY CRITERIA

Applicable design and construction criteria references are listed in Table 1 below. This list is not intended to include all criteria that may apply or to restrict design and construction to only those references listed. See also Paragraph 3 for additional facility-specific applicable criteria.

Table 1: Industry Criteria

Air Conditioning and Refrigeration Institute (ARI)	
ARI 310/380	Packaged Terminal Air-Conditioners and Heat Pumps
ARI 440	Room Fan-Coil and Unit Ventilator
ANSI/ARI 430-99	Central Station Air Handling Units
ARI 445	Room Air-Induction Units
ARI 880	Air Terminals
Air Movement and Control Association (AMCA)	
AMCA 210	Laboratory Methods of Testing Fans for Rating
American Architectural Manufacturers Association (AAMA)	
AAMA 605	Voluntary Specification Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
AAMA 607.1	Voluntary Guide Specifications and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum
AAMA 1503	Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors, and Glazed Wall Sections
American Association of State Highway and Transportation Officials (AASHTO)	

	Roadside Design Guide [guardrails, roadside safety devices]
	Standard Specifications for Transportation Materials and Methods of Sampling and Testing [Road Construction Materials]
	Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals
	Guide for Design of Pavement Structures, Volumes 1 and 2 [pavement design guide]
	A Policy of Geometric Design of Highways and Streets
American Bearing Manufacturers Association (AFBMA)	
AFBMA Std. 9	Load Ratings and Fatigue Life for Ball Bearings
AFBMA Std. 11	Load Ratings and Fatigue Life for Roller Bearings
American Boiler Manufacturers Association (ABMA)	
ABMA ISEI	Industry Standards and Engineering Information
American Concrete Institute	
ACI 302.2R	Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials
ACI 318	Building Code Requirements for Structural Concrete
ACI SP-66	ACI Detailing Manual
ACI 530	Building Code Requirements for Masonry Structures
ADA Standards for Accessible Design	
See US Access Board	ADA and ABA Accessibility Guidelines for Buildings and Facilities, Chapters 3-10.
American Institute of Steel Construction (AISC)	
	Manual of Steel Construction – 13th Edition (or latest version)

American Iron and Steel Institute	
AISI S100	North American Specification for the Design of Cold-Formed Steel Structural Members
American National Standards Institute 11 (ANSI)	
ANSI Z21.10.1	Gas Water Heaters Vol. 1, Storage water Heaters with Input Ratings of 75,000 Btu per Hour or less
ANSI Z124.3	American National Standard for Plastic Lavatories
ANSI Z124.6	Plastic Sinks
ANSI Z21.45	Flexible Connectors of Other Than All-Metal Construction for Gas Appliances
ANSI/IEEE C2	National Electrical Safety Code
ANSI/AF&PA NDS	National Design Specification for Wood Construction
American Society of Civil Engineers (ASCE)	
ASCE 7	Minimum Design Loads for Buildings and Other Structures
ASCE 37	Design and Construction of Sanitary and Storm Sewers, Manuals and Reports on Engineering Practice [sanitary sewer and storm drain design criteria]
ASCE/SEI 31-03	Seismic Evaluation of Existing Buildings [Existing Building Alteration/Renovation]
ASCE/SEI 41-06	Seismic Rehabilitation of Existing Buildings [Existing Building Alteration/Renovation]
American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)	
ASHRAE 90.1	ANSI/ASHRAE/IESNA 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings
ASHRAE Guideline 0	The Commissioning Process
ASHRAE Guideline 1.1	The HVAC Commissioning Process

ASHRAE Handbooks	Fundamentals, HVAC Applications, Systems and Equipment, Refrigeration (Applicable, except as otherwise specified)
ASHRAE Standard 15	Safety Standard for Refrigeration Systems
ASHRAE Standard 62.1	Ventilation for Acceptable Indoor Air Quality
ASHRAE Standard 55	Thermal Environmental Conditions for Human Occupancy (Design portion is applicable, except where precluded by other project requirements.)
ASHRAE Standard 189.1	Standard for the Design of High-Performance Green Buildings (ANSI Approved; USGBC and IES Co-sponsored), - (APPLICABLE TO THE EXTENT SPECIFICALLY CALLED OUT IN THE CONTRACT)
American Society of Mechanical Engineers International (ASME)	
ASME BPVC SEC VII	Boiler and Pressure Vessel Code: Section VII Recommended Guidelines for the Care of Power Boilers
ASME A17.1	Safety Code for Elevators and Escalators
ASME B 31 (Series)	Piping Codes
American Water Works Association (AWWA)	
	Standards [standards for water line materials and construction]
American Welding Society	
	Welding Handbook
	Welding Codes and Specifications (as applicable to application, see International Building Code for example)
Architectural Woodwork Institute (AWI)	
Latest Version	AWI Quality Standards
Associated Air Balance Council (AABC)	
AABC MN-1	National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems

	AABC Associated Air Balance Council Testing and Balance Procedures
ASTM International	
ASTM C1060-90(	Standard Practice for Thermographic Inspection of Insulation Installations in Envelope Cavities of Frame Buildings
ASTM E 779	Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
ASTM E1827-96	Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door
Builders Hardware Manufacturers Association (BHMA)	
ANSI/BHMA	The Various BHMA American National Standards
Building Industry Consulting Service International	
	Telecommunications Distribution Methods Manual (TDMM)
	Customer-Owned Outside Plant Design Manual (CO-OSP)
Code of Federal Regulations (CFR)	
49 CFR 192	Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards
10 CFR 430	Energy Conservation Program for Consumer Products
Consumer Electronics Association	
CEA 709.1B	Control Network Protocol Specification
CEA 709.3	Free-Topology Twisted-Pair Channel Specification
CEA 852	Tunneling Component Network Protocols Over Internet Protocol Channels
Electronic Industries Association (EIA)	
ANSI/EIA/TIA 568	Structured Cabling Series

ANSI/EIA/TIA 569	Commercial Building Standard for Telecommunications Pathways and Spaces (includes ADDENDA)
ANSI/TIA/EIA-606	Administrative Standard for the Telecommunications Infrastructure of Commercial Buildings
J-STD EIA/TIA 607	Commercial Building Grounding and Bonding Requirements for Telecommunications
Federal Highway Administration (FHWA)	
	Manual on Uniform Traffic Control Devices for Streets and Highways [signage and pavement markings for streets and highways]
FHWA-NHI-01-021	Hydraulic Engineering Circular No. 22, Second Edition, URBAN DRAINAGE DESIGN MANUAL
Illuminating Engineering Society of North America (IESNA)	
IESNA RP-1	Office Lighting
IESNA RP-8	Roadway Lighting
IESNA Lighting Handbook	Reference and Application
Institute of Electrical and Electronics Engineers Inc. (IEEE)	
	Standard for Use of the International System of Units (SI): the Modern Metric System
Standard 1100	Recommended Practice for Powering and Grounding Sensitive Electronic Equipment
International Code Council (ICC)	
IBC	International Building Code Note: All references in the International Building Code to the International Electrical Code shall be considered to be references to NFPA 70. All references in the International Building Code to the International Fuel Gas Code shall be considered to be references to NFPA 54 and NFPA 58. All references in the International Building Code to the International Fire

	Code and Chapter 9 shall be considered to be references to Unified Facilities Criteria (UFC) 3-600-01.
IMC	International Mechanical Code – Note: For all references to “HEATING AND COOLING LOAD CALCULATIONS”, follow ASHRAE 90.1 Note: For all references to “VENTILATION”, follow ASHRAE 62.1
IRC	International Residential Code
IPC	International Plumbing Code
IEC	Energy Conservation Code (IEC) –Applicable only to the extent specifically referenced herein. Refer to Paragraph 5, ENERGY CONSERVATION requirements.
IGC	International Gas Code - not applicable. Follow NFPA 54, National Fuel Gas Code and NFPA 58, Liquified Petroleum Gas Code.
International Organization for Standardization (ISO)	
ISO 6781:1983	Qualitative detection of thermal irregularities in building envelopes – infrared method
LonMark International (LonMark)	
LonMark Interoperability Guidelines	(available at www.lonmark.org), including: Application Layer Guidelines, Layer 1-6 Guidelines, and External Interface File (XIF) Reference Guide
LonMark Resource Files	(available at www.lonmark.org), including Standard Network Variable Type (SNVT) definitions
Metal Building Manufacturers Association (MBMA)	
	Metal Building Systems Manual
Midwest Insulation Contractors Association (MICA)	
	National Commercial and Industrial Insulation Standards Manual
National Association of Corrosion Engineers International (NACE)	

NACE RP0169	Control of External Corrosion on Underground or Submerged Metallic Piping Systems
NACE RP0185	Extruded, Polyolefin Resin Coating Systems with Adhesives for Underground or Submerged Pipe
NACE RP0285	Corrosion Control of Underground Storage Tank Systems by Cathodic Protection
NACE RP0286	Electrical Isolation of Cathodically Protected Pipelines
National Electrical Manufacturers Association (NEMA)	
National Environmental Balancing Bureau (NEBB)	
	Procedural Standards Procedural Standards for Testing Adjusting Balancing of Environmental Systems
National Fire Protection Association (NFPA)	
NFPA 10	Standard for Portable Fire Extinguishers
NFPA 13	Installation of Sprinkler Systems
NFPA 13R	Residential Occupancies up to and Including Four Stories in Height Sprinkler Systems
NFPA 14	Standard for the Installation of Standpipes and Hose Systems
NFPA 20	Installation of Centrifugal Fire Pumps
NFPA 24 NFPA 25	Standard for the Installation of Private Fire Service Mains and Their Appurtenances [underground fire protection system design] Inspection, Testing And Maintenance Of Water-Based Fire Protection Systems
NFPA 30	Flammable and Combustible Liquids Code
NFPA 30A	Motor Fuel Dispensing Facilities and Repair Garages
NFPA 31	Installation of Oil Burning Equipment
NFPA 54	National Fuel Gas Code

NFPA 58	Liquefied Petroleum Gas Code
NFPA 70	National Electrical Code
NFPA 70E	Standard for Electrical Safety in the Workplace
NFPA 72	National Fire Alarm Code
NFPA 76	Fire Protection of Telecommunications Facilities
NFPA 80	Standard for Fire Doors and Fire Windows
NFPA 90a	Installation of Air Conditioning and Ventilating Systems
NFPA 96	Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations
NFPA 101	Life Safety Code
NFPA 780	Standard for the Installation of Lightning Protection Systems
National Roofing Contractor's Association (NRCA)	
	Roofing and Waterproofing Manual
National Sanitation Foundation, International	
NSF/ANSI Std. 2, 3, 4, 5, 6, 7, 8, 12, 13, 18, 20, 21, 25, 29, 35, 36, 37, 51, 52, 59, 169	Food Equipment Standards
ANSI/UL Std. 73, 197, 471, 621, 763	Food Equipment Standards
CSA Std. C22.2 No. 109, 120, 195	Food Equipment Standards
Occupational Safety and Health Administration (OSHA)	
Title 29, Part 1926	OSHA Construction Industry Standards, Title 29, Code of Federal Regulations, Part 1926, Safety and Health Regulations for Construction

Plumbing and Drainage Institute (PDI)	
PDI G 101	Testing and Rating Procedure for Grease Interceptors with Appendix of Sizing and Installation Data
PDI WH201	Water Hammer Arrestors
Precast Concrete Institute	
PCI Design Handbook	Precast and Prestressed Concrete
Sheet Metal and Air Conditioning Contractor's National Association (SMACNA)	
SMACNA HVAC Duct Construction Standards	HVAC Duct Construction Standards - Metal and Flexible
SMACNA Architectural Manual	Architectural Sheet Metal Manual
SMACNA HVAC TAB	HVAC Systems - Testing, Adjusting and Balancing
State/Local Regulations	
	State Department of Transportation Standard Specifications for Highway and Bridge Construction
	Sedimentation and Erosion Control Design Requirements
	Environmental Control Requirements
	Storm Water Management Requirements
Steel Door Institute (SDI)	
ANSI A250.8/SDI 100	Standard Steel Doors and Frames
Steel Deck Institute	
	SDI Diaphragm Design Manual
Steel Joist Institute	
	Catalog of Standard Specifications and Load Tables for Steel Joists and

	Joist Girders
Underwriters Laboratories (UL)	
UL 96A	Installation Requirements for Lightning Protection Systems
UL 300	Standard for Safety for Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas
UNITED STATES ACCESS BOARD: U.S. ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD	
ADA and ABA Accessibility Guidelines for Buildings and Facilities	ABA Accessibility Standard for DoD Facilities Derived from the ADA and ABA Accessibility Guidelines: Specifically includes: ABA Chapters 1 and 2 and Chapters 3 through 10. Use this reference in lieu of IBC Chapter 11. Excluded are: (a) Facilities, or portions of facilities, on a military installation that are designed and constructed for use exclusively by able-bodied military personnel (See Paragraph 3 for any reference to this exclusion). (b) Reserve and National Guard facilities, or portions of such facilities, owned by or under the control of the Department of Defense, that are designed and constructed for use exclusively by able-bodied military personnel. (See paragraph 3 for any reference to this exclusion).
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES	
	FDA National Food Code
U.S. GREEN BUILDING COUNCIL (USGBC)	
LEED-NC	Green Building Rating System for New Construction & Major Renovations
	Application Guide for Multiple Buildings and On-Campus Building Projects

4.2. MILITARY CRITERIA

The project shall conform to the following criteria. Certain design impacts and features due to these criteria are noted for the benefit of the offeror. However, all requirements of the referenced criteria will be applicable, whether noted or not, unless otherwise specified herein.

4.2.1. Energy Policy Act of 2005 (Public Law 109-58) (applies only to the extent specifically implemented in the contract, which may or may not directly cite or reference EPACT)

4.2.2. Executive Order 12770: Metric Usage In Federal Government

(a) Metric design and construction is required except when it increases construction cost. Offeror to determine most cost efficient system of measurement to be used for the project.

4.2.3. TB MED 530: Occupational and Environmental Health Food Sanitation

4.2.4. Unified Facilities Criteria (UFC) 3-410-01FA: Heating, Ventilating, and Air Conditioning - applicable only to the extent specified in paragraph 5, herein.

4.2.5. Deleted.

4.2.6. UFC 3-600-01 Design: Fire Protection Engineering for Facilities. Use the latest edition of the IBC in coordination with this UFC. Use Chapters 3, 6, 7, 33 and UFC 3-600-01. If any conflict occurs between these Chapters and UFC 3-600-01, the requirements of UFC 3-600-01 take precedence. Use UFC 3-600-01 in lieu of IBC Chapters 4, 8,9,10.

4.2.7. UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings

4.2.8. UFC 4-023-03 Design of Buildings to Resist Progressive Collapse (Use most recent version, regardless of references thereto in other publications)

(a) Note the option to use tie force method or alternate path design for Occupancy Category II.

4.2.9. UFC 4-021-01 Design and O&M: Mass Notification Systems

4.2.10. Technical Criteria for Installation Information Infrastructure Architecture (I3A)

(a) Email: DetrickISECI3Aguide@conus.army.mil

4.2.11. U.S. Army Information Systems Engineering Command (USAISEC) SECRET Internet Protocol (IP) Router Network (SIPRNET) Technical Implementation Criteria (STIC).. See Paragraph 3 for applicability to specific facility type. May not apply to every facility. This is mandatory criteria for those facilities with SIPRNET.

4.2.11.1. Draft Guide Specification for Section 27 05 28 PROTECTIVE DISTRIBUTION SYSTEM (PDS) FOR SIPRNET COMMUNICATIONS SYSTEMS, found at http://mrsi.usace.army.mil/rfp/Shared%20Documents/SECTION_270528-v3.pdf

5.0 GENERAL TECHNICAL REQUIREMENTS

This paragraph contains technical requirements with general applicability to Army facilities. See also Paragraph 3 for facility type-specific operational, functional and technical requirements. Residential or similar grade finishes and materials are not acceptable for inclusion in these buildings, unless otherwise specifically allowed.

5.1. SITE PLANNING AND DESIGN

5.1.1. STANDARDS AND CODES: The site planning and design shall conform to APPLICABLE CRITERIA and to paragraph 6, PROJECT SPECIFIC REQUIREMENTS.

5.1.2. SITE PLANNING OBJECTIVES: Group buildings in configurations that create a sense of community and promote pedestrian use. See paragraph 3 for additional site planning requirements relating to building functions.

5.1.2.1. Provide enclosures and or visual screening devices for Outdoor Utility such as dumpsters, emergency generators, transformers, heating, ventilation, and air conditioning units from streetscape and courtyard views to limit visual impact. Enclosures shall be compatible with the building they serve and accessible by vehicle. The location of dumpsters can have a significant visual impact and should be addressed as part of an overall building design and incorporated in site planning.

5.1.2.2. Where included in the project, dumpster pads shall be concrete (minimum of 8 inches thick on 4 inch base course, unless site conditions dictate more conservative requirements) and directly accessible by way of a paved service drive or parking lot with adequate overhead clearance for collection vehicles. Provide space at dumpster areas for recycling receptacles. Coordinate with Installation on recycling receptacle types, sizes and access requirements and provide space at dumpster areas to accommodate them.

5.1.2.3. Vehicular Circulation. Apply design vehicle templates provided by the American Association of State Highway and Transportation Officials (AASHTO) to the site design. The passenger car class includes passenger cars and light trucks, such as vans and pick-ups. The passenger car template is equivalent to the non-organizational – privately owned vehicle (POV). The truck class template includes single-unit trucks, recreation vehicles, buses, truck tractor-semi-trailer combinations, and trucks or truck tractors with semi-trailers in combination with full trailers. Provide vehicle clearances required to meet traffic safety for emergency vehicles, service vehicles, and moving vans. Provide required traffic control signage Site entrances and site drive aisles shall maximize spacing between drives, incorporate right-angle turns, and limit points of conflict between traffic. Design Services Drives to restrict access to unauthorized vehicles by removable bollards, gates, or other barriers to meet Anti-Terrorism/Force Protection (ATFP) requirements. Orient service drives to building entrances other than the primary pedestrian entry at the front of the building.

5.1.2.4. Provide Emergency Vehicle Access around the facility and shall be in accordance with AT/FP requirements. Maintain a 33-foot clear zone buffer for emergency vehicles, designed to prevent other vehicles from entering the AT/FP standoff to the building.

5.1.2.5. Clear and grub all trees and vegetation necessary for construction; but, save as many trees as possible. Protect trees to be saved during the construction process from equipment.

5.1.2.6. Stormwater Management. Employ design and construction strategies (Best Management Practices) that reduce stormwater runoff, reduce discharges of polluted water offsite and maintain or restore predevelopment hydrology with respect to temperature, rate, volume and duration of flow to the maximum extent practicable. See paragraph 6, PROJECT SPECIFIC requirements for additional information.

5.1.3. EXTERIOR SIGNAGE: Provide exterior signage in accordance with Appendix H, Exterior Signage. Provide exterior NO SMOKING signage that conveys building and grounds smoking policy.

5.1.4. EXISTING UTILITIES: Base utilities maps and capacities for this site are included as part of this RFP. See paragraph 6 for more detailed information.

5.2. SITE ENGINEERING

5.2.1. STANDARDS AND CODES: The site engineering shall conform to APPLICABLE CRITERIA.

5.2.2. SOILS:

5.2.2.1. A report has been prepared to characterize the subsurface conditions at the project site and is **appended to these specifications.** The report provides a general overview of the soil and geologic conditions with detailed descriptions at discrete boring locations. The Contractor's team shall include a licensed geotechnical engineer to interpret the report and develop earthwork and foundation recommendations and design parameters in which to base the contractor's design. If any additional subsurface investigation or laboratory analysis is required to better characterize the site or develop the final design, the Contractor shall perform it under the direction of a licensed geotechnical engineer. There will be no separate payment for the cost of additional tests. If differences between the Contractor's additional subsurface investigation and the government provided soils report or the reasonably expected conditions require material revisions in the design, an equitable adjustment may be made, in accordance with the provisions of the Differing Site Conditions clause. The basis for the adjustment would be the design and construction appropriate for the conditions described in the Government furnished report or the reasonably expected conditions, in comparison with any changes required by material differences in the actual conditions encountered, in accordance with the terms of contract clause Differing Site Conditions.

5.2.2.2. The contractor's licensed geotechnical engineer shall prepare a final geotechnical evaluation report, to be submitted along with the first foundation design submittal, as described in Section 01 33 16, *Design After Award*.

5.2.3. VEHICLE PAVEMENTS: (as applicable to the project)

5.2.3.1. Design procedures and materials shall conform to one of the following: 1) the USACE Pavement Transportation Computer Assisted Structural Engineering (PCASE) program, 2) American Association of State Highway and Transportation Officials (AASHTO) or, 3) the applicable state Department of Transportation standards in which the project is located. See paragraph 5.2.2.2 and Section 01 33 16 for required information for the Contractor's geotechnical evaluation report. The minimum flexible pavement section shall consist of 2 inches of asphalt and 6 inches of base or as required by the pavement design, whichever is greater, unless specifically identified by the Government to be a gravel road. Design roads and parking areas for a life expectance of 25 years with normal maintenance. Parking area for tactical vehicles (as applicable to the project) shall be Portland Cement Concrete (PCC) rigid pavement design. For concrete pavements, submit joint layout plan for review and concurrence. Design pavements for military tracked vehicles (as applicable to the project) IAW USACE PCASE. Traffic estimates for each roadway area will be as shown on the drawings or listed in Section 01 10 00 Paragraph 6.4.4. Pavement markings and traffic signage shall comply with the Installation requirements and with the Manual on Uniform Traffic Control Devices.

5.2.3.2. Parking Requirements.

(a) All handicap POV parking lots (where applicable in the facility specific requirements) shall meet the ADA and ABA Accessibility Guidelines for accessible parking spaces.

(b) Design POV parking spaces for the type of vehicles anticipated, but shall be a minimum of 9 ft by 18 ft for POVs, except for two wheel vehicles.

5.2.3.3. Sidewalks. Design the network of walks throughout the complex (where applicable) to facilitate pedestrian traffic among facilities, and minimize the need to use vehicles. Incorporate sidewalks to enhance the appearance of the site development, while creating a sense of entry at the primary patron entrances to the buildings. Minimum sidewalk requirements are in Paragraph 3, where applicable and/or paragraph 6 and/or site plans, where applicable..

5.2.4. CATHODIC PROTECTION: Provide cathodic protection systems for all underground metallic systems and metallic fittings/portions of non-metallic, underground systems, both inside and outside the building 5 foot line that are subject to corrosion. Coordinate final solutions with the installation to insure an approach that is consistent with installation cathodic protection programs.

5.2.5. UTILITIES: See paragraph 6.4.6 for specific information on ownership of utilities and utility requirements. Meter all utilities (gas, water, and electric, as applicable) to each facility. For Government owned utilities, install meters that are wireless data transmission capable as well as have a continuous manual reading option. All meters will be capable of at least hourly data logging and transmission and provide consumption data for gas, water, and electricity. Gas and electric meters will also provide demand readings based on consumption over a maximum of any 15 minute period. Configure all meters to transmit at least daily even if no receiver for the data is currently available at the time of project acceptance. For privatized utilities, coordinate with the privatization utility(ies) for the proper meter base and meter installation.

5.2.6. PERMITS: The CONTRACTOR shall be responsible for obtaining all permits (local, state and federal) required for design and construction of all site features and utilities.

5.2.7. IRRIGATION. Landscape irrigation systems, if provided, shall comply with the following:

5.2.7.1. Irrigation Potable Water Use Reduction. Reduce irrigation potable water use by 100 percent using LEED credit WE1.1 baseline (no potable water used for irrigation), except where precluded by other project requirements.

5.2.8. EPA WATERSENSE PRODUCTS AND CONTRACTORS. Except where precluded by other project requirements, use EPA WaterSense labeled products and irrigation contractors that are certified through a WaterSense labeled program where available.

5.3. ARCHITECTURE AND INTERIOR DESIGN:

This element will be evaluated per APPLICABLE CRITERIA under the quality focus.

5.3.1. STANDARDS AND CODES: The architecture and interior design shall conform to APPLICABLE CRITERIA.

5.3.2. GENERAL: Overall architectural goal is to provide a functional, quality, visually appealing facility that is a source of pride for the installation and delivered within the available budget and schedule.

5.3.3. COMPUTATION OF AREAS: See APPENDIX Q for how to compute gross and net areas of the facility(ies).

5.3.4. BUILDING EXTERIOR: Design buildings to enhance or compliment the visual environment of the Installation. Where appropriate, reflect a human scale to the facility. Building entrance should be architecturally defined and easily seen. When practical, exterior materials, roof forms, and detailing shall be compatible with the surrounding development and adjacent buildings on the Installation and follow locally established architectural themes. Use durable materials that are easy to maintain. Exterior colors shall conform to the Installation requirements. See paragraph 6.

5.3.4.1. Building Numbers: Permanently attach exterior signage on two faces of each building indicating the assigned building number or address. Building number signage details and locations shall conform to Appendix H, Exterior Signage.

5.3.5. BUILDING INTERIOR

5.3.5.1. Space Configuration: Arrange spaces in an efficient and functional manner in accordance with area adjacency matrices.

5.3.5.2. Surfaces: Appearance retention is the top priority for building and furniture related finishes. Provide low maintenance, easily cleaned room finishes that are commercially standard for the facility occupancy specified, unless noted otherwise.

5.3.5.3. Color: The color, texture and pattern selections for the finishes of the building shall provide an aesthetically pleasing, comfortable, easily maintainable and functional environment for the occupants. Coordinate the building colors and finishes for a cohesive design. Select colors appropriate for the building type. Use color, texture and pattern to path or way find through the building. Trendy colors that will become dated shall be limited to non-permanent finishes such as carpet and paint. Select finisheswith regards to aesthetics, maintenance, durability, life safety and image. Limit the number of similar colors for each material. Use medium range colors for ceramic and porcelain tile groutto help hide soiling. Plastic laminate and solid surface materials shall have patterns that are mottled, flecked or speckled. Coordinate finish colors of fire extinguisher cabinets, receptacle bodies and plates, fire alarms / warning lights, emergency lighting, and other miscellaneous items with the building interior. Match color of equipment items on ceilings (speakers, smoke detectors, grills, etc.) the ceiling color.

5.3.5.4. Circulation: Circulation schemes must support easy way finding within the building.

5.3.5.5. Signage: Provide interior signage for overall way finding and life safety requirements. A comprehensive interior plan shall be from one manufacturer. Include the following sign types: (1) Lobby Directory, (2) Directional Signs; (3) Room Identification Signs; (4) Building Service Signs; (5) Regulatory Signs; (6) Official and Unofficial Signs (7) Visual Communication Boards (8) NO SMOKING signage that conveys building smoking policy. Use of emblems or logos may also be incorporated into the signage plan.

5.3.5.6. Window Treatment: Provide interior window treatments with adjustable control in all exterior window locations for control of day light coming in windows or privacy at night. Maintain uniformity of treatment color and material to the maximum extent possible within a building.

5.3.5.7. Casework: Unless, otherwise specified, all casework for Cabinetry and cases shall be “custom grade”, as described in the AWI Quality Standards.

5.3.6. COMPREHENSIVE INTERIOR DESIGN

5.3.6.1. Comprehensive Interior Design includes the integration of a Structural Interior Design (SID) and a Furniture, Fixtures and Equipment (FF&E) design and package. SID requires the design, selection and coordination of interior finish materials that are integral to or attached to the building structure. Completion of a SID involves the selection and specification of applied finishes for the building’s interior features including, but not limited to, walls, floors, ceilings, trims, doors, windows, window treatments, built-in furnishings and installed equipment, lighting, and signage. The SID package includes finish schedules, finish samples and any supporting interior elevations, details or plans necessary to communicate the building finish design and build out. The SID also provides basic space planning for the anticipated FF&E requirements in conjunction with the functional layout of the building and design issues such as life safety, privacy, acoustics, lighting, ventilation, and accessibility. See Section 01 33 16 for SID design procedures.

5.3.6.2. The FF&E design and package includes the design, selection, color coordination and of the required furnishing items necessary to meet the functional, operational, sustainability, and aesthetic needs of the facility coordinated with the interior finish materials in the SID. The FF&E package includes the specification, procurement documentation, placement plans, ordering and finish information on all freestanding furnishings and accessories, and a cost estimate. Coordinate the selection of furniture style, function and configuration with the defined requirements. Examples of FF&E items include, but are not limited to workstations, seating, files, tables, beds, wardrobes, draperies and accessories as well as marker boards, tack boards, and presentation screens. Criteria for furniture selection include function and ergonomics, maintenance, durability, sustainability, comfort and cost. See Section 01 33 16 for FFE design procedures.

5.4. STRUCTURAL DESIGN

5.4.1. STANDARDS AND CODES: The structural design shall conform to APPLICABLE CRITERIA.

5.4.2. GENERAL: The structural system must be compatible with the intended functions and components that allows for future flexibility and reconfigurations of the interior space. Do not locate columns, for instance, in rooms requiring visibility, circulation or open space, including, but not limited to entries, hallways, common areas, classrooms, etc. Select an economical structural system based upon facility size, projected load requirements and local availability of materials and labor. Base the structural design on accurate, site specific geotechnical information and anticipated loads for the building types and geographical location. Consider climate conditions, high humidity, industrial atmosphere, saltwater exposure, or other adverse conditions when selecting the type of cement and admixtures used in concrete, the concrete cover on reinforcing steel, the coatings on structural members, expansion joints, the level of corrosion protection, and the structural systems. Analyze, design and detail each building as a complete structural system. Design structural elements to preclude damage to finishes, partitions and other frangible, non-structural elements to prevent impaired operability of moveable components; and to prevent cladding leakage and roof ponding. Limit deflections of structural members to the allowable of the applicable material standard, e.g., ACI, AISC, Brick Industry Association, etc. When modular units or other pre-fabricated construction is used or combined with stick-built construction, fully coordinate and integrate the overall structural design between the two different or interfacing construction types. If the state that the project is located in requires separate, specific licensing for structural engineers (for instance, such as in Florida, California and others), then the structural engineer designer of record must be registered in that state.

5.4.3. LOADS: See paragraph 3 for facility specific (if applicable) and paragraph 6 for site and project specific structural loading criteria. Unless otherwise specified in paragraph 6, use Exposure Category C for wind. If not specified, use Category C unless the Designer of Record can satisfactorily justify another Exposure Category in its design analysis based on the facility Master Plan. Submit such exceptions for approval as early as possible and prior to the Interim Design Submittal in Section “Design After Award”. Design the ancillary building items, e.g. doors, window jambs and connections, overhead architectural features, systems and equipment bracing, ducting, piping, etc. for gravity, seismic, lateral loads and for the requirements of UFC 4-010-01, DOD Minimum Antiterrorism Standards for Buildings. Ensure and document that the design of glazed items includes, but is not limited to, the following items under the design loads prescribed in UFC 4-010-01:

(a) Supporting members of glazed elements, e.g. window jamb, sill, header

(b) Connections of glazed element to supporting members, e.g. window to header

(c) Connections of supporting members to each other, e.g. header to jamb

(d) Connections of supporting members to structural system, e.g. jamb to foundation.

5.4.4. TERMITE TREATMENT: (Except Alaska) Provide termite prevention treatment in accordance with Installation and local building code requirements, using licensed chemicals and licensed applicator firm.

5.5. THERMAL PERFORMANCE

5.5.1. STANDARDS AND CODES: Building construction and thermal insulation for mechanical systems shall conform to APPLICABLE CRITERIA.

5.5.2. BUILDING ENVELOPE SEALING PERFORMANCE REQUIREMENT. Design and construct the building envelope for office buildings, office portions of mixed office and open space (e.g., company operations facilities), dining, barracks and instructional/training facilities with a continuous air barrier to control air leakage into, or out of, the conditioned space. Clearly identify all air barrier components of each envelope assembly on construction documents and detail the joints, interconnections and penetrations of the air barrier components. Clearly identify the boundary limits of the building air barriers, and of the zone or zones to be tested for building air tightness on the drawings. The use of painted interior walls is not an acceptable air barrier method.

5.5.2.1. Trace a continuous plane of air-tightness throughout the building envelope and make flexible and seal all moving joints.

5.5.2.2. The air barrier material(s) must have an air permeance not to exceed 0.004 cfm / sf at 0.3” wg (0.02 L/s.m2 @ 75 Pa) when tested in accordance with ASTM E 2178

5.5.2.3. Join and seal the air barrier material of each assembly in a flexible manner to the air barrier material of adjacent assemblies, allowing for the relative movement of these assemblies and components.

5.5.2.4. Support the air barrier so as to withstand the maximum positive and negative air pressure to be placed on the building without displacement, or damage, and transfer the load to the structure.

5.5.2.5. Seal all penetrations of the air barrier. If any unavoidable penetrations of the air barrier by electrical boxes, plumbing fixture boxes, and other assemblies are not airtight, make them airtight by sealing the assembly and the interface between the assembly and the air barrier or by extending the air barrier over the assembly.

5.5.2.6. The air barrier must be durable to last the anticipated service life of the assembly.

5.5.2.7. Do not install lighting fixtures with ventilation holes through the air barrier

5.5.2.8. Provide a motorized damper in the closed position and connected to the fire alarm system to open on call and fail in the open position for any fixed open louvers at elevator shafts. Coordinate the motorized elevator hoistway vent damper(s) with the Fire Protection System design in paragraph 5.10. Ensure that the damper(s) is accessible to facilitate regular inspection and maintenance.

5.5.2.9. Damper and control to close all ventilation or make-up air intakes and exhausts, , etc., when leakage can occur during inactive periods. Atrium smoke exhaust and intakes shall only open when activated per IBC and other applicable Fire Code requirements.

5.5.2.10. If garages under buildings are applicable, compartmentalize garages by providing air-tight vestibules at building access points.

5.5.2.11. Compartmentalize spaces under negative pressure such as boiler rooms and provide make-up air for combustion.

5.5.2.12. Performance Criteria and Substantiation: Submit the qualifications and experience of the testing entity for approval. Demonstrate performance of the continuous air barrier for the opaque building envelope by the following tests:

(a) Develop an Air Barrier Quality Control plan to assure that a competent air barrier inspector/specialist inspects the critical components prior to them being concealed. At a minimum, three onsite inspections are required during construction to assure the completeness of the construction and design.

(b) Test the completed building and demonstrate that the air leakage rate of the building envelope does not exceed 0.25cfm/ft2 at a pressure differential of 0.3" w.g.(75 Pa) in accordance with ASTM's E 779 (2003) or E-1827-96 (2002). Accomplish tests using both pressurization and depressurization.. Divide the volume of air leakage in cfm @ 0.3" w.g. (L/s @ 75 Pa) by the area of the pressure boundary of the building, including roof or ceiling, walls and floor to produce the air leakage rate in cfm/ft2 @ 0.3" w.g. (L/s.m2 @ 75 Pa). Do not test the building until verifying that the continuous air barrier is in place and installed without failures in accordance with installation instructions so that repairs to the continuous air barrier, if needed to comply with the required air leakage rate, can be done in a timely manner.

(c) Test the completed building using Infrared Thermography testing. Use infrared cameras with a resolution of 0.1deg C or better. Perform testing on the building envelope in accordance with ISO 6781:1983 and ASTM C1060-90(1997). Determine air leakage pathways using ASTM E 1186-03 Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems, and perform corrective work as necessary to achieve the whole building air leakage rate specified in (a) above.

(d) Notify the Government at least three working days prior to the tests to provide the Government the opportunity to witness the tests. Provide the Government written test results confirming the results of all tests.

5.6. PLUMBING

5.6.1. STANDARDS AND CODES: The plumbing system shall conform to APPLICABLE CRITERIA.

5.6.2. PRECAUTIONS FOR EXPANSIVE SOILS: Where expansive soils are present, include design features for underslab piping systems and underground piping serving chillers, cooling towers, etc, to control forces resulting from soil heave. Some possible solutions include, but are not necessarily limited to, features such as flexible expansion joints, slip joints, horizontal offsets with ball joints, or multiple bell and spigot gasketed fittings. For structurally supported slabs, suspend piping from the structure with adequate space provided below the pipe for the anticipated soil movement.

5.6.3. HOT WATER SYSTEMS: For Hot Water heating and supply, provide a minimum temp of 140 Deg F in the storage tank and a maximum of 110 Deg F at the fixture, unless specific appliances or equipment specifically require higher temperature water supply.

5.6.4. SIZING HOT WATER SYSTEMS: Unless otherwise specified or directed in paragraph 3, design in accordance with ASHRAE Handbook Series (appropriate Chapters), ASHRAE Standard 90.1, and the energy conservation requirements of the contract. Size and place equipment so that it is easily accessible and removable for repair or replacement.

5.6.5. JANITOR CLOSETS: In janitor spaces/room/closets, provide at minimum, a service sink with heavy duty shelf and wall hung mop and broom rack(s).

5.6.6. FLOOR DRAINS: As a minimum, provide floor drains in mechanical rooms and areas, janitor spaces/rooms/closets and any other area that requires drainage from fixtures or equipment, drain downs, condensate, as necessary.

5.6.7. URINALS: Urinals shall be non-water type, conforming to ASHRAE Standard 189.1. Non-Water type shall include sealed replaceable cartridge or integral liquid seal trap. Either non-water type urinal shall use a biodegradable liquid to provide the seal and maintain a sanitary and odor-free environment. Install, test and maintain in accordance with manufacturer's recommendations. Slope the sanitary sewer branch line for non-water use urinals a minimum of 1/4 inch per foot. Do not use copper tube or pipe for

drain lines that connect to the urinal. Manufacturer shall provide an operating manual and on-site training to installation operations personnel for the proper care and maintenance of the urinal. Do not provide non-water type urinals for barracks type or other living spaces. Those fixtures shall be water-use type, conforming to ASHRAE 189.1 (0.5 gpf/1.9 lpf).

5.6.8. BUILDING WATER USE REDUCTION. Reduce building potable water use in each building 30 percent from the Baseline, using the Manufacturing Performance Requirements for .Plumbing Fixtures from the Energy Policy Act of 1992 (Public Law 102-486), except as modified by LEED. See Appendix S. Public lavatory faucets shall deliver a maximum flow rate of 0.5 gallons per minute, when tested in accordance with ASME A 112.18/CSA B125 and use that flowrate as the Baseline figure for calculating the 30 percent reduction requirement from the Baseline.

5.6.9. Do not use engineered vent or Sovent® type drainage systems.

5.6.10. Where the seasonal design temperature of the cold water entering a building is below the seasonal design dew point of the indoor ambient air, and where condensate drip will cause damage or create a hazard, insulate plumbing piping with a vapor barrier type of insulation to prevent condensation. Do not locate water or drainage piping over electrical wiring or equipment unless adequate protection against water (including condensation) damage is provided. Insulation alone is not adequate protection against condensation. Follow ASHRAE Fundamentals Chapter 23, Insulation for Mechanical Systems, IMC paragraph 1107 and International Energy Conservation Code for pipe insulation requirements.

5.6.11. Cover all drain, waste and vent piping to prevent mortar or other debris from being flushed down and blocking pipes during such construction activities.

5.7. ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

5.7.1. STANDARDS AND CODES: The electrical systems for all facilities shall conform to APPLICABLE CRITERIA.

5.7.2. MATERIALS AND EQUIPMENT: Materials, equipment and devices shall, as a minimum, meet the requirements of Underwriters Laboratories (UL) where UL standards are established for those items. Wiring for branch circuits shall be copper. Motors larger than one-half horsepower shall be three phase. All electrical systems shall be pre-wired and fully operational unless otherwise indicated. Wall mounted electrical devices (power receptacles, communication outlets and CATV outlets) shall have matching colors, mounting heights and faceplates.

5.7.3. POWER SERVICE: Primary service from the base electrical distribution system to the pad-mounted transformer and secondary service from the transformer to the building service electrical equipment room shall be underground. See paragraph 6 for additional site electrical requirements.

5.7.3.1. Spare Capacity: Provide 10% space for future circuit breakers in all panelboards serving residential areas of buildings and 15% spaces in all other panelboards.

5.7.4. TELECOMMUNICATION SERVICE: Connect the project's facilities to the Installation telecommunications (voice and data) system through the outside plant (OSP) telecommunications underground infrastructure cabling system per the I3A Criteria. Connect to the OSP cabling system from each facility main cross connect located in the telecommunications room.

5.7.5. LIGHTING: Comply with the recommendations of the Illumination Engineering Society of North America (IESNA), the National Energy Policy Act and Energy Star requirements for lighting products..

5.7.5.1. Interior Lighting:

(a) Reflective Surfaces: Coordinate interior architectural space surfaces and colors with the lighting systems to provide the most energy-efficient workable combinations.

(b) High Efficiency Fluorescent Lighting: Utilize NEMA premium electronic ballasts and energy efficient fluorescent lamps with a Correlated Color Temperature (CCT) of 4100K. Linear fluorescent and compact fluorescent fixtures shall have a Color Rendering Index of (CRI) of 87 or higher. Fluorescent lamps shall be the low mercury type qualifying as non-hazardous waste upon disposal. Do not use surface mounted fixtures on acoustical tile ceilings. Provide an un-switched fixture with emergency ballast at each entrance to the building.

(c) Solid State Lighting: Fixtures shall provide lighting with a minimum Correlated Color Temperature (CCT) of 4100K and shall have a Color Rendering Index of (CRI) of 75 or higher. Verify performance of the light producing solid state components by a test report in compliance with the requirements of IESNA LM 80. Verify performance of the solid state light fixtures by a test report in compliance with the requirements of IESNA LM 79. Provide lab results by a NVLAP certified laboratory. The light producing solid state components and drivers shall have a life expectancy of 50,000 operating hours while maintaining at least 70% of original illumination level. Provide a complete five year warranty for fixtures.

(d) Metal Halide Lighting (where applicable): Metal Halide lamp fixtures in the range of 150-500 Watts shall be pulse start type and have a minimum efficiency rating of 88%.

(e) Lighting Controls: ANSI/ASHRAE/IESNA 90.1 has specific lighting controls requirements. See Also Appendix T, *Functional Area Lighting Control Strategy.*

(f) Exterior Lighting: See paragraph 6.9 for site specific information, if any, on exterior lighting systems. Minimize light pollution and light trespass by not over lighting and use cut-off type exterior luminaries.

5.7.6. TELECOMMUNICATION SYSTEM: Building telecommunications cabling systems (BCS) and OSP telecommunications cabling system shall conform to APPLICABLE CRITERIA, including but not limited to I3A Technical Criteria. An acceptable BCS encompasses, but is not limited to, copper and fiber optic (FO) entrance cable, termination equipment, copper and fiber backbone cable, copper and fiber horizontal distribution cable, workstation outlets, racks, cable management, patch panels, cable tray, cable ladder, conduits, grounding, and labeling.. Items included under OSP infrastructure encompass, but are not limited to, manhole and duct infrastructure, copper cable, fiber optic cable, cross connects, terminations, cable vaults, and copper and FO entrance cable.

5.7.6.1. Design, install, label and test all telecommunications systems in accordance with the I3A Criteria and ANSI/TIA/EIA 568, 569, and 606 standards. A Building Industry Consulting Services International (BICSI) Registered Communications Distribution Designer (RCDD) with at least 2 yrs related experience shall develop and stamp telecommunications design, and prepare the test plan. See paragraph 5.8.2.5 for design of environmental systems for Telecommunications Rooms.

5.7.6.2. The installers assigned to the installation of the telecommunications system or any of its components shall be regularly and professionally engaged in the business of the application, installation and testing of the specified telecommunications systems and equipment. Key personnel; i.e., supervisors and lead installers assigned to the installation of this system or any of its components shall be BICSI Registered Cabling Installers, Technician Level. Submit documentation of current BICSI certification for each of the key personnel. In lieu of BICSI certification, supervisors and installers shall have a minimum of 5 years experience in the installation of the specified copper and fiber optic cable and components. They shall have factory or factory approved certification from each equipment manufacturer indicating that they are qualified to install and test the provided products.

5.7.6.3. Perform a comprehensive end to end test of all circuits to include all copper and fiber optic cables upon completion of the BCS and prior to acceptance of the facility. Provide adequate advanced notification to the COR to allow COR and Installation personnel attendance The BCS circuits include but are not limited to all copper and fiber optic(FO) entrance cables, termination equipment, copper and fiber backbone cable, copper and fiber horizontal distribution cable, and workstation outlets. Test in accordance with ANSI/EIA/TIA 568 standards. Use test instrumentation that meets or exceeds the standard. Submit the official test report to include test procedures, parameters tested, values, discrepancies and corrective actions in electronic format. Test and accomplish all necessary corrective

actions to ensure that the government receives a fully operational, standards based, code compliant telecommunications system.

5.7.7. LIGHTNING PROTECTION SYSTEM: Provide a lightning protection system where recommended by the Lightning Risk Assessment of NFPA 780, Annex L.

5.8. HEATING, VENTILATING, AND AIR CONDITIONING

5.8.1. STANDARDS AND CODES: The HVAC system shall conform to APPLICABLE CRITERIA.

5.8.2. DESIGN CONDITIONS.

5.8.2.1. Outdoor and indoor design conditions shall be in accordance with UFC 3-410-01FA. Outdoor air and exhaust ventilation requirements for indoor air quality shall be in accordance with ASHRAE 62.1. All Buildings with minimum LEED Silver requirement (or better) will earn LEED Credit EQ 7.1, Thermal Comfort-Design., except where precluded by other project requirements. Where the contract specifies indoor design temperature , airflow, humidity conditions, etc., use those parameters.

5.8.2.2. High Humidity Areas: Design HVAC systems in geographical areas meeting the definition for high humidity in UFC 3-410-01FA to comply with the special criteria therein for humid areas.

5.8.2.3. Cooling equipment may be oversized by up to 15 percent to account for recovery from night setforward. Heating equipment may be oversized by up to 30 percent to account for recovery from night setback. Design single zone systems and multi-zone systems to maintain an indoor design condition of 50% relative humidity for cooling only. For heating only where the indoor relative humidity is expected to fall below 20% for extended periods, add humidification to increase the indoor relative humidity to 30%. Provide ventilation air from a separate dedicated air handling unit (DOAU) for facilities using multiple single zone fan-coil type HVAC systems. Do not condition outside air through fan coil units. In Air handlers that handle outdoor air and have fans that run continuously during the occupied mode, direct expansion cooling coils may be used only if the controls and compressor technology is provided that allows the compressor to operate down to 10% of full load without utilizing hot gas bypass to minimize the potential of delivering unconditioned outdoor air to the space.

5.8.2.4. Locate all equipment so that service, adjustment and replacement of controls or internal components are readily accessible for easy maintenance.

5.8.2.5. Environmental Requirements for Telecommunications Rooms and Telecommunications Equipment Rooms, (including SIPRNET ROOMS, where applicable for specific facility type). Comply with ANSI/EIA/TIA 569 (including applicable Addenda**)**. Maintain environmental conditions at the Class 1 and 2 Recommended Operating Environment. Before being introduced into the room, filter and pre-condition outside air to remove particles with the minimum MERV filtration quality shown in the ASHRAE HVAC Applications, Chapter 17. Maintain rooms under positive pressure relative to surrounding spaces. Design computer room air conditioning units specifically for telecommunications room applications. Build and test units in accordance with the requirements of ANSI/ASHRAE Standard 127. A complete air handling system shall provide ventilation, air filtration, cooling and dehumidification, humidification (as determined during the design phase), and heating. The system shall be independent of other facility HVAC systems and shall be required year round.

5.8.2.6. Fire dampers: dynamic type with a dynamic rating suitable for the maximum air velocity and pressure differential to which the damper is subjected. Test each fire damper with the air handling and distribution system running.

5.8.3. BUILDING AUTOMATION SYSTEM. The Building Automation System (BAS) shall be a single complete non-proprietary Direct Digital Control (DDC) system for control of all heating, ventilating and air conditioning (HVAC) systems and for control of other building systems. The BAS shall be based on an

Open implementation of BACnet using ASHRAE 135 exclusively as the communications protocol for communication between DDC Hardware devices to allow multi-vendor interoperability. The building BAS shall include integration to a basewide supervisory monitoring and control (M&C) system.

5.8.3.1. The system shall be Open in that it is designed and installed such that the Government or its agents are able to perform repair, replacement, upgrades, and expansions of the system without further dependence on the original hardware vendor or their agents. This includes, but is not limited to the following:

- Hardware shall be installed such that individual control equipment can be replaced by similar control equipment from other equipment manufacturers with no loss of system functionality.
- Necessary documentation (including rights to documentation and data), configuration information, configuration tools, application programs (with comments explaining program logic), application source code for programmable controllers, drivers, and other software shall be licensed to and remain with the Government such that the Government or its agents are able to perform repair, replacement, upgrades, and expansions of the system without subsequent or future dependence on the Contractor.

5.8.3.2. All DDC Hardware shall:

- Be connected to a ASHRAE 135 MS/TP control network.
- Implement all required functionality of the application network interface via BACnet objects, properties, and services
- Shall conform to basewide addressing schemes, particularly with regard to Device ID.
- Minimize the use of proprietary BACnet objects and properties
- Not use any of the following BACnet services for application control functionality or communication:
    - AtomicFile or AtomicFileWrite
    - ConfirmedTextMessage or UnconfirmedTextMessage
    - ConfirmedPrivateTransfer or UnconfirmedPrivateTransfer
- Communicate over the control network via ASHRAE 135 exclusively.
- Conform to the BACnet Testing Lab's Device Implementation Guidelines.
- Be capable of responding to Who-Is/I-Am and Who-Has/I-Have service requests.
- All settings and parameters used by the application shall be fully configurable:
    - to the greatest extent possible, via properties of BACnet objects that can be written to via BACnet services.
    - via properties of BACnet objects that can be written to via BACnet services for the following
- Setpoint
- Alarm limit
- Schedule modification
- Trend modification
    - All other settings and parameters that can not be written to via BACnet services shall be fully configurable via either:
- Properties of BACnet objects that can be written to with a configuration tool, or
- Hardware settings on the controller itself to support the application.
- Provide BACnet objects, properties, and services required to support the application and supervisory monitoring and control functionality including:
    - System start/stop and overrides.
    - Scheduling
    - Alarming
    - Trending
- To the greatest extent practical, not rely on the control network to perform the application
- Be BTL Listed
- Provide on board nonvolatile memory for devices accumulating energy consumption.

5.8.3.3. Include any device capable of communicating over IEEE 802.3 (Ethernet) in a DIACAP and Certificate of Networthiness (CoN) for this installation, regardless of whether the Ethernet connection is active at time of installation. Do not use devices with Ethernet connection capability not included in a DIACAP or without a DIACAP or without a CoN shall not be used.

5.8.3.4. Gateways may be used provided that each gateway communicates with and performs protocol translation for control hardware controlling one and only one package unit.

5.8.3.5. Not Used

5.8.3.6. Perform all necessary actions needed to fully integrate the ASHRAE 135-based building control system to the UMCS. These actions include but are not limited to:

- Install BACnet MS/TP-to-IP routers and/or BACnet/IP Broadcast Management Devices (BBMD) in accordance with ASHRAE 135 Annex J as needed to connect the building control network to the UMCS IP network. Devices shall be capable of configuration via DHCP and Write-Broadcast-Distribution-Table messages but shall not rely on these services for configuration. All communication between the UMCS and building networks shall be via BACnet/IP and in accordance with ASHRAE 135. Any IP network work including access to existing networks shall be coordinated with the installation Network Enterprise Center (NEC).
- Configure M&C Software functionality including: graphical pages for System Graphic Displays including overrides, alarm handling, scheduling, trends for critical values needing long-term or permanent monitoring via trends, and demand limiting.
- Configure M&C software to provide hierarchically arranged screens to allow operator to configure (via BACnet services to the appropriate objects) all devices on the installation BACnet internetwork. The following adjustments shall be supported:
    - Setpoints
    - Alarm limits
    - Schedules
    - Trends

This requirement is separate from and in addition to the requirement to provide all necessary programming and configuration software.

5.8.3.7. Perform all necessary actions needed to integrate legacy systems to the UMCS. Configure M&C Software functionality including: graphical pages for System Graphic Displays including overrides, alarm handling, scheduling, trends for critical values needing long-term or permanent monitoring via trends, and demand limiting. Integration may be via drivers in the M&C Software or hardware gateways may be provided. Where hardware gateways are provided, include all hardware, software, software licenses, and configuration tools required for gateway operation, modification, and maintenance. Configure software driver or a hardware gateway to support M&C software functionality as listed above.

5.8.3.8. Provide the following to the Government for review prior to acceptance of the system:

- The latest version of all software including source code for application software (for programmable controllers), software licenses, and user manuals required to program, configure and operate the system.
- Points Schedule drawing that shows every DDC Hardware device. The Points Schedule shall contain the following information as a minimum for each device:
    - Device ID and network address (MS/TP network and MAC address, or IP address).
    - Input and Output Objects including Name, Type, Description, and relevant supported or required Properties.
    - Hardware I/O, including Type (AI, AO, BI, BO) and Description.
    - Alarm information including alarm limits and BACnet device IDs, object IDs, and property information.
    - Supervisory control information including BACnet device IDs, object IDs, and properties for trending and overrides.

- Objects and Properties needed for device configuration.
- Device IDs and objects (where applicable) of remote devices and objects that communicate with the given Device (e.g. clients and servers for BACnet services used by the given device).
- Example Points Schedules are available at: https://eko.usace.army.mil/fa/besc/

- Riser diagram of the network showing all network cabling and hardware. Label hardware with BACnet Device IDs, BACnet network addresses, network names, and locations.
- A consolidated list of all Device IDs.
- Control System Schematic diagram and Sequence of Operation for each controlled system.
- Operation and Maintenance Instructions including procedures for system start-up, operation and shut-down, a routine maintenance checklist, and a qualified service organization list.
- Quality Control (QC) checklist (below) completed by the Contractor's Chief Quality Control (QC) Representative

Table 5-1: QC Checklist

Instructions: Initial each item, sign and date verifying that the requirements have been met.		
#	Description	Initials
1	All DDC Hardware is installed on a MS/TP or IP local control bus IAW ASHRAE135 section 9 or Annex J.	
2	Communication between DDC Hardware is only via ASHRAE 135. PrivateTransfer, TextMessage, or AtomicFile services have not been used.	
3	All sequences are performed using DDC Hardware.	
4	All software has been licensed to the Government	
5	Final As-built Drawings accurately represent the final installed system.	
6	O&M Instructions have been completed and submitted.	
7	All DDC hardware connected or intended to be connected to the IP network is covered under a DIACAP and has a certificate of Networthiness	
8	M&C software monitoring displays have been created for all building systems, including all override and display points indicated on Points Schedule drawings	
9	Connections between the UMCS IP network and ASHRAE 135 building networks is in accordance with ASHRAE 135 Annex J, including BACnet Broadcast Management Devices (BBMDs) as needed.	
By signing below I verify that all requirements of the contract, including but not limited to the above, been met. Signature:_____ Date:_____		

5.8.3.9. Perform a Performance Verification Test (PVT) under Government supervision prior to system acceptance. During the PVT, demonstrate that the system performs as specified, including but not limited to demonstrating that the system is Open and correctly performs the Sequences of Operation.

5.8.3.10. Provide a 1 year unconditional warranty on the installed system and on all service call work. The warranty shall include labor and material necessary to restore the equipment involved in the initial service call to a fully operable condition.

5.8.3.11. Provide training at the project site on the installed building system . Upon completion of this training each student, using appropriate documentation, should be able to start the system, operate

the system, recover the system after a failure, perform routine maintenance and describe the specific hardware, architecture and operation of the system.

5.8.4. TESTING, ADJUSTING AND BALANCING. Test and balance air and hydronic systems, using a firm certified for testing and balancing by the Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB), or the Testing Adjusting, and Balancing Bureau (TABB). The prime contractor shall hire the TAB firm directly, not through a subcontractor. Perform TAB in accordance with the requirements of the standard under which the TAB Firm's qualifications are approved, i.e., AABC MN-1, NEBB TABES, or SMACNA HVACTAB unless otherwise specified herein. All recommendations and suggested practices contained in the TAB Standard shall be considered mandatory. Use the provisions of the TAB Standard, including checklists, report forms, etc., as nearly as practicable to satisfy the Contract requirements. Use the TAB Standard for all aspects of TAB, including qualifications for the TAB Firm and Specialist and calibration of TAB instruments. Where the instrument manufacturer calibration recommendations are more stringent than those listed in the TAB Standard, adhere to the manufacturer's recommendations. All quality assurance provisions of the TAB Standard such as performance guarantees shall be part of this contract. For systems or system components not covered in the TAB Standard, the TAB Specialist shall develop TAB procedures. Where new procedures, requirements, etc., applicable to the Contract requirements have been published or adopted by the body responsible for the TAB Standard used (AABC, NEBB, or TABB), the requirements and recommendations contained in these procedures and requirements are mandatory.

5.8.5. COMMISSIONING: Commission all HVAC systems and equipment, including controls, and all systems requiring commissioning for LEED Enhanced commissioning, in accordance with ASHRAE Guideline 1.1, ASHRAE Guideline 0 and LEED. Do not use the sampling techniques discussed in ASHRAE Guideline 1.1 and in ASHRAE Guideline 0. Commission 100% of the HVAC controls and equipment. Hire the Commissioning Authority (CxA), certified as a CxA by AABC, NEBB, or TABB, as described in Guideline 1.1. The CxA will be an independent subcontractor and not an employee of the Contractor nor an employee or subcontractor of any other subcontractor on this project, including the design professionals (i.e., the DOR or their firm(s)). The CxA will communicate and report directly to the Government in execution of commissioning activities. The Contracting Officer’s Representative will act as the Owner’s representative in performance of duties spelled out under OWNER in Annex F of ASHRAE Guideline 0. Because required CxA contractual relationship may not be acceptable to GBCI for LEED certification, the project cannot earn LEED Credit EA3 Enhanced Commissioning. However, still complete, maintain and provide copies of all necessary LEED documentation for Credit EA 3. This LEED Credit cannot be included to meet the required LEED rating for this project. Contractor may attempt this as an additional credit for GBCI certification but the Government will not accept it until GBCI accepts it.

5.9. ENERGY CONSERVATION

5.9.1. The building including the building envelope, HVAC systems, service water heating, power, and lighting systems shall meet the Mandatory Provisions and the Prescriptive Path requirements of ASHRAE 90.1. Substantiation requirements are defined in Section 01 33 16, Design After Award.

5.9.2. Design all building systems and elements to meet the minimum requirements of ANSI/ASHRAE/IESNA 90.1. Design the buildings, including the building envelope, HVAC systems, service water heating, power, and lighting systems to achieve an energy consumption that is at least 40% below the consumption of a baseline building meeting the minimum requirements of ANSI/ASHRAE/IESNA Standard 90.1. Energy calculation methodologies and substantiation requirements are defined in Section 01 33 16, Design After Award.

5.9.3. Purchase Energy Star products, except use FEMP designated products where FEMP is applicable to the type product. The term “Energy Star product” means a product that is rated for energy efficiency under an Energy Star program. The term “FEMP designated product” means a product that is designated under the Federal Energy Management Program of the Department of Energy as being among the highest 25 percent of equivalent products for energy efficiency. When selecting integral sized electric motors, choose NEMA PREMIUM type motors that conform to NEMA MG 1, minimum Class F

insulation system. Motors with efficiencies lower than the NEMA PREMIUM standard may only be used in unique applications that require a high constant torque speed ratio (e.g., inverter duty or vector duty type motors that conform to NEMA MG 1, Part 30 or Part 31).

5.9.4. Solar Hot Water Heating. Provide at least 30% of the domestic hot water requirements through solar heating methodologies, unless the results of a Life Cycle Cost Analysis (LCCA) developed utilizing the Building Life Cycle Cost Program (BLCC) which demonstrates that the solar hot water system is not life cycle cost effective in comparison with other hot water heating systems. The type of system will be established during the contract or task order competition and award phase, including submission of an LCCA for government evaluation to justify non-selection of solar hot water heating. The LCCA uses a study period of 25 years and the Appendix K utility cost information. The LCCA shall include life cycle cost comparisons to a baseline system to provide domestic hot water without solar components, analyzing at least two different methodologies for providing solar hot water to compare against the baseline system.

5.9.5. Process Water Conservation. When potable water is used to improve a building's energy efficiency, employ lifecycle cost effective water conservation measures, except where precluded by other project requirements.

5.9.6. Renewable Energy Features. The Government's goal is to implement on-site renewable energy generation for Government use when lifecycle cost effective. See Paragraph 6, PROJECT SPECIFIC REQUIREMENTS for renewable energy requirements for this project.

5.10. FIRE PROTECTION

5.10.1. STANDARDS AND CODES Provide the fire protection system conforming to APPLICABLE CRITERIA.

5.10.2. Inspect and test all fire suppression equipment and systems, fire pumps, fire alarm and detection systems and mass notification systems in accordance with the applicable NFPA standards. The fire protection engineer of record shall witness final tests. The fire protection engineer of record shall certify that the equipment and systems are fully operational and meet the contract requirements. Two weeks prior to each final test, the contractor shall notify, in writing, the installation fire department and the installation public work representative of the test and invite them to witness the test.

5.10.3. Fire Extinguisher Cabinets: Provide fire extinguisher cabinets and locations for hanging portable fire extinguishers in accordance with NFPA 10 Standard for Portable Fire Extinguishers. The Government will furnish and install portable fire extinguishers, which are personal property, not real property installed equipment.

5.10.4. Fire alarm and detection system: Required fire alarm and detection systems shall be the addressable type. Fire alarm initiating devices, such as smoke detectors, heat detectors and manual pull stations shall be addressable. When the system is in alarm condition, the system shall annunciate the type and location of each alarm initiating device. Sprinkler water flow alarms shall be zoned by building and by floor. Supervisory alarm initiating devices, such as valve supervisory switches, fire pump running alarm, low-air pressure on dry sprinkler system, etc. shall be zoned by type and by room location.

5.10.5. Roof Access: Paragraph 2-9 of UFC 3-600-01 Fire Protection for Facilities will be modified in the next update to that UFC. Pending revision, comply with roof access and stairway requirements in accordance with the International Building Code. Where roof access is required by the IBC or other criteria, comply with UFC 4-010-01, Anti-Terrorist Force Protection, Standard 14. "Roof Access".

5.10.6. Fire Protection Engineer Qualifications: In accordance with UFC 3-600-01, FIRE PROTECTION ENGINEERING FOR FACILITIES**,** the fire protection engineer of record shall be a registered professional engineer (P.E.) who has passed the fire protection engineering written examination administered by the

National Council of Examiners for Engineering and Surveys (NCEES), or a registered P.E. in a related engineering discipline with a minimum of 5 years experience, dedicated to fire protection engineering that can be verified with documentation.

5.11. SUSTAINABLE DESIGN

5.11.1. STANDARDS AND CODES: Sustainable design shall conform to APPLICABLE CRITERIA. See paragraph 6, PROJECT-SPECIFIC REQUIREMENTS for which version of LEED applies to this project. The LEED-NC Application Guide for Multiple Buildings and On-Campus Building Projects (AGMBC) applies to all projects. Averaging may be used for LEED compliance as permitted by the AGMBC but is restricted to only those buildings included in this project. Each building must individually comply with the requirements of paragraphs ENERGY CONSERVATION and BUILDING WATER USE REDUCTION.

5.11.2. LEED RATING, REGISTRATION, VALIDATION AND CERTIFICATION: See Paragraph PROJECT-SPECIFIC REQUIREMENTS for project minimum LEED rating/achievement level, for facilities that are exempt from the minimum LEED rating, for LEED registration and LEED certification requirements and for other project-specific information and requirements.

5.11.2.1. Innovation and Design Credits. LEED Innovation and Design (ID) credits are acceptable only if they are supported by formal written approval by GBCI (either published in USGBC Innovation and Design Credit Catalog or accompanied by a formal ruling from GBCI). LEED ID credits that require any Owner actions or commitments are acceptable only when Owner commitment is indicated in paragraph PROJECT-SPECIFIC REQUIREMENTS or Appendix LEED Project Credit Guidance

5.11.3. OPTIMIZE ENERGY PERFORMANCE. : Project must earn, as a minimum, the points associated with compliance with paragraph ENERGY CONSERVATION. LEED documentation differs from documentation requirements for paragraph ENERGY CONSERVATION and both must be provided. For LEED-NC v2.2 projects you may substitute ASHRAE 90.1 2007 Appendix G in its entirety for ASHRAE 90.1 2004 in accordance with USGBC Credit Interpretation Ruling dated 4/23/2008.

5.11.4. COMMISSIONING. See paragraph 5.8.5 COMMISSIONING for commissioning requirements. USACE templates for the required Basis of Design document and Commissioning Plan documents are available at http://en.sas.usace.army.mil (click on USACE LEED Commissioning Plan Template) and may be used at Contractor's option.

5.11.5. DAYLIGHTING. Except where precluded by other project requirements, do the following in at least 75 percent of all spaces occupied for critical visual tasks: achieve a 2 percent glazing factor (calculated in accordance with LEED credit EQ8.1) OR earn LEED Daylighting credit, provide appropriate glare control and provide either automatic dimming controls or occupant-accessible manual lighting controls.

5.11.6. LOW-EMITTING MATERIALS. Except where precluded by other project requirements, use materials with low pollutant emissions, including but not limited to composite wood products, adhesives, sealants, interior paints and finishes, carpet systems and furnishings,

5.11.7. CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT. Except where precluded by other project requirements, earn LEED credit EQ 3.1 Construction IAQ Management Plan, During Construction and credit EQ 3.2 Construction IAQ Management Plan, Before Occupancy.

5.11.8. RECYCLED CONTENT. In addition to complying with section RECYCLED/RECOVERED MATERIALS, earn LEED credit MR4.1, Recycled Content, 10 percent except where precluded by other project requirements.

5.11.9. BIOBASED AND ENVIRONMENTALLY PREFERABLE PRODUCTS. Except where precluded by other project requirements, use materials with biobased content, materials with rapidly renewable content,

FSC certified wood products and products that have a lesser or reduced effect on human health and the environment over their lifecycle to the maximum extent practicable.

5.11.10. FEDERAL BIOBASED PRODUCTS PREFERRED PROCUREMENT PROGRAM (FB4P). The Farm Security and Rural Investment Act (FSRIA) of 2002 required the U.S. Department of Agriculture (USDA) to create procurement preferences for biobased products that are applicable to all federal procurement (to designate products for biobased content). For all designated products that are used in this project, meet USDA biobased content rules for them except use of a designated product with USDA biobased content is not required if the biobased product (a) is not available within a reasonable time, (b) fails to meet performance standard or (c) is available only at an unreasonable price. For biobased content product designations, see http://www.biopreferred.gov/ProposedAndFinalItemDesignations.aspx.

5.12. CONSTRUCTION AND DEMOLITION (C&D) WASTE MANAGEMENT: Achievement of 50% diversion, by weight, of all non-hazardous C&D waste debris is required. Reuse of excess soils, recycling of vegetation, alternative daily cover, and wood to energy are not considered diversion in this context, however the Contractor must tracked and report it. A waste management plan and waste diversion reports are required, as detailed in Section 01 57 20.00 10, ENVIRONMENTAL PROTECTION.

5.13. SECURITY (ANTI-TERRORISM STANDARDS): Unless otherwise specified in Project Specific Requirements, only the minimum protective measures as specified by the current Department of Defense Minimum Antiterrorism Standards for Buildings, UFC 4-010-01, are required for this project. The element of those standards that has the most significant impact on project planning is providing protection against explosives effects. That protection can either be achieved using conventional construction (including specific window requirements) in conjunction with establishing relatively large standoff distances to parking, roadways, and installation perimeters or through building hardening, which will allow lesser standoff distances. Even with the latter, the minimum standoff distances cannot be encroached upon. These setbacks will establish the maximum buildable area. All standards in Appendix B of UFC 4-010-01 must be followed and as many of the recommendations in Appendix C that can reasonably be accommodated should be included. The facility requirements listed in these specifications assume that the minimum standoff distances can be met, permitting conventional construction. Lesser standoff distances (with specific minimums) are not desired, however can be provided, but will require structural hardening for the building. See Project Specific Requirements for project specific siting constraints. The following list highlights the major points but the detailed requirements as presented in Appendix B of UFC 4-010-01 must be followed.

(a) Standoff distance from roads, parking and installation perimeter; and/or structural blast mitigation

(b) Blast resistant windows and skylights, including glazing, frames, anchors, and supports

(c) Progressive collapse resistance for all facilities 3 stories or higher. Unless determined otherwise by the Installation and noted in paragraphs 3 or 6, the building shall be considered to have areas of uncontrolled public access when designing for progressive collapse.

(d) Mass notification system (shall also conform to UFC 4-021-01, Mass Notification Systems)

(e) For facilities with mailrooms (see paragraph 3 for applicability) – mailrooms have separate HVAC systems and are sealed from rest of building

6.0 PROJECT SPECIFIC REQUIREMENTS

6.1. GENERAL

The requirements of this paragraph augment the requirements indicated in Paragraphs 3 through 5.

6.2. APPROVED DEVIATIONS

The following are approved deviations from the requirements stated in Paragraphs 3 through 5 that only apply to this project.

6.2 Deviations: The following are approved deviations from the requirements stated in Paragraphs 3, 4, and 5 that only apply to the project.

The requirements in this Paragraph take precedence over the requirements in Paragraphs 3, 4, and 5.

Delete Setion 5.9.4 Solar Hot Water Heating - Life Cycle Cost Analysis has demonstrated that this system is not cost effective at Fort Drum.

6.2.1 C*ontracotor is required to utilize NANP-1110-1-1 in their design process.*

6.3. SITE PLANNING AND DESIGN

6.3.1. General:

6.3.1.1 Site Description: The proposed project site is within the 2700 Area sections of Fort Drum, fronting on Munns Corner Road.

6.3.1.2 Project Description: This project will include a new administration facility and four (4) new, earth-covered magazines. The project shall include the appropriate lightning protection, as well as supporting facilities, including water, sewer, electric, telecommunications, natural gas, paving, sidewalks, storm drainage, POV parking, and site improvements. Handicapped access will be provided at the administration facility only. All applicable Antiterrorism and Force Protection requirements will be included in this project. The new magazines will be located between the existing magazines as shown on the site plan. The administration facility will be located outside of the designated blast zone as indicated on the site plan.

6.3.1.3 Standards, Documents, and Criteria: The Contractor shall be responsible for obtaining the latest version of any documents not attached as part of this RFP but referenced as criteria for the project. Requirements of this Chapter 6 may delete, revise, or add to criteria contained in the referenced documents. This Chapter 6 shall be deemed as the controlling authority where any differences exist with referenced documents and criteria.

6.3.1.3.1 Reliance: Throughout this Request for Proposal (RFP), the Contractor is directed to reference Government-supplied reports and drawings (i.e. geotechnical, topographical, fire flow tests, etc.) that were utilized in the preparation of the Contract Documents. The Contractor may rely upon the general accuracy of such reports and drawings, but these do not relieve the Contractor from the responsibility to confirm all existing conditions. The Contractor is required to perform borings, surveying, or any other investigations, necessary to verify site conditions, and the location, condition, size, depth, etc. of existing utilities, and the capability/suitability of existing structures, systems, and components.

6.3.1.4 Codes: The designs, materials, equipment, and installation shall be in accordance with the requirements of the listed codes and design manuals, with the requirements of this Chapter, and with the listed specifications. The building construction classification shall be in accordance with the International Building Code (IBC), as modified by UFC 1-200-01 “General Building Requirements”.

6.3.1.5 Drawings: Attached drawings provide information on the site and building layout and shall be used in the design of the facility. All of the drawings are available in electronic file form (.pdf Format). During the Proposal Phase, any changes to Government-supplied drawings will be clouded and noted. Microstation Version 8.0 drawings (.dgn format) will be available to the successful bidder.

6.3.1.6 Site Preparation: The site work includes all design and construction of site features described in this Request for Proposal, including but not limited to, site planning, clearing, grading, erosion control, and site drainage.

6.3.1.6.1 Site Preparation: Site preparation shall include, but not be limited to, the demolition of Building, pavement, removal and/or relocation of existing utilities, the clearing and grubbing of trees and shrubs, and earthwork grading of the site to obtain the building pad and site improvement’s desired elevations and other items as indicated.

6.3.1.7 All excavated materials are classified as unclassified material. All excavated unclassified materials may include existing foundations, glacial boulders, and/or impenetrable bedrock. If the Contractor requires blasting, the Contractor shall obtain a blating permit from Fort Drum, and the Contractor shall comply with all additional safety and other procedures issued by the Contracting Officer Representative, all of which shall be performed by the Contractor at no additional cost to the Government. However, the areas for construction of the new magazines and access to the magazines shall be a NO BLASTING ZONE.

6.3.1.8 Snow/Ice: Walkways and mechanical area shall be designed to maintain a safe distance from the roof lines (at the Administration Building only) to minimize the impact of sliding snow and ice using the USACE Cold Regions Research and Equipment Laboratory (CRREL) sliding snow calculator. Parking areas and sidewalks shall be designed with consideration for plowing and managing snow. Grading shall be designed to minimize sheet storm water flows across sidewalks. See Appendix AA for additional information.

6.3.1.9 Excavated Materials: Excavated materials shall be separated to satisfactory and unsatisfactory soil materials. Surplus satisfactory material shall be disposed of at the on-base soil disposal area, approximately five-miles from the project site, as directed by Fort Drum Public Works. Unsatisfactory material (all rock, concrete, asphalt, metal, refuse, or organics) shall be legally disposed of off of Fort Drum property. The geotechnical engineer shall determine the presence of any unsatisfactory materials. Note: All satisfactory surplus material remains the property of the Government.

6.3.1.10 Contractor’s Storage Yard: The Contractor’s storage yard shall be located within the project site as approved by the Contracting Officer.

6.3.1.11 The finished floor of any building shall be 6-inches above the surrounding grade elevation. The finished floor elevation shall not be modified from what is shown on the drawings.

6.3.1.9.12 Survey Controls: Only recoverable concrete monuments, located in the Contractor's excavated areas, may be used by the Contractor for facility construction layout.

6.3.2. Site Structures and Amenities

6.3.2.1 Dumpster Pads: Provide a dumpster (traditionally sized at 40CY) pad, accessible by vehicle, with concrete-filled, steel bollards, for the building, located as per UFC 4-010-01. The Contractor will also provide a dumpster enclosure which will be designed according to the Fort Drum Design Guide. Provide space at the dumpster area(s) for recycling receptacles and coordinate with the Installation on recycling receptacle types, sizes, and access requirements.

6.3.2.2 Mechanical and Electrical Concrete Pads: Provide appropriately sized concrete pads for the exterior mechanical and electrical equipment. The pad surface shall extend a minimum of 6-inches past the limits of the equipment in a rectangular configuration. Mechanical and electrical pads shall have a minimum 8-inch thick reinforced concrete slab constructed on a minimum 4-inch gravel base.

6.3.2.3 Concrete-Filled Pipe Bollards: 8-inch diameter, Schedule 40, galvanized steel, concrete-filled pipe bollards with yellow plastic sleeves installed are to be provided on the site. Removable bollards where required shall consist of sleeve-type removable bollards. Standard and removable bollards shall be designed for crash impacts. (20 ton vehicle impacting bollard at eighteen-inches above ground at 10-miles-per-hour.)

6.3.2.4 Foundation Drip Strip: The Contractor is to provide a drip strip at finished grade around each building. The drip strip is to include geo-synthetic fabric and #2 colored stone matching the proposed building façade materials along with black aluminum edging. The drip strip shall be a minimum of four-inches in depth and shall be double the width of the building's eave with a minimum of a 2-foot width.

6.3.2.5 Fencing: Provide a chain link fence as indicated on the site plans. Fencing is to be 7-feet high chain link with 3 strands of barbed wire.

6.3.3. Site Functional Requirements:

6.3.3.1. Stormwater Management (SWM) Systems.

6.3.3.1.1 Drainage: Slope grade away from the exterior of all buildings at 1:10 for 20-feet to maintain positive drainage.

6.3.3.1.2 Pavement Grade: Finished pavement shall be graded to assure positive drainage across the paved areas as shown on drawings. Paved surfaces shall have a minimum grade of 1.0% and a maximum grade of 2.5%.

6.3.3.1.3 Storm Runoff: Storm runoff shall be calculated by the Rational Method defined in HDS-4. The site shall be designed to maximize overland runoff routes. Any collection and closed piping system deemed necessary shall be designed for the 10-year storm frequency. Road and driveway culverts shall be designed for the 50-year storm frequency and storm water mitigation basins shall be designed for the 100-year storm frequency as per the New York State Department of Environmental Conservation (NYSDEC) requirements.

6.3.3.1.4 Existing/New Storm Drainage System: The existing site is underdeveloped and is drained by natural overland flow. The existing roads abutting the site are drained by open ditches. Road extensions shall match the existing road's open ditch design. Culverts shall be provided at all driveway access and roadway intersections to maintain the continuity of drainage flow in the ditches. On-site drainage shall be by open swales as much as possible. New manholes shall be provided at all changes in pipe direction, grade, or elevation, and where pipe lengths exceed 250 feet. Storm drain piping materials shall be Polyethylene. The design of all storm drainage features shall be stamped by a New York State Registered Professional Engineer.

6.3.3.1.5 Stormwater Mitigation: The Contractor(s) shall comply with Article 17 of the New York State Environmental Conservation Law; Title 6 Part 750 of New York Codes, Rules, and Regulations; and the current New York State Pollution Discharge Elimination System Permit. Inclusive of this permit is the requirement for the Contractor to prepare a "Stormwater Pollution Prevention Plan" (SWPPP) and a specific Erosion and Sedimentation Control Plan.

6.3.3.2. Erosion and Sediment Control

6.3.3.2 Erosion and Sediment Control: The Contractor(s) shall comply with Article 17 of the New York State Environmental Conservation Law; Title 6, Part 750 of the New York Codes, Rules, and Regulations; and the current New York State Pollutant Discharge Elimination System Permit, which requires a Stormwater Pollution Prevention Plan (SWPPP) in accordance with NYSDEC requirements. Any changes to the design of the SWPPP shall be stamped by a NYS registered professional engineer and shall be approved by the COR.

6.3.3.3. Vehicular Circulation.

6.3.3.3.1 See drawings in Appendix J for site vehicle circulation and parking requirements.

6.3.3.3.2 In order to provide for the ease of snow removal and snow storage in adjacent areas, no curbs or islands are allowed unless specifically shown on drawings.

6.3.3.3.3 Roads, security gates, and access drives shall be laid out and constructed in a manner as to be in compliance with UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings.

6.4. SITE ENGINEERING

6.4.1. Existing Topographical Conditions

6.4.2.1 Existing Topographical Conditions: A field topographic and utility survey of the project site is included. The Contractor is responsible for verifying all existing conditions, including but not limited to existing condition features, topographic line and grade and all existing utility information including horizontal location and vertical depth and slope.

6.4.2. Existing Geotechnical conditions: See Appendix A for a preliminary geotechnical report.

6.4.2.2 Existing Geotechnical Conditions: The geotechnical aspects of this project include, but are not limited to, the foundation, soils, soil mechanics, design, pavements, and related items.

6.4.2.3 Geotechnical Information: The Site is located on a bank of 40-foot (minimum) of poorly graded sand with limited rocks and no bedrock penetrating it. The sand is highly permeable. There may be up to 6-inches of topsoil located on the site in some locations.

6.4.2.4 Using a New York State, licensed, professional engineer, the Contractor shall prepare a Foundation Analysis Design (FDA) including a narrative, data presentation and calculations. The contractor is responsible for obtaining any geote3chnical information. The FDA shall be prepared as an individual document to be included as an attachment to the design submissions. The FDA shall be provided to the Contracting Officer for review and approval. Receipt by the Government of the aforementioned submittals shall not release the Contractor from responsibility for an adequate design. All findings from geotechnical explorations, testing, design, and analysis shall be reported in the FDA.

6.4.3. Fire Flow Tests See Appendix D for results of fire flow tests to use for basis of design for fire flow and domestic water supply requirements.

6.4.3 Fire Flow Tests: There is no water service provided to this site for Fire Protection.

6.4.4. Pavement Engineering and Traffic Estimates:

6.4.4.1 Pavement Design: All roads, drives, and parking areas shall be designed using and H-20 load rating as the minimum design standard. Access roads, POV and secured parking areas shall consist of Hot Mix Asphalt (HMA) concrete pavement. At a minimum HMA Pavement section shall consist of the following layers:

- 1 ½-inch bituminous top course (NYSDOT Item #403.170, Type 7F).
- 2 ½-inch bituminous binder course (NYSDOT Item #403.170, Type 3).
- 12-inches of 95% compacted, graded aggregate base course (NYSDOT Item #304.12, Type 2).
- 24-inches minimum 90% compacted prepared subgrade.

Situation &design analysis will dictate new road design & construction. When approved, the width of the roadway shoulder will depend on the nature of the travel route. For roadway extensions, the shoulder width should at least match the existing. Entrance driveways, and roadways consisting of a two-way traffic flow, shall have a minimum width of 24-feet.

6.4.4.1.2 Fort Drum Emergency Vehicle Access Roads: Emergency vehicle access roads shall meet these minimum requirements:

- The emergency vehicle access road will be inside of the Force proection limits and shall have removable bollards installed on each end.
- The emergency vehicle access road shall be at least 24-feet wide.
- The emergency vehicle access road shall be designed to accommodate Fort Drum's firefighting apparatus. (The heaviest vehicle is 70,000 pounds.)
- The emergency vehicle access road radii shall be sized to accommodate Fort Drum's firefighting apparatus. (The longest vehicle is 62-feet.) The minimum radii will be at least ten-feet.
- The emergency vehicle access road aprons shall extend at least 2-feet beyond the road's width.

6.4.4.2 Edge of Pavement: Pavement edges are to be flush with grade. The gravel base course shall extend beyond the edge of pavement and daylight to facilitate drainage as shown on drawings. For Organizational Parking Area, the gravel base shall extend a minimum of 20-feet and shall be a minimum of 6-inches deep over a properly specified geotextile separation fabric.

6.4.4.2.1 Pavement Connections of New Pavement to Existing Pavement: A straight line saw cut of the wearing top course of existing pavement a minimum of 6-inches beyond the vertical cut of the binder asphalt course and the granular base course.

6.4.4.3 Parking Areas: All driveways and parking areas will be designed for a specific use. H-20 load rating shall be the minimum design standard. It is critical that the design of parking facilities can accommodate large size emergency vehicles enabling direct access to the building. When possible, parking lots located between two buildings should be shared. Access roads, POV, and secured parking areas shall consist of HMA concrete pavement. HMA pavement section will consist of:

- 1 ½-inch bituminous top course (NYSDOT Item #403.170, Type 7F).
- 2 ½-inch bituminous binder course (NYSDOT Item #403.170, Type 3).
- 12-inches of 95% compacted, graded aggregate base course (NYSDOT Item #304.12, Type 2).
- Geotextile membrane over compacted subgrade or undisturbed soil.
- 24-inches minimum 90% compacted prepared subgrade.
- Entrance driveways and roadways consisting of a two-way traffic, shall have a minimum width of 24-feet.
- Do not use prime coats for asphalt pavement.
- Roller compacted concrete or Portland Cement Concrete (PCC) is desirable for organizational parking areas.
- Finished grade slopes in parking areas can range from 2%-3%, allowing storm water runoff to sheet flow to open channel drainage swales.

6.4.4.3.1 All parking areas must comply with the Architectural Barriers Act (ABA), latest edition. Parking areas must meet the Force Protection requirements as indicated in UFC 4-010-01, Minimum Antiterrorism Standards for Buildings, latest edition.

6.4.4.3.2 The standard for off-street parking requires a minimum dimension of 9-feet by 18-feet for each POV. A perpendicular 90° layout is preferred. Refer to TI-800-01, Table 3-5 for Authorized Parking Stall Quantities By Facility Type for Non-Organizational Privately Owned Vehicles (POV).

6.4.5. Traffic Signage and Pavement Markings

6.4.5.1 Traffic signage shall be per New York State Manual of Uniform Traffic Control Devices (MUTCD).

6.5.4.2 Provide handicapped vehicle parking signage and pavement markings per the Architectural Barriers Act requirements.

6.4.6. Base Utility Information

6.4.6.1 Base Utility Information-Base Utility Information is Provided on the Site Plans: all utilities are owned by the Goverment. The Contractor shall provide live/hot power, communications, sewer, gas, and water connections. If not physically possible, utility connections shall be provided as described herein. Any utility outages, road closures, etc. shall be coordinated with Fort Drum Agencies and may be required to be accomplished at off hours or on weekends and holidays. A 14-day timeline notification shall be submitted to Fort Drum Public Works prior to any work. Outages are not acceptable during the heating season and any exceptions will require a 30-day advance notice.

6.4.6.2 Field Information: The utility information provided in the drawings is the best information available. It is provided to assist the Contractor during the design of this project. The Contractor is responsible for verifying the existence, location, size, depth, and condition of the utilities by either utilizing the "pot hole" method or ground penetrating radar. The Contractor is responsible for obtaining all information during design, and requests for information shall be coordinated through the Contracting Officer. Any survey required to provide utility locations, manhole inverts, verification of existing features, etc. shall be the responsibility of the Contractor and shall tie into the project datum.

6.4.6.3 Marker Tape and Tracer: Provide marker tape and tracer wire for all underground utilities. Tracer wire test stations and termination to be contained in a test station that shall be a "TWABADJ1-inch-adjustable 1-inch tracer wire access box, by C.P. Test Services or equal. Test stations to be located at 500 foot intervals and at the termination of the utility. Tracer wire is to be placed 6-inches to 12-inches above the buried pipe and dig tape is to be located 18" below grade.

6.4.6.4 All new utilities will tie into existing utility systems.

6.4.6.5 The design of the water and sewer systems shall be stamped by a New York State registered Professional Engineer and shall conform to all requirements of the 10 State Standards and specific New York State Standards. All sewers require a minimum of 2-feet per second velocity.

6.4.6.6 As part of the utilities design submission (including telecommunications), the Contractor shall provide a profile showing elevations, manhole inverts, conduit runs, cover, and anticipated points of interference from other buried utilities.

6.4.6.7 Underground utilities and other structures under and/or within 20-feet of any road surface shall be designed to HS-20 DOT loading conditions.

6.4.6.8 Water:

6.4.6.8.1 Fire Hydrants: A minimum of two standard, concrete-filled, painted, galvanized steel bollards shall be provided around all hydrants. Those exposed to traffic on all sides shall have four bollards installed as protection. All hydrants will require a five (5) foot long by three-eights-inch diameter fiber glass pole with four (4) each, alternating red and white reflecting bands, mounted on a spring at the top of the fire hydrant for locating the fire hydrant in the snow. Fire hydrants are to have a 5-inch "Storz" connection and cap.

6.4.6.8.2 Valve and Valve Boxes: Sufficient sectional control valves shall be provided so that no more than two (2) fire hydrants will be out of service in the event of a single break in a water main.

6.4.6.8.3 Post Indicator Valves (PIV): Post indicator valves shall be provided on water services. Tamper switches must be included on all post indicator valves on the fire lines to a building. PIV are to be a minimum of 50-feet from the building.

6.4.6.8.4 Testing and Chlorination Requirements: Water main and service lines to be tested require 48-hour notice and approval from the COR and the Fort Drum Public Works Plumbing Shop and Environmental Division must be obtained.

6.4.6.8.5 Burial Depth: Water lines shall have minimum 5-feet-6-inches of earth cover to maintain the water line below the frost penetration depth at Fort Drum.

6.4.6.8.6 Water Meters: Water meters will be required for the service line to each building. The meter shall read in gallons and shall be a pulse-type with local and remote read capabilities. The meter is to be located within the mechanical room of the building. Water meters must be tied into the Energy Management Control System (EMCS) to provide remote read out.

6.4.6.8.7 Water Line Materials: The water mains are to the type and material in accordance with the applicable American Water Works Association (AWWA) standards for potable water and National Fire Protection Association (NFPA) firefighting distribution.

6.4.6.8.8 Construction Connections: Any connection to the Fort Drum potable water supply for construction purposes must be protected by an approved backflow device (RPZ) supplied by the Contractor and said device is to have a current inspection at all times. All backflow prevention devices used (temporary and permanent) shall have “current” device certificates. “Current” device certificates are to be presented to the Contracting Officer and provided to Fort Drum Public Works prior to their use. A flow meter at temporary connections is also required to monitor water usage for billing purposes.

6.4.6.9 Gas: Interruption of gas service to the adjacent facilities during construction shall be minimized and restricted to the hours as permitted by the Contracting Officer. The gas service line shall be designed in accordance with the applicable codes and local gas company, NationalGrid Standards. Natural gas main pressure at Fort Drum is traditionally 15 PSI.

6.4.6.9.1 Burial Depth: The minimum cover depth for gas mains and service lines shall be 30-inches.

6.4.6.9.2 Gas Line Materials: Materials for gas lines shall be Type II, high-density polyethylene with the PE 3408 designation SDR11 (100PSI). Transition from underground to above ground piping shall be anode-less riser.

6.4.6.9.3 Gas Line Testing: Gas line to be pressure tested at a minimum 70 psi. The Contractor shall provide a written work plan and drawing to the Fort Drum Public Works for approval, a minimum 14-days prior to commencing any work. All piping 2-inches and greater shall be purged using nitrogen only; full nitrogen purge required, slug method is not acceptable.

6.4.6.9.4 Gas Meter, Regulator, and Strainer: A gas meter and regulator shall be provided for the building. The gas meter shall have a permanent bypass line to facilitate removal of the meter without disruption of service and shall have a rotary meter for interface with the EMCS. The meter and regulator shall be located within the fenced mechanical yard and shall be protected from weather conditions. A strainer shall be provided upstream of the gas meter.

6.4.6.9.4.1 The gas meter shall be protected by bollards and from snow/ice falling from roofs.

6.4.6.9.5 Gas Line Separation: Gas lines shall have a minimum separation of 10-feet from other site utilities where possible, unless more stringent requirements exist. In areas where thermoplastic buried gas pipeline is in close proximity to buried underground electrical cables and communications lines, adequate

separation of 10 feet or concrete encasement of the gas line is required to protect the physical integrity of the gas supply/service pipeline.

6.4.6.10 Sanitary Sewer: A septic system shall be designed to convey sewage produced by the building. Designer shall use the DEC Manual "Design Standards for Waste Water Treatement Works 1988" as the standard for design. DOR shall certifiy the installation of the system.

6.4.6.10.1 The design of the sanitary sewer shall be in accordance with TM5-814-1, “Sanitary and Industrial Wastewater Collection-Gravity Sewers and Appurtenances”.

6.4.6.10.2 Testing: Gravity sewers shall be tested in accordance with the pipe manufacturer’s specifications for both leakage and deflection.

N/A

N/A

N/A

N/A

N/A

6.4.7. Cut and Fill

6.4.7 Cut and Fill: The Contractor is responsible for design of the final grading plan. If borrowed materials become necessary to meet the desired grades, the Contractor, upon written authorization from the Contracting Officer and the Fort Drum Public Works Office of Master Planning, may get fill from a Fort Drum borrow site as directed and approved from Fort Drum Public Works. The Contractor is to coordinate borrow site location and requirements with the DPW-MP Program Manager. (Note: For off-site borrow requirements, refer to Paragraph 6.4.8.)

6.4.7.1 The plan should reflect selective site clearing that preserves groups of trees. Grading should manage site runoff where possible. Apply the principles of positive drainage to control the conditions that remove rainfall away from the facilities and functions. Lawn sheet flow shall not flow over sidewalks or paved areas. Do not drain new parking areas into existing streets and do not drain existing streets into new parking areas. Site designs should seek to minimize the disturbance of land, utilize natural drainage paths where possible, and take into account future construction in the area. Site design should also minimize the impact of construction activities on drainage and prevent loss of soils by water and wind erosion. Designs that improve on the existing water quality by incorporating sustainable design principles are encouraged, and consistent with budget restraints and activity requirements.

6.4.7.2 The building(s) finished floors shall be six-inches above the surrounding grade elevation, except where grades are required on walkways and entrances to buildings that are handicapped accessible. Slope finished grades away from the building at 1:10 for the first 30-feet and then at a minimum 1% to existing or new storm drainage. Use a preferred minimum gradient or 1% in all parking areas. The maximum gradient used parallel from front to rear of a space shall be 5% and from side to side (width of a space) shall be 1%.

6.4.7.3 All excavated materials are classified as unclassified material. All excavated unclassified materials may include existing foundations, glacial boulders, and/or impenetrable bedrock. If the Contractor

requires blasting, the Contractor shall obtain a blasting permit from Fort Drum, and the Contractor shall comply with all additional safety and other procedures issued by the Contracting Officer Representative, all of which shall be performed by the Contractor at no additional cost to the Government. However, the areas for construction of the new magazines and access to the magazines shall be a NO BLASTING ZONE.

6.4.7.4 Contractor's Storage Yard: See Drawings.

6.4.7.5 Geotextile Under Granular Material: Geotextile shall be placed between granular fill material and satisfactory materials. Materials are defined in UFGS Specification Section 31 00 00 EARTHWORK. The Contractor shall require "satisfactory materials" to comply with any materials classified by ASTM D2487 as GW, GP, GM, GP-GM, GC, GP-GC, GM-GC, SW, or SP. Satisfactory materials for general grading may comprise stones less than six-inches, except for fill material used for pavement areas shall comprise stones less than two-inches in any dimension.

6.4.8. Borrow Material

If borrow material is permitted to be obtained from sites within Fort Drum, the following conditions apply:

- A borrow request will be in writing that details the location of the approved borrow site, and will provide an accurate estimate for borrow materials to include grade/side slopes, dates of usage, Contractor name, Hauler name(s), and site location for intended usage. Actual haul quantities will be provided to Fort Drum Public Works Environmental Solid Waste Manager for tracking as recycled materials.

- The Contractor shall stake out the corners of the designated borrow area.

- Provide Contractor identification signs, approximate size to be 24-inches by 24-inches at each corner of the borrow area assigned.

- To open the pit, trees, stumps, and grubbing materials will be removed. Top soil will be removed and stored on-site for reuse when closing.

- The borrow material calculations will be based on providing positive slope (minimum 1%) from the established road and when excavation is complete will provide a relatively flat surface.

- If during excavation water is encountered the Contractor will cease excavating and start recovery operations to restore native sand to a level that provides a 24-inch protective layer over the water.

- If the size of the pit becomes insufficient, notify Public Works Master Planning.

- Pit edge slopes will be maintained at a maximum of 20%.

- No spoils will be left on-site.

- All haul trucks will cover all loads.

- All haul trucks will be clean of excess material (anything outside the box) before leaving the borrow site.

- The Contractor will provide portable rest room facilities.

For Closure:

- Closure request shall be in writing.

- Top soil stored from opening operations will be graded smooth to include the slope areas.

- Seeding will be provided for the closed borrow area and shall be the Fort Drum Standard for Sandy Soils.

- Seeding will follow Contract specifications and time frames.

6.4.8.1 All fill brought from outside of Fort Drum to be used within the Fort Drum boundary shall come from a source with a valid New York State mining permit. These sources must have been subjected to an archeological review and a determination of no effect issued from the New York State Office of Historic Preservation.

6.4.8.2 If borrow material is required, the Contractor shall comply with the Fort Drum DPW-MP Program Manager erosion control requirements at no additional charge to the government.

6.4.9. Haul Routes and Staging Areas

The Contractor's haul route shall be from the project site location to Munns Corners Road, exiting the Base onto Great Bend Road (NYS Route 26) which is the Airfield entry gate. The Contractor will be responsible for repairing any damage caused by the use of the haul routes during construction, and the Contractor shall be responsible for daily cleaning. The proposed haul route(s) shall be depicted on a drawing and submitted for acceptance prior to the start of work.

6.4.10. Clearing and Grubbing:

6.4.10.1 Tree falling activities must take place after October1st and before April 15th to avoid the direct take of the Federally-endangered Indiana Bat in accordance with the Endangered Species Act.

6.4.10.2 The Contractor shall stack timber from the project as directed by the Contracting officer to a location adjacent to the site. Timber remains the property of the Government.

6.4.10.2.1 In cases of timber retained on-site the following conditions shall apply. Trees marked with a painted red stripe are the property of the Government. These marked trees shall be treated in the following manner by the Contractor awarded the bid:

- Trees must be fallen and all limbs removed from the main trunk.

- Trees will be cut starting from the base (as close to ground as possible). The entire main stem shall be kept in one piece, to a top diameter of 8-inches.

- All stems shall be piled in a manner and area designated by the Fort Drum Forest Management Program.

6.4.11. Landscaping:

Not Used

6.4.12. Turf:

6.4.12.1 Loam and Seed: All disturbed areas shall be covered with stockpiled or imported loam at a minimum of six-inches and shall be seeded such that a dense grass growth becomes established.

6.5. ARCHITECTURE

6.5.1. General: To the maximum extent possible within the contract cost limitation, the buildings shall conform to the look and feel of the architectural style and shall use the same colors as adjacent facilities as expressed herein . The Government will evaluate the extent to which the proposal is compatible with the architectural theme expressed in the RFP during the contract or task order competition. The first priority in order of importance is that the design provides comparable building mass, size, height, and configuration compared to the architectural theme expressed herein. The second priority is that design is providing compatible exterior skin appearance based upon façade, architectural character (period or style), exterior detailing, matching nearby and installation material/color pallets, as described herein.

6.5.2. **Design**

6.5.2.1. Appendix F is provided "For Information Only", to establish the desired site and architectural themes for the area. Appendix F identifies the desired project look and feel based on Fort Drum**'s** Installation Architectural Theme from existing and proposed adjacent building forms; i.e. building exterior skin, roof lines, delineation of entrances, proportions of fenestration in relation to elevations, shade and shadow effects, materials, textures, exterior color schemes, and organizational layout.

6.5.2.2. The design should address Fort Drum's identified preferences. Implement these preferences considering the following:

(a) Achievable within the Construction Contract Cost Limitation (CCL)

(b) Meets Milestones within Maximum Performance Duration.

(c) Achieves Full Scope identified in this Solicitation

(d) Best Life-Cycle Cost Design

(e) Meets the Specified Sustainable Design and LEED requirements

(f) Complies with Energy Conservation Requirements Specified in this RFP.

6.5.2.3. Priority #1. Visual Compatibility: Facility Massing (Size, Height, Spacing, Architectural Theme, etc.) Exterior Aesthetic Considerations: The buildings massing, exterior functional aesthetics, and character shall create a comprehensive and harmonious blend of design features that are sympathetic to the style and context of the Installation. The Installation's intent for this area is:

6.5.2.3 Architectural Design Theme:

6.5.2.3.1 Color Schedules: Exterior and interior colors shall comply with the current Fort Drum Color Matrix (refer to Appendix M). The successful Contractor must provide two (2) color boards for each interior and exterior material to the Contracting Officer. The Fort Drum color boards must include material samples to be incorporated into the project, in the proposed color.

6.5.2.3.2 Concrete: Exposed concrete is not permitted for major exterior architectural elements, except as noted for concrete floors. Building foundations and other structural elements of concrete shall be

concealed through the use of stepped brick ledges, grading, etc. All exterior concrete surfaces shall receive a broom finish. Broom finish in direction perpendicular to traffic. All sidewalks shall be constructed of minimum strength concrete of 4500 psi and 4 inches thick unless to be used by service vehicles, those shall be 6-inches thick and reinforced.

6.5.2.3.3 Sidewalks: ABA compliant sidewalks are required for circulation of personnel from the POV parking lots. Sidewalk edges are to be flush with grade and shall be a minimum of 6-feet wide for ease of snow clearing. All sidewalks shall be constructed of minimum strength concrete of 4500 psi and 4-inches thick unless it is to be used by service vehicles, those shall be 7-inches thick and reinforced.

6.5.2.4. Priority #2. Architectural Compatibility: Exterior Design Elements (Materials, Style, Construction Details, etc.) Roofs, Exterior Skin, and Windows & Door Fenestrations should promote a visually appealing compatibility with the desired character while not sacrificing the integrity and technical competency of building systems.

6.5.2.5. See Appendix F for exterior colors that apply to Architectural character at Fort Drum. The manufacturers and materials referenced are intended to establish color only, and are not intended to limit manufacturers and material selections.

6.5.2.6. Additional architectural requirements:

(a) Install fall protection anchor points on all roofs with a slope greater than 2:12

6.5.2.7 Architectural Design Requirements:

6.5.2.7.1 Code Review and Fire Safety Analysis: The jurisdiction having authority on code-related matters is HQ, U.S. Army Corps of Engineers and coordination with Fort Drum. Refer to UFC 3-600-01 for applicable International Building Code use and special requirements. The Contractor shall submit a complete Life Safety Plan and Code analysis indicating, as a minimum, the locations of all necessary fire doors, fire walls, fire partitions, egress routes, egress travel distances, occupancy use, allowances, etc.

6.5.2.7.1.1 Each building being constructed will be reviewed and assigned a Risk Category as described in ASCE 7-10. This categorization may impact the design loads required in Section 6.6.3 of this RFP. The Risk Category and the resultant design load calculations will be clearly shown in the Code Review and Fire Safety Analysis submission.

6.5.2.7.2 Typical Sloped Standing Seam Metal Roof: An architectural, UL 90 standing seam roof assembly shall conform to SMACNA standards. The Contractor shall provide soffit and ridge ventilation in accordance with accepted design principles. Standing seams shall be a minimum of 1 ½-inch high. Seams shall be 1-feet--inches to 2-feet-0-inches o.c. Roofing shall be fabricated from a minimum 24 gauge, G-90 galvanized steel. Roof deck assembly shall be FM class 1, or UL-listed as Fire Classified. Fastening systems shall be completely concealed. Color shall be factory applied fluoropolymer-polyvinylidene (PVDF), painted finish (Equivalent to Kynar 500) on galvanized steel systems, or anodized for aluminum systems. Roof systems shall be installed over underlayment of self-sealing membrane, venting composite insulated roofing panel, and decking on the roof structure. Self-sealing membrane shall be cold applied, self-adhering. It shall consist of high strength polyethylene film coated on one side with a layer of rubberized asphalt adhesive. Membrane shall be UL Class A, a minimum 40 mils thick, with an elongation of 250% when tested in accordance with ASTM D412. Provide 4 courses at eaves, 1 course at ridge, and 2 courses at valleys. Venting composite insulated roofing panel shall be comprised of 2-inch polyisocyanurate insulation board, 2-inch air space (min. 85% free area), ¾-inch CDX plywood. Decking shall be designed in accordance with the roof loading and framing spacing.

Decking may be corrugated steel, plywood, or 2X wood strapping, as permitted by Code. No mechanical equipment is permitted on top of the metal roof. Penetrations for plumbing vents, etc. are to be kept to a minimum. Whenever possible, utilize shed-roof end-walls in lieu of roof penetrations. Any roof penetration shall be within 5-feet-0-inches of the ridge and securely anchored to the structure in at least 2 locations before penetrating the roof. The building design shall not incorporate valleys or dormers. Roof pitch shall be a minimum of 4:12. Roof overhangs shall be a minimum of 3-feet-6-inches. Minimum heel height of roof trusses at the exterior walls shall be 1-feet-4-inches. This insures adequate air flow from the soffit to the attic space. Heel heights shall be increased to provide a minimum of 6-inches free space above the specified insulation without the use of foam baffles or by compacting the insulation at the perimeter. It is the responsibility of the designer to provide roof expansion joints to allow movement related to thermal expansion. Fire-retardant treated plywood shall not be part of the roof assembly. R-Value is to be R-60.

6.5.2.7.2.1 Typical Sloped Standing Seam Metal Roof with Flat Portion at Parapet: Facilities requiring standing seam metal roofs with a portion of flat roof with a parapet at the perimeter of the building along with an internal drainage system with the metal roof having a 4:12 pitch to match the surrounding facilities. The standing seam metal roof shall be attached to metal decking attached to either wood or metal trusses creating a cold roof environment to minimize ice buildup during inclement weather. All penetrations made in the sloped portion of the roof shall be made as close to the roof peak as possible (Minimum 5-feet-0-inches) and also anchored at two points to the structure on the inside to prevent them from being sheared off by snow and ice. The flat roof shall be fully adhered EPDM to the sheathing covered insulation over metal decking attached to roof support system creating a cold roof environment to minimize ice buildup during inclement weather. The “R” value for the roof system will be R-60. No loose or granular fill insulation is permitted. No insulation shall be placed directly on acoustical ceiling tiles.

6.5.2.7.2.2 Cold Roof Design: All sloped, standing seam, metal roofs shall be of a cold roof design. The space immediately below the roof decking shall be adequately ventilated and insulated so as to maintain complete isolation of the roof surface from the heated interior space Attic trusses or equivalent framing shall be incorporated as required to maintain at least a six-inch roof-ventilation airway from the eaves through the cold spaces and out through the perforated, continuous soffits. “Cool Vent” or equal shall be installed beneath all sloped metal roof areas. Continuous air flow, from the eave to the ridge, shall be maintained through the vented panel.

6.5.2.7.2.3 A “cold attic” shall be maintained beneath the sloped roof decking portions of all buildings. No heating units or duct work are permitted in the cold space. Any duct work required by the final design to run above should be within the ceiling/roof structure cavity.

6.5.2.7.2.4 Ice and water shield, a minimum of 40 mils. thick, shall be installed beneath the entire sloped area of standing seam metal roofs.

6.5.2.7.2.5 All standing seam metal roofs shall have blade-type, mechanically crimped, sealed seams.

6.5.2.7.3 Roof Warranty: The Contractor shall furnish a one year weather tightness guarantee for the standing seam metal roof, with a notarized signature of an authorized representative of the firm. Guarantee shall provide for repair or replacement, without cost to the Government, in the event of failure caused by faulty workmanship or materials, and will cover all standing seam roofing, metal flashings, and trim. Repairs are to be made within 24 hours of notice. In addition, the manufacturer shall furnish a 20 year warranty on the paint finish covering chalking, cracking, chipping, blistering, peeling, flaking, and fading. The manufacturer’s warranty shall have no dollar limit or pro-rating. The period of the warranty

shall commence upon completion and acceptance of the work involved as determined by the Contracting Officer. The roofing warranty on the flat roof system must be a minimum of 15 years.

6.5.2.7.4 Exterior Soffits and Fascias: Provide continuous ventilation. Soffit vents shall be fully perforated metal panels screened and sealed to resist insect intrusion. Soffits and fascias shall be pre-finished steel to match the standing seam metal roof. The Contractor may select from painted or anodized finishes per the attached color matrix. (See Appendix F) Soffits shall be securely attached to prevent uplift. Soffits at canopies and building entrances shall be architectural linear metal, pre-finished painted steel to match the roof. No gutters will be allowed.

6.5.2.7.5 Exterior Canopies: Exterior walkways accessing building entrances are required to be covered with canopies to protect pedestrians from snow and ice sliding off the sloped roof. Mechanical room exterior doors and exit-only doors occurring in gable end walls require canopies sized to protect the door from snow and ice buildup. Canopies are required to cover an area two times the door width by 5-feet-0-inches deep minimum or a depth as calculated by the Contractor's designer. The designer shall use the sliding snow calculator developed by the USACE Cold Regions Research and Engineering Laboratory (CRREL). Utility connections to buildings shall be protected from sliding snow and ice. The Contractor shall submit all sliding snow calculations as part of the design submittals. Appendix AA will be provided with CRRel information.

6.5.2.7.5.1 Exterior Canopy Support Brackets: Brackets shall be high density polymer. Structural support for the canopy may be accommodated either elsewhere or fabricated to be completely encapsulated by the polymer. Polymer shall be fire-rated, Class 1 material.

6.5.2.7.6 Snow Guards: Avoid where possible. If snow guards are necessary, they shall be designed and installed per "MP-05-6443-Snow Guards on Metal Roofs", as published by CRREL.

6.5.2.7.7 Roof shall be designed so as to prevent valleys from being over doors or windows. Design shall not permit snow falling from one roof to another. All roof penetrations shall be within 5-feet-0-inches from peak of roof.

6.5.2.7.8 Wall Louvers: Weather resistant drainable type, of extruded aluminum, with bird screens. Louvers shall be made to withstand wind loads as described in Paragraph 6.6.3.1. They shall bear the AMCA certified ratings program seal for air performance and water penetration in accordance with AMCA 500 and AMCA 511. The ratings shall show a water penetration of less than .11 pounds per square yard. The louver size shall be coordinated with the requirements of the mechanical design. The louvers shall be provided and sized to accommodate removal and replacement of equipment. Non-functional louvers shall be provided to supplement those required by the mechanical systems so that the composite matches the building elevations included in this RFP. Non-functioning louvers shall be blanked off and insulated with a minimum R-10 insulation.

6.5.2.7.9 Building Identification: Each building shall have a minimum of two (2) sets of aluminum Helvetica numbers. Coordinate with Fort Drum personnel. Signage shall be vandal-resistant.

6.5.2.8 Masonry: Unless otherwise specified, exterior portions of the building(s) shall be brick and split-face CMU to match existing buildings. Coursing, color accents, lintels, and other exterior architectural features shall be in compliance with the Fort Drum Exterior Colors Matrix and consistent with neighboring buildings. The masonry veneer shall not extend below grade. Tool all joints in brick and CMU. The successful Contractor must construct a sample wall for review and approval by the Contracting Officer's Representative, and coordinated with Public Works, Master Planning. Steel lintels supporting masonry over windows, louvers, and doors shall be painted. Exterior window sills shall be

split-face CMU, sloping to the exterior. Exterior steel lintels shall be sand-blasted to SP-10 and painted with two (2) coats of two-part epoxy paint. Each coat shall be 6-8 mils DFT. Color to match window frame. Split-face CMU at the exterior wall shall be cast with an integral waterproofing agent. All walls shall extend to the underside of structure above. Provide flashing at all openings, transitions, etc., in accordance with the "Technical Notes on Brick Construction", as prepared by the Brick Industry Association. Provide adjustable hot-dipped galvanized wall anchors. Design anchors for seismic reactions when required by structural requirements of this Chapter. Provide mortar net above base flashings in all wall cavities to catch and permanently suspend mortar droppings in masonry cavity walls above the level of the flashing and weeps so blockage of weep-hole vents can't occur. Mortar net must be a manufactured Product intended for this use. Provide control joints on both sides of building corners at a maximum distance of 24-inches from the corner. Provide additional building control and expansion joints in accordance with the guidelines of the Brick Institution of America. Control joints shall be provided at the wing wall extensions. If cavity walls are installed, the construction shall consist of reinforced CMU backup, air barrier, R30 insulation, air space, and brick veneer.

6.5.2.9 Exterior Windows: Windows shall comply with Unified Federal Criteria (UFC) 4-010-01 "DoD Minimum Antiterrorism Standard For Buildings". Windows shall be aluminum, impact-resistant, heavy duty, and commercial grade. Frames shall be of thermally broken aluminum and shall have a minimum performance rating of AW65 per AAMA 101. All window systems shall include a thermally broken aluminum sub-sill. Window operation shall be as shown on elevations. The window finish shall be factory applied fluoropolymer-polyvinylidene fluoride (PVDF), painted finish (equivalent to Kynar 500), color as shown on the Exterior Color Matrix. The overall "R" value shall be a minimum R-2.63. The glazing for all exterior windows shall be insulated glazing panels. The inboard lite shall be Low-E coated, laminated safety glass and the outboard lite shall be tempered safety glass. Laminated glass shall meet referenced DoD standards. All exterior windows shall have horizontal mini-blinds. The blinds shall have .008 gauge, one-inch wide horizontal aluminum slats. Interior sills of exterior windows shall receive solid surface stools, nominal 1" thick. Window jambs and window header, at interior shall be painted to match.

6.5.3. Programmable Electronic Key Card Access Systems:

Not Used

6.5.4. INTERIOR DESIGN

6.5.4 Interior Design Objectives: Arrange spaces in an efficient, functional manner. Provide simple circulation patterns that allow for easy wayfinding within buildings. Use durable materials that can be easily maintained and replaced. Maximize the use of daylighting and operable windows. Coordinate mechanical systems to ensure no conflicts occur with ceiling placement. Use interior surfaces that are easy to clean, but rich in light and color. Avoid trendy or bright color schemes. Any reception desks must have unobstructed views to observe all personnel entering through the front doors.

6.5.4.1 Floor Plans: The Contractor shall conform to the same floor plan, elevations, and building sections as shown on the attached drawings. The Government's intent in providing floor plans, elevations, and building sections is to establish relationships and proportions. Minor deviations from the dimensions shown on the plans will be acceptable to increase construction productivity, to accommodate standard material sizes, to improve functions, to conform to regulating codes and regulations, etc.

6.5.4.2 The building(s) shall be a minimum of Type IIB, non-combustible construction.

6.5.4.3 The Mechanical Room shall have a two hour fire rating.

6.5.4.4 The Electrical Room shall have a one hour fire rating.

6.5.4.5 Entryway Grille System: Provide a slab recess to accept a walk-off mat. Provide a floor drain under the mat at building entrances. Floor drain in entry vestibule shall include a sediment bucket to facilitate easy cleaning and minimize clogging.

6.5.4.6 All interior concrete surfaces shall receive a steel trowel finish. After all bleed water has evaporated from the surface, float to finish floor level, and steel trowel. After the concrete has set sufficiently to carry the workmen's weight, burnish with as many trowelings as necessary to leave a dense, level, ringing hard finish free of trowel marks, drag marks, stipple, or orange peel. After the curing period recommended by the manufacturer, mix and apply concrete floor hardener in two, or three coat applications, if required, in strict accordance with the manufacturer's recommendations. Use hardeners only where concrete floors are exposed.

6.5.4.6.1 Concrete Sealer: Place sealer on exposed concrete floors. Sealer shall comply with ASTM C 309.

6.5.4.6.2 All finish floors shall be level with tolerance from 1/8-inch from finish floor elevation in 10-feet. This variation, if it occurs, cannot be abrupt, but must taper so that 1/8-inch variation occurs in not under 5-feet.

6.5.4.7 Wood and Casework: The use of wood shall be limited to fire-rated shelves and cabinetry, millwork, plastic laminate mounting panels, and unexposed, fire-retardant treated nailers, roof curb blocking shims, or backing for flashing.

6.5.4.8 Insulation:
The building components listed in the table below each have specific clauses containing additional installation requirements.

Fort Drum R-Value Requirements

Building Component:	**R**	**Notes:**

	Value:	
Sloped Standing Seam	R-60	Requires cold roof and cool attic design
Metal Roof (SSSMR)		
SSSMR w/ Flat	R-60	Requires cold roof and cool attic design
Portion at Parapet		
Flat Roof with	R-60	
Internal Drainage		
Foundation Walls	R-11	Extend from bottom of slab to top of footing
Underslab	R-11	2-inch to extend 48-inches inward from perimeter
Cavity Walls	R-30	
Exterior Doors	R-13	
Overhead Doors	R-13	
Exterior Windows	R-2.62	
Building Component:	**mils. Thick:**	**Notes:**
Ice/Water Shield	40	Ice/Water shield will be installed beneath the entire surface of a SSSMR.
Air/Vapor Barrier	6	

6.5.4.8.1 Thermal Insulation: Minimum 2-inch rigid insulation (minimum R-11) shall be provided at all foundation walls of heated spaces. Extend from top of footing to underside of slab and forty-eight-inches under slab perimeter. Exterior Foundation walls-Minimum R-11 (aged R Value).

6.5.4.8.2 Vapor Barriers: A vapor barrier shall be provided on the warm side of all surfaces separating heated from non-heated spaces. Provide a six mil polyethylene sheet vapor barrier under all concrete slabs on grade.

6.5.4.8.2.1 Air Barriers: Provide an air barrier on the exterior of the wall system, such that the air barrier is continuous across all openings (sealed to window and door frames) and extending from top of footing, up wall, across floor, down wall and to the top of the footing. Acceptable air barriers may be applied as sheet goods or sprayed in place. Air barriers shall be vapor non-permeable, and are not required when

spray foam insulation is used. Under alternate construction types, air barriers shall be vapor permeable. Prime walls as required by and recommended by manufacturer.

6.5.4.8.2.2 Air Barrier: The building shall meet the air barrier requirements as defined in the current edition of the New York State Energy Code.

6.5.4.9 Furnishings: Furniture, appliances, and vending machines throughout the facility will be provided and installed by the Government except as otherwise noted (i.e. dining facilities). The Contractor shall coordinate electrical and utility connections for all appliances, vending machines, and furniture. Appliances which are built-in shall be provided and installed by the Contractor.

6.5.4.10 Clear Access Space: Provide clear access space around each piece of equipment for operation, maintenance, and repair as recommended by the equipment manufacturer. No piping, ducts, or equipment shall infringe on access space. Where the manufacturer does not provide clearance recommendations, provide 18-inch minimum clearance. In mechanical rooms and other mechanical spaces, locate all pipes and ducts so that walkways and equipment access areas are not obstructed and a minimum of 78-inch clearance is provided above walkways and work spaces. Locate and route all piping and ducts so piping and ducts do not have to be stepped over or stepped on to access equipment or walk-through spaces.

6.5.4.11 Doors and Hardware:

6.5.4.11.1 Building Entrance Doors: Utilize Fiberglass Reinforced Plastic (FRP) doors at exterior locations subject to weather exposure, including the exit doors, building entrances (including both sets of doors at vestibules), mechanical and electrical room doors.

6.5.4.11.2 Aluminum Frames for FRP Doors: Extra heavy duty series, wall thickness of .188-inch, frame depth of 6”, face dimension of 1 ½-inch, angle clip joint construction. All fasteners shall be of aluminum, stainless steel, or zinc-plated steel, and concealed by the framing system. Overall R factor of the doors shall be R-13 or better. Heavy duty doors and hardware are required. All non-glazed and non-fire-rated exterior door assemblies, excluding storefront assemblies, shall have polyurethane core foamed in place or laminated to each outer panel, with a minimum compressive strength of 20 psi and a minimum density of 410 psi. Minimum required insulating value of R-13.

6.5.4.11.3 Interior Door Frames: Interior door frames shall be a minimum 16 gauge knock-down construction. All hollow metal door and frame assemblies shall be constructed as required by ANSI/DSI-100 to meet or exceed a heavy duty, Grade II, Model 2, seamless hollow metal construction. Hollow metal frames shall be painted in accordance with the interior color scheme. Grout all hollow metal frames solid.

6.5.4.11.4 N/A

6.5.4.11.5 Interior Doors: Doors shall be 7-feet-0-inches in height unless noted otherwise, commercial grade, hollow metal.

6.5.4.11.5.1Hollow Metal Doors: Doors shall be full flush, 16 gauge, cold-rolled steel, 1 ¾-inch thick. Cores shall be impregnated cardboard honeycomb with top and bottom steel reinforcement. Edges shall include interlocking joints on lock and hinge edges with visible edge seams.

6.5.4.12 Hardware: Door hardware and security requirements must be coordinated with the functional requirements shown on the plans and the electrical security/fire alarm system requirements of this RFP.

6.5.4.12.1 Hardware Finish: Standard finish for all Base hardware is Satin Chrome Builder's Hardware Manufacturer's Association A156.18.

1. Steel Base Metal BNMA 639
2. Brass Base Metal BHMA 626
3. Stainless Steel Base Metal BHMA 630

6.5.4.12.2 Locksets and Latchets: The locks shall be supplied with Best Mortise Cylinders or equal (Arrow and Falcon) to continue the Base Master Key System. The existing Fort Drum system is equal to Schlage Heavy-Duty Commercial Lever-Type with removable 7-pin, Type L keyway, interchangeable core locks to be compatible with existing Fort Drum "Best" manufactured locks. Building entrance doors shall be keyed alike. The Contractor shall provide three (3) sets of keys for each door to Public Works, Fort Drum. Coordinate keying requirements with Fort Drum and the Contracting Office.

6.5.4.12.3 Security Mechanical Locks: Shall comply with ANSI A156.13 Series 1000 Security Grade 1 Dead Bolt Lock F18.

6.5.4.12.4 Panic Devices: Shall comply with ANSI A516.3 Type 1, Type 2, Grade 1, Accessibility Code A117.1, NFPA 101 Fire Safety, NFPA 80 Life Safety and ULC-ULC10C Positive Pressure. Panics are to have lever trim handles that are ABA compliant. The panics shall be supplied with Best Lock Company cylinders or equal to continue the Base Master Key System. Provide Fort Drum standard panic hardware with cylinder lock at all building entrances. Provide as required by Codes.

6.5.4.12.5 Door Closers: Provide overhead holders or closers with hold-open capability at exterior doors to lobbies, corridors, mechanical rooms, electrical rooms, and janitor's closets.

6.5.4.12.6 Door hinges: Exterior hinges shall comply with ANSI A5111. Entrance vestibule doors shall have tamper-proof continuous geared hinges. All other type exterior doors shall have a minimum of 1 ½ pair of heavy duty butt hinges. The minimum size for the butt hinges shall be 4" x 4". Interior hinges shall comply with ANSI A8111. Interior doors shall have a minimum of 1 ½ pair heavy duty butt hinges. All out-swinging doors with keyed locksets shall have non-removable pins (NRP). This includes all interior and exterior door hinges. Minimum hinge size for these butt hinges shall be 4" x 4".

6.5.4.12.7 Push Pull Plates: Shall comply with ANSI A156.6 J304/J405.

6.5.4.12.8 Kick Plates: Shall comply with ANSI A156.6. Kick plates shall be 4BE x .050. Use machine screws for Hollow Metal Doors.

6.5.4.12.9 Flush Bolts and Dust Proof Strike: Shall comply with ANSI 156.16.

6.5.4.12.10 Surface Bolts: Shall comply with ANSI 156-16 L84161.

6.5.4.12.11 Thresholds, Weather Stripping, Astragals, Sweeps: Shall comply with ANSI A156.21-1994.

6.5.4.12.12 Key Control Box: Provide one key control box for each building.

6.5.4.13 Exterior Windows: Shall be double or single hung windows unless otherwise noted. Due to severe local weather conditions, skylights are not allowed. Overpressures that result from an explosion can cause standard window glass to break and form razor-sharp shards that can be projected inward at considerable velocity. A risk assessment will be conducted to determine the presence and extent of glass

hazards to personnel working in the administration building. Blast-resistant window glazing that precludes projection of glass fragments shall be used. The risk assessment will determine the type of glass to be used. Window design need not be engineered to provide protection from overpressures exceeding 3.5 psi (K18).

6.5.4.13.1 The window frame and frame connection to the structure must be of sufficent strength to retain both the window glazing and the window frame within the structure. Window glazing can be designed to either fracture or not fracture. Window glazing and frame should be designed to remain in the window frame or, as a minimum, simply fallout and land approximate to the building.

6.5.4.14 Toilet Accessories: All toilet accessories shall be heavy-duty, commercial grade construction.

6.5.4.15 Floor Finishes:

6.5.4.15.1 Ceramic Porcelain Tile: As a minimum, ceramic tile shall be frost resistant, have a water absorption of 0.004%, and an abrasive wear index of 234, a breaking strength of 800 pounds, and a coefficient of friction of 0.6. Provide slip-resistant tile where appropriate. Ceramic tile in toilet rooms and bathrooms shall be installed using thinset methods in accordance with the “TCA Handbook”. Ceramic tile base shall be 4’ high, sanitary cove, installed prior to the floor tile.

6.5.4.15.2 Grout: Grout shall be the epoxy type.

6.5.4.15.3 Vinyl Composition Tile (VCT): VCT shall be 12”-inches x 12-inches x 1/8-inch thick type tile. Federal Specification: ASTM F 1066. Seal and wax all vinyl composition tile prior to substantial completion. Use 2 coats of sealer and 2 coats of wax in accordance with the manufacturer’s instructions.

6.5.4.16 Wall finishes: The design shall consist of wall finishes of gypsum wall board (painted with 3 coats); ceramic tile (wainscot or full height) or prefinished insulated interior metal panels in warehouse or storage facilities. Provide 4” high by 1/8” thick vinyl wall base with pre-molded end stops and external corners. Provide vinyl wall base at all interior CMU walls where carpet or vinyl composition tile is the scheduled floor finish. Ceramic tile wainscot shall be in all toilet rooms with moisture resistant high impact gypsum wall board above painted with epoxy paint finish. All showers shall have full height ceramic tile over cement board. Use ceramic tile base in areas with ceramic type tiled floors.

6.5.4.16.1 Wall and Corner Guards: Protect all exposed corners of gypsum board partitions with guards consisting of a continuous aluminum retainer and snap-on vinyl/acrylic corner guard cover. Corner guards shall extend from the finished floor to 8-feet above the finished floor.

6.5.4.17 Ceiling Finishes:

6.5.4.17.1 Suspended Acoustic Ceiling Tile (SACT): SACT shall be 24-inches x 24-inches x ¾-inch thick tegular ceiling tile, NRC .60 or better. Wash/Cleaning room ceilings shall utilize vinyl-faced tiles to provide moisture resistance, washability, and resistance to mold and mildew growth.

6.5.4.17.2 Gypsum Board: Provide painted gypsum board ceilings in building entrance and shower/toilet areas. All gypsum ceilings shall have a smooth texture. Gypsum ceilings and walls in wet areas shall be exterior grade, moisture-resistant type, and minimum 5/8-inch thick. Finish all gypsum board surfaces to a Level 4 finish, as defined by “GA-214-90, Levels of Gypsum Board Finish”.

6.5.4.18 Acoustical Insulation: Acoustical privacy between conference rooms, equipment rooms and adjacent rooms is required with a minimum STC rating of 50. Extend sound attenuated construction to the

underside of the structure. Minimize penetrations for piping, ductwork, conduit, etc. through sound attenuated walls.

6.5.4.19 Interior Windows: Hollow metal window and door frames shall be incorporated into the walls at all administration reception areas adjacent to the front entry corridors. Glazing of interior windows shall be minimum ¼-inch tempered glass. Meet fire-resistant requirements consistent with wall construction, if walls are fire-rated.

6.5.4.20 The Contractor shall provide shelving in the Janitor Closet spaces. This shelving shall be 1foot-4inches deep. The shelving and shelving supports systems shall be designed and installed to resist a minimum of 100 pounds per linear foot.

6.5.4.21 Fire Extinguishers and Cabinets: Provide fire extinguishers as required by Code in a recessed fire extinguisher cabinet, fire-rated as required by surrounding construction.

6.5.4.22 Access Doors and Chases: Provide vandal-resistant metal access doors within construction to maintain access to plumbing shut-off valves, etc. Locate plumbing so to limit location and number of required access doors. All doors shall be accessible with keyed locks and vandal-resistant features. Access doors shall be painted to match the surrounding color scheme.

6.5.4.23 Painting: Painting practices shall comply with applicable Federal, State, and Local laws enacted to insure compliance with the Federal Clean Air Standard. At the time of application, paint shall show no signs of deterioration. Uniform suspension of pigments shall be maintained during all applications.

6.5.4.23.1 Unless otherwise specified or recommended by the paint manufacturer, paint may be applied by brush, roller, or spray. Rollers for applying paints and enamels shall be of a type designed for the coating to be applied and the surface to be coated. Paints, except water-thinned types, shall be applied only to surfaces that are completely free of moisture as determined by sight, touch, or, in the case of wooden surface, by metered reading.

6.5.4.23.2 Thoroughly work coating materials into joints, crevices, and other open spaces. Special attention shall be given to insure that all edges, corners, crevices, welds, and rivets receive a film thickness equal to that of adjacent, painted surfaces. Each coat of paint shall be applied so dry film shall be of uniform thickness and free from runs, drops, ridges, waves, pinholes, or other voids, laps, brush marks, and variations in color, texture, and finish.

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

6.5.4.23.4 Minimum Dry Film Thickness (DFT): Apply paints, primers, varnishes, enamels, undercoats, and other coatings to a minimum dry film thickness of 1.5 mil, each coat unless, otherwise specified. Coating thickness refers to the minimum dry film thickness.

- New uncoated wood and plywood: Alkyd w/ Primer coat, intermediate coat and topcoat. System DFT 4.5 mils.
- New uncoated concrete: Latex w/ Primer coat, intermediate coat and topcoat. System DFT 4.5 mils.
- New uncoated gypsum board: Low VOC Latex (Eggshell) w/ Primer coat, intermediate coat and topcoat. System DFT 4.5 mils.

Interior building signage requirements:

6.5.4 Interior Design Signage: The standards to apply for interior signage design for signage color, type and sizing are found in Technical Manual (TM) 5-807-10, Signage.

6.6. STRUCTURAL DESIGN

6.6 Structural Design: The structural design objectives are to utilize structural materials that will work with the functionality of the building(s) along with the interior and exterior design objectives, such as antiterrorism for protection system and also match the architectural theme of adjacent buildings which were constructed in 1987-2010. All structural design shall be in accordance with Unified Federal Criteria (UFC) 1-200-01 "General Building Requirements", UFC 3-310-02A "Structural Design Criteria for Buildings", and UFC 4-010-01 "Minimum Antiterrorism Standards for Buildings". Unless otherwise noted, all structural design shall be in accordance with the latest version of the Codes, Standards, and References cited. The governing Building code for this project shall be the 2009 International Building Code as modified by UFC 1-200-01, and UFC 3-310-01 "Structural Load Data" and the Fort Drum Design Standards.

6.6.1 Analyze, design, and detail the building as a complete structural system. Design the structural elements to preclude damage to finishes, partitions, and other frangible, non-structural elements; to prevent impaired operability of moveable components; and to prevent cladding leakage and roof ponding. Limit deflections of structural members to the allowable limits specified in the International Building Code and to assure adequate drainage from the roof without ponding.

6.6.1.1 Consider climate conditions, high humidity, industrial atmosphere, road salt applications, or other adverse conditions when selecting the type of cement and admixtures used in concrete, the concrete cover on reinforcing steel, and the coatings on structural members, expansion joints, the level of corrosion protection, and the structural systems. All concrete shall be a minimum of 4,500 psi and shall be reinforced. Place floor-mounted mechanical and electrical equipment on a four-inch minimum concrete pad.

6.6.1.2 Provide all calculation input data, including loads, diagrams, node diagrams, and adequate documentation to illustrate the design.

6.6.2 Structural Foundation Systems: the exterior wall footing depths will be at least 5-feet-6-inches below the final exterior grade for protection against frost action, unless competent rock is encountered at shallower depths.

6.6.2.1 Structural Framing System: Administrative facilities shall require steel columns and beams with steel joists for supporting the upper floors and steel roof trusses for supporting the roof assembly. Steel framing also supports the masonry façade and/or the insulated metal wall panels according the building function.

6.6.3 Structural Design Criteria: Section 6.5.2.7.1.1 requires that each building being constructed be assigned a Risk Category as defined in ASCE 7-10. Based upon the multiplying factors associated with the assigned Risk Categories, the following base calculations may change. The Contractor's design submissions will clearly note and incorporate the load calculations utilized, based upon the Risk Category assigned.

6.6.3.1 Minimum Design Wind Load Requirements: All wind loads shall be computed and applied using a wind speed of 100 mph.

6.6.5.3.2 Minimum Design Seismic Load Requirements: Seismic design loads shall be computed and applied using earthquake loading data as shown in UFC 3-310-01 and the following:

Seismic Use Group: I

Site Classification: C

Seismic Acceleration: SM1=16.0%: SMS=34.0%

Seismic Design Category: B

6.6.5.3.3 Minimum Design Snow Load Requirements: Design per ASCE 7-05. Ground snow load: 70 psf.

6.7. THERMAL PERFORMANCE

6.7 Thermal Performance: Moisture protection shall be provided by the Contractor. Protection from damage to flooring and wall finishes shall be taken into consideration when designing floor slabs and walls. This could be as simple as placing a vapor barrier under the floor slab, building wrap, or vapor barrier on the walls.

6.8. PLUMBING

6.8 Plumbing: The plumbing system shall be designed and installed in accordance with the latest edition of the "International Plumbing Code" (IPC) and UFC 3-420-01. Inspection and testing of the plumbing system shall be performed as prescribed in the IPC and UFC 3-420-01. Specific materials and equipment shall be standard products of a manufacturer regularly engaged in the manufacturing of such products. Specified equipment shall be essentially duplicate equipment that has performed satisfactorily at least two (2) years prior to bid opening.

6.8.1 Domestic hot water design shall be based on the latest version of the "American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Handbook".

6.8.1.1 Domestic Water Heating System**:** Gas fired water heater(s) shall provide 140° F water with 40 ° F water entering the water heater. Chimney vent flue shall be stainless steel.

6.8.1.2 Hot water will be stored at 140° F and delivered to the plumbing fixtures at 110° F through the use of a thermostatic mixing valve.

6.8.1.3 A minimum of two (2) modular, high-efficiency copper fin tube gas-fired heaters shall be provided in each building. Burners utilizing pulse combustion principles will not be accepted. Controls shall be provided to allow for staggered and lead-lag operation and shall be integrated with the building DDC system. The control panel shall be located for easy access and have a protective cover, which can be removed with no tools. Solid-state controls shall be used to monitor and control all operating and safety functions. Standard operating controls and equipment shall include ignition, operating aquastat, manual re-set high-limit, automatic main and redundant gas valve, master switch with automatic pilot, inlet/outlet temperature gauges, ASME safety relief valve and flow switch. Heaters shall be equipped for 120V, single-phase, 60 Hertz. Complete factory certified operating and start up instructions shall be furnished with the units

6.8.1.3.1 The jacket panels shall be steel construction and coated with a baked-on enamel finish. All waterways shall be of copper/brass construction. The heat exchanger shall employ a drain to remove corrosive condensate. The water heater shall carry a minimum 5-year warranty.

6.8.1.3.2 Each heater shall utilize a separate pump to maintain constant circulation through the heater whenever it is enabled. The circulation rate shall be in accordance with the manufacturer's recommendation.

6.8.1.3.3 Each heater shall meet or exceed ASHRAE 90.1 b-2001.

6.8.1.3.4 Each heater shall have a minimum combustion efficiency rating of 94%.

6.8.1.3.5 The selected heaters and storage tank shall have the smallest footprint possible and shall be mounted and anchored on a 4-inch thick reinforced concrete housekeeping pad with 4-inch clear space from the heater to the edge of the pad. All Code-mandated and manufacturer's specified maintenance clearances shall be provided in the mechanical room containing the heaters.

6.8.1.3.6 Venting shall as recommended by the manufacturer. Masonry chimneys shall not be used.

6.8.1.3.7 Circulating pumps for domestic hot water shall be electrically driven, single-stage, centrifugal type. Pumps will be of bronze construction.

6.8.1.3.8 Domestic water heating storage tanks shall be cylindrical, ASME Code steel, glass-lined with cathodic protection. A pressure/temperature relief valve and drain shall be provided.

6.8.1.3.9 Provide pressurized expansion tanks for all water heaters.

6.8.2. Piping design shall be based on the International Plumbing Code (IPC) and UFC 3-420-01 for domestic water, storm, sanitary waste and vent piping. All water piping shall be sized to limit water velocity in pipe to 6 feet-per-second, unless a lower velocity is recommended by the plumbing fixture manufacturer. An isometric diagram of the water system and sanitary sewer system shall be included in the design submittal.

6.8.2.1. Plumbing vents through roof shall have a minimum height of 24-inches, and shall be located as close to the roof ridge as possible and provided with adequate supports as necessary to resist forces from sliding snow and ice during winter conditions (No more than 5-feet away from ridge).

6.8.2.1.1 Domestic water piping: No piping shall be located inside exterior wall cavities, unheated attics, or other areas subject to freezing. Provide a backflow preventer on the domestic water service. Water piping shall be Type "K" copper below the slab and type "L" above the floor. Piping shall extend 5-feet outside of building to civil portions of the work. All water piping above the floor shall be insulated. Building water service shall be sized in accordance with the IPC and UFC 3-420-01. Drain valves will be installed on the fixture side of all service valves located inside the building. Provide water piping velocities not to exceed 6 feet per second (fps). The entire water distribution system shall be disinfected in accordance with AWWA standards.

6.8.2.1.1 Water service into the building will be sized for domestic water systems. The domestic water service riser inside the mechanical room shall include a water meter with remote readout capability. The water meter shall connect to the DDC system. Individual back flow preventers devices shall be located throughout the facility (ies) in accordance with the IPC, UFC 3-420-01, and FCCHR-01 "Manual of Cross connection Control".

6.8.2.1.2 Sanitary and Storm Sewer Piping Systems shall be service weight cast iron with hub and spigot, neoprene gasketed joints below slab and Schedule 40 PVC plastic or copper DWV piping and fittings above the floor. Plastic piping will not be used in multi-story buildings. Piping shall be extended 5-feet

outside the building to civil portion of the work and will connect to the underground, reinforced concrete piping by means of a manhole. The sanitary sewer system will be vented in accordance IPC and UFC 3-420-01. Plumbing vents through the roof should be located as close to the ridge (a minimum of five-feet) as possible and have extra supports due to winter conditions. Indirect waste and condensate piping system shall be type “M” copper, insulated and must discharge through an air gap. Sanitary building drains shall be sized appropriately for the size, occupancy and use of the building(s).

6.8.2.1.3 Piping shall be concealed in areas with drop ceilings.

6.8.2.1.4 Provide fire-rated floor and wall penetrations where passing through fire-rated construction.

6.8.2.1.5 Piping identification shall be in accordance with ASME A13.1.

6.8.2.1.6 Piping insulation type shall be fiberglass, closed-cell foam, or phenolic foam and comply with ASTM E84, NFPA 255, and UL 723 standards. No polyurethane insulating materials shall be used. Domestic cold water piping shall be insulated with a minimum of ½” insulation with a vapor jacket. Domestic hot water runouts shall have ½-inch insulation with a service jacket. Hot water branches and mains, greater than 1-inch pipe size shall have 1” insulation with a service jacket. Indirect and condensate waste piping shall be insulated with a minimum of ½-inch insulation with a vapor jacket. Horizontal storm piping runs shall have a minimum of 1-inch insulation with a vapor jacket.

6.8.2.1.7 No piping shall be located in exterior walls, unheated attics, or other areas subject to freezing. The Contractor is to take all necessary measures in the design/construction to prevent pipes from freezing and rupturing.

6.8.2.1.8 All piping shall be seismically restrained. Refer to UFC 3-310-03A.

6.8.3. Cleanouts shall be provided at each change in direction of sanitary and storm sewers lines, at the intervals specified in the International Plumbing Code, UFC 3-420-01, at the building(s) service entrance, and at points of departure from the building. All cleanouts shall be permanently accessible. Provide access panels or cover plates in exposed areas. Ground cleanouts shall be installed in a 12” x 12” concrete pad, flush with grade.

6.8.3.1 Exterior wall hydrants shall be non-freeze, exposed, anti-siphon self-draining type, with integral bronze casing, polished bronze wall plate, ¾-inch hose thread spout and removable key. Provide additional shutoff valve inside the building. One hydrant shall be provided outside the mechanical room and a maximum spacing interval of 150-feet around the exterior wall of the building. Wall hydrants shall have a minimum stem length of 2-feet. Supply piping should not be located on an exterior wall.

6.8.3.2 Interior hose bibs shall be bronze or brass with a replaceable hexagonal disc, ¾” hose thread spout, and equipped with anti-siphon device (integral or as attachment) in conformance with ANSI/ASSE 1011. Hose bibs shall be installed in each Mechanical room and combination hot and cold water hose bibs shall be installed in wash down areas and mud rooms.

6.8.3.3 Cold-water makeup for HVAC equipment shall be by use of a hose bib equipped with an anti-siphon device to manually refill the water system. (Note: No direct water connection shall be made to the glycol system).

6.8.3.4 Floor drains with sediment buckets shall be installed in Mechanical Rooms. Vestibules shall have floor drain(s) with depressed floor mat. All toilet rooms with two (2) or more urinals or water closets shall be provided with floor drain. All floor drains shall have trap primers.

6.8.3.5 All floor-mounted equipment shall be provided with a concrete housekeeping pad. Housekeeping pad shall be sized to extend at least 6-inches beyond the equipment and shall be a minimum of 4 inches thick.

6.8.3.6 Water hammer arrestors shall be installed in accordance with ANSI A112.26.1 and PDI WH-201. Provide access doors or removable panels when concealed.

6.8.3.7 A recessed cold water valve box outlet and floor drain shall be provided in the vicinity of the ice machine in the vending areas.

6.8.3.8 Floor drains shall be installed in mechanical rooms, toilet rooms, janitor rooms, vestibules (depressed floor mat with drain), for equipment requiring drainage, and in the vicinity of ice machines. Floor drains shall be cast iron body and grate. Floor drains in toilet rooms shall have a polished brass grate. All floor drain traps shall be automatically primed by single trap primers or where appropriate, with distribution unit type trap primers.

6.8.3.9 N/A

6.8.3.10 N/A

6.8.4 Fixtures: Fixtures will be water conservation type in accordance with the International Plumbing code. Fixtures shall be provided complete with fittings, and chromium or nickel-plated brass (polished bright or satin surface) trim.

6.8.4.1 Exposed traps shall be chromium-plated, adjustable bent tube, 20-gauge brass or plastic (ABS). Concealed traps shall be metal.

6.8.4.2 Faucets shall be single-control type, with seals and seats combined in one replaceable cartridge. Water flow shall be no more than 2.5 gpm from any faucet.

6.8.4.3 Showers shall be equipped with a combination pressure balanced valve and flow control device to limit the flow to 2.5 gallons per minute.

6.8.4.4 Individual shutoff or stop valves shall be provided on water supply lines to all plumbing fixtures.

6.8.4.5 Water closets shall have vitreous china elongated bowl, direct feed siphon jet action, and shall be floor-mounted. Water consumption shall be no more than 1.5 gallons per complete flushing cycle. Toilet seats with open front and self-sustaining check hinges are required. Flush valves shall be exposed at all locations.

6.8.4.6 Urinals shall be vitreous china and shall be wall-mounted.

6.8.4.7 Lavatories shall be vitreous china, wall-mounted or integral with counter top.

6.8.4.8 N/A

6.8.4.9 Mop sinks shall be floor-mounted, precast terrazzo or stainless steel construction, minimum 24-inches x 24-inches x 10-inches high in size with stainless steel caps on all curbs. Mop sink faucet shall be wall-mounted, chrome-plated with a vacuum breaker, integral stops, adjustable wall brace, pail hook, ¾-inch hose thread on spout, 30-inch long, flexible, heavy-duty rubber hose and hose bracket.

6.8.4.10 Electric water coolers shall be wall-mounted, barrier-free, stainless steel, lead-free with front and side push bars and have a capacity of 8 gallons/hour. Water coolers shall conform to the requirements of ARI 1010 and the Lead Contamination Control Act of 1998.

6.8.4.11 N/A

6.8.4.12 N/A

6.9. SITE ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

All work shall comply with the latest edition of the National Electric Code (NEC) and National Electrical Safety Code (NESC).

6.9.1 All materials, equipment, fixtures, and appurtenances shall be listed or labeled by Underwriters Laboratories, Inc., or a similar organization acceptable to the Government.

6.9.1.2 Excavation permits shall be obtained from the Fort Drum Department of Public Works prior to the start of any work.

6.9.1.3 Exterior Electric Power:

6.9.1.3.1 Primary Power**:** Obtain primary 13.2/7.62 kV power.

6.9.1.3.2 The layout and location of ducts, manholes, handholes, etc. shown on the Civil site utility plans are approximate. Provide manholes and handholes (handholes permitted for low voltage power cables only) as required to keep cable pulling stresses, conduit sidewall pressures, and jam ratios within manufacturer's recommendations.

6.9.1.3.3 Provide an underground, non-reinforced concrete duct bank with two (1 active and 1 spare) 5-inch, non-metallic, schedule 40 PVC conduits from the point of connection to the fuse terminals to a new Pole-mounted transformer(s). Where different, provide duct banks and manholes as required, and cables as shown on the drawings. Coordinate installation with other work. Duct banks shall be 36-inches below grade (top of duct bank to finished grade) or as shown on the site plans if greater. All ductbanks shall be concrete encased. Within 20-feet of the limits of the road the concrete ductbanks shall be reinforced to meet HS-20 Loading.

6.9.1.3.4 Provide one (1) concrete-encased, spare, 5-inch conduit from the tap section of the fuse terminal unit to the point of connection and from the spare tap section of the fuse terminal to a point approximately 5-feet from the fuse terminal.

6.9.1.3.5 Minimum cover for the primary power duct bank shall be 36-inches for 15 kV conduits with 15 kV cables.

6.9.1.3.6 Medium-voltage cable joints shall comply with International Electric and Electronics Engineers (IEEE) Std 404 and IEEE Std 592. Medium voltage cable terminations shall comply with IEEE Std 48. Splice kits shall be of the pre-molded splice and connector type. Joints used in underground facilities shall be certified by the manufacturer for waterproof, submersible applications. Tape type splices are **not** acceptable. Medium-voltage cable joints shall be made by qualified cable splicer's only. The Government reserves the right to require the cable splicer to make a demonstration or sample splice for approval. Underground splicing kits shall be 15 kV class RTE type BOL-T connectors or equal and terminations at the medium-voltage sectionalizing switch 600 ampere terminations shall be 15 kV class, separable

insulated connectors, type BOL-T connectors, or approved equal. All 200A terminations shall be by load break elbows.

6.9.1.3.7 Fault and Overcurrent Protection**:** Line-side and load-side overcurrent and fault protection devices shall be coordinated to isolate any electrical fault from the rest of the system and for all overload conditions. After contract award, the Contractor shall contact the Contracting Officer to obtain the information (i.e., site one lines, etc.) necessary to provide this coordination.

6.9.1.4 Primary Conductors**:** The phase conductors on the line side of the fuse terminals shall be single copper conductor 15kV, 133% insulated, type MV90, with a semi-conducting shield, and EPR insulation, 500 kcmil with a #4/0 neutral with USE/XHHW insulation. All neutral connections shall be made with irreversible permanent connector. The phase conductors (primary cables) downstream of the sectionalizing switch shall be single copper conductor 15kV, 133% insulated, type MV90, with a semiconductor shield, and EPR insulation sized per NEC for the loads, but shall be a minimum of #2**.** Provide #2 copper ground wire with USE/XHHW insulation with the phase conductors.

6.9.1.5 Transformers: A dedicated pole-mounted transformer shall be provided for each new building. The building transformer shall be 3-phase, 13.2 kV, delta primary, with 480/277 volt, grounded wye secondary, pad-mounted, oil-filled, air-cooled and enclosed per ANSI C57.12.28, loop feed type. Transformers may have a 120/208 volt secondary voltage where the service transformer is 300kVA or less.

6.9.1.5.1 Transformer dialectic cooling fluid shall be mineral oil.

6.9.1.5.6 The transformer shall provide service to a main distribution panelboard or switchboard located in the electrical room.

6.9.1.6 N/A

6.9.1.7 Grounding: The contractor shall provide grounding systems that meet or exceed the requirements of the National Electric Code (NEC).

6.9.1.7.1 Grounding Systems**:** All underground bonding connections shall be made with exothermic welds. The maximum resistance to ground shall be 25 ohms.

6.9.1.7.2 Fence Grounding: Connect each fence terminal post, corner post, and gate post to a 5/8-inch x 10-foot copper-clad ground rod.

6.9.1.7.3 Building Grounding: Concrete-encased electrodes and ground rods shall be provided. In addition, provide other grounding electrodes that are available per the NEC and NFPA 780.

6.9.1.7.4 Lightning Protection System: Provide a lightning protection system for each building. Systems shall be installed in compliance with NFPA 780 and shall be certified to receive the UL Master Label.

6.9.6 Site Telecommunications: Telecommunications utilities include telephone, fiber optic and Cable Television (CATV). All design and installation shall meet Installation Information Infrastructure Architecture (I3A) “Technical Criteria” and applicable referenced requirements.

6.9.6.1 The Contractor shall provide a detailed telecommunications maintenance hole/duct system plan in accordance with I3A and Telecommunications Industry Association (TIA)/Electronic Industries Alliance

(EIA)-758 Standards. A profile is required that includes all existing utilities that must be verified by potholing.

6.9.6.2 All new manholes will be fully equipped with accessories as specified by I3A. All existing manholes and hand holes associated with this project shall be equipped with hardware required to meet current I3A standards. All manholes and hand holes within a 20-foot limit of any roadway will be designed and constructed in accordance with HS-20 Loading requirements.

6.9.6.3 The Contractor shall install three (3) each, 3-inch, 3-envelope, fabric mesh innerduct and pull-string where required in the existing duct system for fiber optic cable being installed for this project. In the duct to the building, one (1) 3-inch, 3-envelope, fabric mesh inner duct and pull string will be insalled. All ducts must be sealed or plugged.

6.10. FACILITY ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.10 Facility Electrical:

6.10.1 Interior Electrical System: The Contractor shall provide a complete interior electrical system. Overcurrent protective devices shall be coordinated such that only the device closest to the fault trips or opens. All feeders and branch circuits shall have a dedicated neutral conductor and insulated equipment grounding conductor and shall be installed in conduit.

6.10.1.1 All electrical work, including conduit and boxes, shall be concealed in finished spaces. Outlet boxes and wiring devices shall be flush-mounted in finished spaces. For this purpose, finished spaces include the entire building except for mechanical rooms, electrical rooms and closets, communications rooms, janitor closets, and similar spaces. Sheet metal boxes are permitted above 10-feet above finished floor.

6.10.1.1.1 The Contractor shall provide current transformers and a meter capable of providing volts, amps, kWH, and peak demand. The meter shall also provide an output that can be read by the Building Management System. The Contractor shall connect the meter to the Building Management System.

6.10.1.1.2 The main disconnect shall be a single circuit breaker. Provide ground fault protection on the main circuit breaker as required by the National Electric Code for services of 1000 amps or more at 480 volts. All other downstream feeder and branch circuit overcurrent protection in panelboards shall also be provided by circuit breakers.

6.10.1.1.3 The main distribution panel may either be a switchboard or panelboard for loads up to 1200 amps. A switchboard shall also be provided for loads over 1200 amps.

6.10.1.1.4 Ground fault protection for **feeder** circuit breakers is **not** required.

6.10.1.1.5 Feeders: The minimum size for a panelboard feeder shall be 100 amps.

6.10.1.2 Provide power to all contractor furnished/contractor installed; Government furnished/Government installed; Government installed equipment.

6.10.1.3 All furniture and equipment locations will be coordinated prior to rough-in.

6.10.1.4 The Contractor shall provide all disconnect switches, motors starters, control equipment and control wiring for all equipment provided by this Contract.

6.10.1.5 Any electrical work potentially affecting existing electrical or communication systems shall be coordinated through the Contracting Officer. Contact the Contracting Officer, in writing, at least 14 days prior to any planned power or communications outages.

6.10.1.6 Electrical installations must comply with the seismic requirements of UFC 3-310-03A.

6.10.1.7 Provide pull ropes in all spare conduits. Cap spare conduits that do not terminate in equipment. Provide telecommunications conduits as required by I3A.

6.10.1.8 Firestop all penetrations in fire-rated elements (walls, decks, etc.) as required by NFPA 101.

6.10.1.9 Label all electrical equipment (such as panelboards, disconnect switches, motor starters, contactors, etc.) and circuits. Label each end of spare conduits and cables with the location of the opposite end. Install wire markers for each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.

6.10.1.10 Demand factors may be applied to all loads as permitted by the NEC.

6.10.1.11 Raceways crossing structural expansion joints or seismic joints shall be provided with suitable expansion fittings or other suitable means to compensate for the building expansion and contraction and to provide for continuity of grounding.

6.10.1.12 All requirements in this section apply to all buildings unless specifically noted otherwise.

6.10.1.13 Provide warning tape 12-inches below finished grade with a suitable legend above all underground duct banks and conduits (power and signal).

6.10.1.14 Maintain National Electric Code required clearances around all electrical equipment. Coordinate work with other trades.

6.10.1.15 All plywood backboards shall be painted with fire-retardant insulating paint.

6.10.2 Voltage drop shall be limited to 1% on the service conductors and 5% from the building's main distribution panel to all loads (2% for feeders and 3% for branch circuits), unless otherwise noted. Voltage drop calculations shall be based on estimated demand loads plus 25% future load growth. In addition, base voltage drop calculations on a 12 amp load for vending machines (all on dedicated circuits). All loads shall be assumed to be at 90% power factor.

6.10.2.1 Provide at least 1 spare conduit, which shall be the same size as the conduits with wires, from the pole mounted transformer to the electric room.

6.10.2.3 Provide transient voltage surge suppression (TVSS) at the service entrance.

6.10.3Transformers shall be furnished with standard accessories and at least 4 taps (2 – 2.5% above and below nominal voltage).

6.10.3.1 Transformers shall be Energy Star rated.

6.10.3.2 Transformers shall be K-rated where recommended by IEEE 1100, Recommended Practice for Powering and Grounding Electronic Equipment.

6.10.2.3 All step-down transformers serving harmonic loads that comprise 25% or more of the total load shall be K-rated.

6.10.4 Panelboards:

6.10.4.1 All panelboards, including the main circuit breaker, switchboard and/or main distribution panelboards shall be fully rated for the available fault current. All panelboards shall be sized for a minimum of 125% of the demand load they serve.

6.10.4.2 Except for the main service distribution panel board and the main 208Y/120 volt panelboards connected to the 480 – 120/208 volt stepdown transformers, panelboards shall be furnished with main lugs only. Provide bolt-on circuit breakers.

6.10.4.3 Panelboards that serve computer and data processing loads shall be dedicated to these loads and other loads such as HVAC, lighting, and other building loads shall be served by separate panels. This requirement does not apply to HVAC equipment with motors less than ½ horsepower.

6.10.4.4 All panelboards serving harmonic loads that comprise over 50% of the load shall be provided with 200% rated neutral busses and 200% rated neutral feeders. Each panel board serving harmonic loads shall be protected by a TVSS system.

6.10.4.5 Full sized bolt-on branch breakers, insulated neutral busses and equipment grounding busses shall be provided.

6.10.4.6 Panelboards shall be located near the loads they serve.

6.10.4.7 Approximately 20% of single pole spaces shall be provided for spares (8 in a 42 space panel and 6 in a 30 space panel). This requirement shall apply to all panelboards, except the main distribution panel/switchboard, but including the main 120/208 volt distribution panels.

6.10.5 Individual personal computers on user desktops shall not be considered data processing loads for this purpose. This requirement applies to server rooms and similar spaces.

6.10.6 Conductors: All conductors shall be copper, and not smaller than #12 AWG for power circuits. Aluminum is not allowed.

6.10.6.1 All conductors in conduit shall be stranded, except that solid conductors are permitted in the last vertical drops to outlets and switches. Provide spade lugs or suitable adapters to connect conductors to wiring devices.

6.10.6.2 All conductors shall be installed in Electrical Metallic Tubing (EMT) where permitted by NEC. The use of Schedule 40 PVC conduit for grounding electrode conductors and exterior lighting system conductors is permitted.

6.10.6.3 Wire type THHN/THWN shall be used, except for service and site lighting, where type RHW-2 or XHHW shall be used.

6.10.6.4 Branch Circuits, Receptacles and Outlets**:** All general receptacle and lighting circuits shall be 20 ampere circuits and fed by 20 ampere circuit breakers. All wall plates shall be ivory, unbreakable nylon in finished spaces. Metal face plates are permitted in unfinished spaces.

6.10.6.4.1 All branch circuits required by the NEC shall be provided.

6.10.6.4.2 Receptacles on opposite sides of common walls shall be horizontally offset. The horizontal offset shall be a minimum of 24” in fire-rated partitions.

6.10.6.4.3 Lighting and receptacles shall be on separate circuits.

6.10.6.4.4 All exterior receptacles shall be GFCI type in enclosures that are weatherproof with a plug connected to the receptacle.

6.10.6.4.5 General purpose receptacles shall be provided per the NEC and as specified in this section. There shall be a maximum of eight (8) receptacles on a general receptacle circuit. There shall be a maximum of four (4) receptacles per circuit with computer and network equipment. Lower maximum s specified elsewhere take precedence over this paragraph.

6.10.6.4.6 Convenience receptacles shall be NEMA 5-20R, ivory.

6.10.6.4.7 Provide a circuit as required for the exterior building sign.

6.10.7 Disconnect Switch: Install a horsepower and ampere rated, maintenance disconnect switch at each piece of electrical equipment. This shall apply to the primary of stepdown transformers that are not in sight of the feeder circuit breaker. Separate switches are not required where provided by the manufacturer in the equipment. Coordinate the location of disconnect switches with the Contracting Officer prior to installation.

6.10.8 Lighting: Lighting shall be provided per as specified in this subsection. Where not specified in this RFP, follow UFC 3-530-01AN standards. Where certain spaces are not covered by UFC 3-530-01AN, or this RFP, follow Illuminating Engineering Society (IES) standards. All luminaires shall be heavy commercial (specification) grade. In addition, all light acquired for use at this project (interior and exterior) will meet the standards set by EISA Section 321 (a) (3) (A).

6.10.8.1 Exterior Lighting**:** Luminaires shall be high pressure sodium, cutoff type and include shields to minimize light trespass. Metal halide luminiares with pulse-start ballasts are permitted where necessary to match existing nearby luminiares, in locations with security cameras, and where color rendition is important.

6.10.8.1.1 All exterior luminaires shall be fused.

6.10.8.2 In addition to the locations specified under paragraph 3.0, lighting shall be provided for the streets (where not already existing), access roads, sidewalks, in exterior canopies if provided, pavilions (if provided), recreation facilities and formation areas (if provided), and above all exterior doors. The actual number and locations of luminaires shall be determined by the Engineer of Record.

6.10.8.3 Poles for parking areas shall be metal 30-feet high and shall be installed on 3-feet high concrete pedestals. Poles for sidewalks shall be metal and approximately 15-feet high. Pole assemblies shall be rated for 110 mph. Poles shall match the style and type of existing poles.

6.10.8.4 Exterior luminaires shall be controlled by the DDC system via an electrically-held magnetic lighting contactor with a hand-off-auto switch located in the electric or mechanical room.

6.10.8.4.1 Average maintained illuminance shall be 1 footcandle on sidewalks, 0.5 footcandles on the access road and in parking areas, and 5 footcandles at building entrances. The minimum illumination at any point shall be 0.2 footcandles. The average minimum illuminance uniformity ratio shall not exceed 6:1.

Note: See Chapter 6.15, Section 4 for additional exterior lighting requirements.

6.10.8.5 All metal poles shall be grounded to a ground rod at the pole and bonded to the equipment grounding conductor.

6.10.8.5.1 Pole and pole-mounted shoebox type luminaires shall match existing.

6.10.8.6 Provide control, via the building's energy management system, via an electrically-held magnetic lighting contactor with a hand-off-auto switch located in the electric or mechanical room. One contactor may be used to control all exterior luminaires.

6.10.8.7 Interior Lighting: Provide luminaires for all rooms. All interior luminaires shall be energy efficient fluorescent.

6.10.8.7.1 Lighting control shall be from wall-mounted switches in each room. All switches shall be ivory. Provide 3 and 4-way switches as required for rooms with multiple entry points.

6.10.8.7.2 Provide energy efficient lighting consistent of luminaires with T-5, T5HO, T-8, or compact fluorescent lamps and electronic ballasts throughout the building.

6.10.8.7.3 Provide occupancy sensors as specified in ASHRAE 90.1. Occupancy sensors shall be dual technology type (infrared and ultrasonic or microphonic). Wall switch infrared occupancy sensors are acceptable in spaces of 150 square feet or less.

6.10.8.7.4 Open-type fluorescent luminaires shall be equipped with wire guards.

6.10.8.7.5 Where compact fluorescent lamps are used, lamps shall be hard-wired type and not self-ballasted, screw-in type. U-bent lamps shall not be used.

6.10.8.8 Egress and Emergency Lighting: Emergency egress and exit lighting shall be provided as required by NFPA 101.

6.10.8.8.1 Provide low-profile emergency lighting units with PVC housings and self-diagnostics.

6.10.8.8.2 Exit lights shall be LED type with emergency battery packs, self-diagnostics, and PVC housings.

6.10.8.8.3 NFPA 101, Annex A, Paragraph A.7.9 (all subsections to 7.9) (2009 edition) shall apply. Emergency lighting outside these buildings shall provide illumination to either a public way or a distance away from the building that is considered safe (10-feet), whichever is closer to the building being evacuated.

6.10 Facility Telecommunications:

6.10.9 Telephone and Data Systems: Provide complete telephone and data cable systems for the building(s) in accordance with the technical criteria of "Installation Information Infrastructure Architecture" (I3A) and applicable references.

6.10.9.1 The Design-Build Contractor shall provide equipment racks, cabinets, fiber and copper patch panels, grounding equipment, service entrance equipment (including protectors and cross-connects), “110” punch down blocks, all conductors and outlets throughout the building. All horizontal copper cabling shall be rated for the present level of Category 6 cabling as approved by EIA/TIA standards. The Contractor shall make all required connections for both telephone and data systems both inside and outside the building. The entire horizontal distribution cabling system link for data and telephone systems shall be part of the manufacturer’s warranted cabling solution, including patch cords. The design documents shall include data rack layouts and elevations showing each type of patch panel and equipment space required.

6.10.9.2 The use of Unified Facilities Criteria (UFC) 3-580-01, dated 22 June 2007, or any prior version, is not authorized in Contracts until the UFC is revised and reissued.

6.10.9.3 Stub-out conduits as defined by National Electrical Contractors Association (NECA)/Building Industry Consulting Service International (BICSI) 568 shall be bonded to the cable tray with a #6 AWG bare copper wire.

6.10.9.4 Telecommunications Grounding: Grounding for the telecommunications systems shall be designed and installed in accordance with I3A and EIA/TIA 607 standards. A telecommunications main grounding busbar shall be provided in the main communications room of each building and telecommunications grounding busbars shall be provided in all intermediate telecommunications rooms.

6.10.10 Intrusion Detection System (IDS): An IDS system shall be provided as specified in part 3 of this specification section. Each IDS shall be procured and installed in accordance with AR 190-11 and the Fort Drum Installation Design Guide. The Contractor shall provide a complete intrusion detection system, including all necessary equipment, cables and testing. This requirement takes precedence over statements to the contrary elsewhere in this RFP.

6.10.10.1 Intrusion detection systems shall be by Advantor Systems Corporation for seamless integration into the post central security monitoring station located in building 10715. The closed circuit television portion of the intrusion detection system shall be by OzVision Remote Video Solutions for seamless integration into the post central security monitoring station located in building 10715. The system requires a dedicated power source, dedicated phone line, and LAN connection for CCTV. Transmission lines for the alarm circuit will have line supervision to detect tampering or malfunction and meet specific requirements such as minimum gage, shielded, and twisted pair. The hardware communications link will be enclosed in metallic conduit from the protected area to wherever the communication is made to the telephone network.

6.11. HEATING, VENTILATING, AND AIR CONDITIONING

6.11 HEATING, VENTILATING, AND AIR CONDITIONING:

6.11.1 HVAC Design Parameters: The design shall be based on the following parameters:

Project Location: Fort Drum, New York; Latitude: 44° 02' N; Longitude: 75° 46' W; Elevation: 650’ above sea level.

Outdoor Design Conditions:

1. Summer: 83°F DB and 71°F WB.

2. Use 90°F DB OA temperature for air-cooled condensers.

3. Winter: -30°F DB, Heating Degree Days: 7601.

4. Prevailing Wind: From Northwest, at 5 knots, in the winter.

6.11.1.1 Indoor Design Conditions for Offices, Conference Rooms, Command Suites, Office Corridors, and Vending Areas:

1. Summer: 72° F DB, with optional nighttime setup at 85° F DR.

2. Winter: 68° F DB, with optional nighttime setback at 55° F DB.

Indoor Design Conditions for Communications Room: 72° F DB year round.

Indoor Design Conditions for Latrines, Storage:

1. Summer: 95° F DB.

2. Winter: 68° F DB.

Indoor Design Conditions for Mechanical and Electrical Rooms:

1. Summer: 95° F DB High Limit (Heat and Ventilation only)

2. Winter: 55° F DB.

Indoor Design Conditions for Entry Vestibules: 50° F DB (Heat only).

Heat Gain/Loss Through Building Envelope: R-Factors will be as defined by the Project Architect. R-60 for the roof and R-30 for the exterior walls.

Internal Cooling Design Criteria:

1. Equipment: Actual normal heat rejection of installed equipment.

2. Lights: Will be as defined by the Project Electrical Engineer.

Ventilation Requirements:

1. Boiler Room: Combustion venting as required by NFPA-54 and NFPA-211.

2. Ventilation systems shall be designed in accordance with ASHRAE 62, latest edition.

Outside and Exhaust Air: Shall enter /exit the building(s) air systems through the wall. Outside air intakes shall be no less than 10 feet above grade. If not possible, then locate on the roof, with a minimum 3’-0” curb.

Seismic Restraints for Mechanical Equipment, Piping, and Ductwork: In accordance with UFC 3-310-03A, “Seismic Design for Buildings”.

6.11.2 HVAC Systems:

Entire building shall be positively pressurized relative to outdoors. Latrines, janitor closets, and locker rooms shall be negatively pressurized relative to surrounding areas. Office/administrative occupied spaces and other areas shall be positively pressurized relative to surrounding spaces. All materials and equipment shall be new and shall be standard, catalogued products of manufacturer's regularly engaged in the production of such materials and equipment, and shall be the manufacturer's latest standard design. Equipment shall comply with the requirements of Underwriters Laboratories, Inc. (UL), Canadian Gas Association (CGA), American Gas Association (AGA), Air Conditioning and Refrigeration Institute (ARI), American Society for Testing and Materials (ASTM), National Electric Manufacturers Association (NEMA), American National Standards Institute (ANSI), National Fore Protection Association (NFPA) or other national trade associations as applicable.

6.11.2.1 HVAC System for Communications Room: All Communications Rooms shall utilize an independent DX air conditioner designed to meet the room design conditions, and maintain the room under positive pressure relative to the surrounding spaces. These units shall be provided with micro-processor controls and any other options necessary to meet the design conditions such as low ambient temperature controls, humidifiers, or hot-gas bypass reheat for humidity control. Units may be either self-contained or split system type. Units shall be available to provide heating and cooling 365 days per year regardless of outdoor air temperature.

6.11.2.2 Heating System: The hot water heating system shall include a minimum of two (2) cast iron type hot water boilers and circulation pumps. Heating system shall utilize a primary/secondary pumping arrangement. There shall be not less than two primary hot water distribution pumps for the building, one of which shall be operating and the other on automatic standby. Pumps with motors that are equal or greater than 5.0 Horsepower shall utilize variable frequency drives. Pump seals shall be silicon carbide for use in systems with suspended particles. The controls shall activate the lead/lag pumps daily and to equalize their running hours (adjustable). The AHU shall temper the outside air for ventilationi and return air to provide a ste temperature to each VAV box. Each VAV box shall be equipped with a reheat coil to provide tempered air as required by the zone thermometer. Provide fin tube radiation in the permiter rooms to maintain room set point temperature.

6.11.2.2.1 Heating/Cooling Load Calculations: Heat gain and loss calculations shall be, as a minimum, in accordance with the current edition of the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) "handbook of Fundamentals". Computer-generated loads must be submitted with complete input and output summaries during the design process. Load calculations software must be ASHRAE-based. The design of the heating and cooling loads shall include 100% capabilities plus 10% factor of safety, plus the HVAC systems boilers, chillers, heating and cooling coil systems shall include 100% capabilities and 10% factor of safety.

6.11.2.2.2 Additional system data to be submitted during the design process shall include, but not be limited to system air and water supply and return quantities and temperatures for both heating and cooling, mixed air temperature, supply and return duct velocities in each duct section with associated CFMs and static pressure losses. System total and external static pressures, heating and cooling coil performance data, each diffuser and register CFM, velocity and throws, and all other required data to show the performance of the new system meets the constact requirements. After system installation, testing and balancing, the Contractor shall provide noise level readings to confirm that the system meets the required DB ratings for the type of occupancy.

6.11.2.2.3 Energy Conservation Calculations: (Recommended for LEED prerequisites) A minimum requirement of the sustainable project certification is to show compliance with the latest version of ASHRAE 90.1. The compliance documentation shall be submitted by the successful proposer after contract award. The designer may choose between the Energy Cost Budget Method and the Prescriptive

and Performance Requirement Method of compliance. Energy conservation compliance documentation shall be in accordance with UFC 3-400-01. All proposers must submit in their proposals a statement that they will provide a facility(ies) that complies with ASHRAE 90.1 and the Fort Drum Energy Design Guideline.

6.11.2.3 Heating Boilers: Boilers shall provide heating for the buildings and shall be cast iron, gas-fired boilers with minimum annual fuel utilization efficiency (AFUE) of 88%. (Basis of design: Hydrotherm DN Series.) Pulse type combustion boilers are not acceptable. (Note: Fort Drum (requires) cast iron condensing boilers due to their smaller footprint and higher efficiency.) Each boiler's capacity shall be 65% of the calculated capacity required to heat building. Manufacturer's packaged operation controls shall be provided to handle all aspects of capacity modulation and safeguarding. Controls shall be provided to allow for staggered operation and shall interface with the building DDC system and allow changes to be made to boiler control set points from the DDC system. Boiler water supply temperature shall be reset based on outside air temperature controlled by DDC control system. Solid-state controls shall be used to monitor and control all operating and safety functions. Each boiler shall utilize a separate boiler secondary pumping system to maintain constant hot water (glycol) circulation rate through the boiler whenever the boiler is enabled. Burners shall be power burners.

6.11.2.3.1 Boiler flue system shall be a double wall, prefabricated, positive pressure type, stainless steel and factory pre-insulated, furnished and installed in strict accordance with manufacturer's installation requirements. Boiler vents exiting through the roof shall be not more than 5-feet-0-inches from the roof ridge. Anchor at 2 points within the building.

6.11.2.3.2 To prevent freeze-ups in the mechanical rooms the Contractor shall consider one of the following options:

1. Boiler intakes are directly connected to the boiler and run to the outside per manufacturer's recommendations.

2. Each gas fired piece of equipment located in the mechanical room shall have a dedicated combustion air louver sized for the combustion air requirements of that unit. An independently controlled combustion air damper shall be provided at each louver and will open whenever the unit is operating. A pre-heat coil shall be installed at each louver to temper the outside air to minimum of 40° F.

3. If a pre-heat coil is not provided to temper the outside air, then all items located in the mechanical room that have a potential of freezing (i.e. water piping including sprinkler piping, water heaters, etc.) shall be located in a separate room and all combustion air requirements shall be direct vented to the outside from the equipment. No outside combustion air intakes louvers shall be provided.

6.11.2.3.3 The boiler room shall be provided with propane gas and carbon monoxide gas leakage monitoring, with remote alarm. System shall be connected to the DDC system and fire alarm panel.

6.11.2.3.4 Boilers shall be mounted on anchored, reinforced 4-inch high concrete housekeeping pads, with a 4 inch clear space from the boiler to the edge of pad.

6.11.2.4 Gas Piping: The design and installation of the propane gas distribution systems and equipment shall be in conformance with equipment and piping manufacturer's recommendations, UFC 3-430-05FA, and applicable sections of ASME B31.8, AGA-01. The installation of interior propane gas distribution systems shall be in conformance with the provisions of NFPA 54 and AGA-01. Steel pipe shall conform to ASTM A-53, Grade A or B, Type E or S, Schedule 40.

6.11.2.4.1 A 1000 gallon propane tank will be provided by Fort Drum. The Contractor shall be responsible for all piping from the tank to and throughout the building.

6.11.2.4.2 All gas purging procedures and guidelines shall be in accordance with Fort Drum's gas purging guidelines.

6.11.2.5 Cooling System: The DX system or a chilled water system shall be used to cool the building and shall be equiped with all required accessories. If a primary/secondary pumping arrangement is required, then two pumps will be used. The pumps shall be selected for the full chilled water flow rate, mounted and located on reinforced concrete housekeeping pad(s) and selected for non-overloading operation at all conditions. If the motors for the distribution pumps exceed 7.0 kW, then a primary/secondary pumping arrangement shall be used, the distribution loop shall be designed for variable flow and the pumps shall be controlled by variable frequency drives.

6.11.2.5.1 Chilled Water Piping: The chilled water piping system shall be constructed of Type L copper or ASTM A-53, Schedule 40, black steel with screwed, or welded fittings. The above ground chilled water piping shall be in accordance with UFGS Section 23 64 26 "Chilled and Condenser Water Piping and Accessories". Underground chilled water piping shall be in accordance with UFGS 33 61 00 "Prefabricated Underground Heating/Cooling Distribution System". The piping trench shall include the installation of marking tape and tracer wire.

6.11.2.5.2 DX System: The condenser shall be insatlled per manufacturer's recommendations . Provide all required materials and accessories for a complete and usable system.

6.11.2.6 Air-Cooled Water Chiller: Packaged air-cooled liquid chillers: chiller(s) shall include all customary auxiliaries deemed necessary by the manufacturer for safe, controlled, automatic operation of the equipment. The chiller(s) shall be provided with a single-point wiring connection for incoming power supply. Chiller(s) shall be constructed and rated in accordance with ARI 550. Chiller(s) shall conform to ASHRAE 15. Refrigerants shall be one of the fluorocarbon gases. Refrigerants shall have number designations and safety classifications in accordance with ASHRAE 34. Refrigerants shall meet the requirements of ARI 700 as a minimum refrigerant (R-22 shall not be used). Refrigerant Ozone Depletion Potential (ODP) shall not exceed 0.00. Chiller(s) shall be provided with a complete factory-mounted and prewired microprocessor-based control system. The controls package shall provide operating controls, monitoring capabilities, programmable set points, safety controls, and EMCS interfaces. Chiller(s)' minimum efficiency shall be in accordance with the latest version of ASHRAE 90.1. Provide concrete mounting pad, on grade, sized as required to allow for services and NEC clearances in accordance with the manufacturer's written installation instructions and recommendations for maintenance, access, and unobstructed condenser air intake flow.

6.11.2.6.1 Chiller Warranty: The Contractor shall provide a Two-year parts only (excludes refrigerant) manufacturer's warranty on the chiller(s) compressor(s). This warranty shall be directly from the chiller manufacturer to the Government and shall be in addition to the standard one-year warranty of construction. The manufacturer's warranty shall provide for the repair or replacement of the chiller(s)' compressor(s) that becomes inoperative as a result of defects in material or workmanship within 2 years after the date of final acceptance.

6.11.2.7 Air Handling Units: Modular Type Air Handling Units shall be double wall draw-through configuration, provided with a backward inclined or airfoil type, belt driven, centrifugal supply fan; internal vibration isolators; DX or chilled water (glycol solution) cooling coil -sized to cool the outside air to 55 degrees F in order to dehumidify the outside air, access section; hot water (glycol solution) heating coil; filters; and mixing box complete with automatic air dampers; double wall galvanized steel casing;

galvanized steel frame; condensate drain pan (double pitched type). Ultraviolet light C band (UV-C) emitters shall be incorporated downstream of all cooling coils and above all drain pans to control airborne and surface microbial growth and transfer. Applied units must be specifically manufactured for this purpose. Safety features shall be provided to prevent hazards to operating staff. Units shall not produce ozone. Freeze protection shall be accomplished by monitoring the air handling units discharge air temperature. When the discharge air temperature falls to 50° F, the DDC system shall send a signal to stop fan, close the outside air damper, and send an alarm to the control system. Provide emergency shutdown of all air handling units by means of an emergency push button located on wall door 72-inches above the floor at location directed by Contracting Officer's Representative.

6.11.2.7.1 The air handling units shall be provided with high efficiency motors, with adjustable sheaves and electronic, direct digital type automatic temperature controls, to facilitate operation in the "occupied"/"unoccupied" modes of operation. Units shall be provided with a discharge duct smoke detector.

6.11.2.7.2 Filters shall have MERV 8 or higher when evaluated under ASHRAE Standard 52.2. All filters shall be UL Class 2. Provide each filter assembly with its dedicated automatic alarm (latching) to signal the need for filter change due to loading.

6.11.2.8 Ductwork and Accessories: These shall comply with UFGS 23 00 00 "Air Supply, Distribution, Ventilation, and Exhaust System" guidelines, SMACNA requirements and guidelines provided in applicable paragraphs of this RFP. Ductwork shall be lined out to 15 feet from the Air Handling Units (AHU) and fans or to the second 90° elbow, whichever is longest. Lined ductwork shall be 1 ½' thick, 1.5 lb/ft³ acoustic fiberglass liner with vinyl or neoprene coating resistant to fungal growth. Liner installation shall comply with "NAIMA Duct Liner Installation Guidelines".

6.11.2.8.1 Diffusers, Grilles and Registers: Inlets and outlets shall be sound rated and certified according to ASHRAE Standards. Diffusers and registers shall be color coordinated with the Architectural Design.

6.11.2.9 Fire and Fire/Smoke Dampers: Fire dampers shall be fire rated according to the areas being protected.

6.11.2.9.1 Volume Dampers: Manual-balancing dampers shall be furnished with accessible operating mechanisms. Manual volume control dampers shall be operated by locking-type quadrant operators. Access doors or panels shall be provided for all concealed damper operators.

6.11.2.10 Ventilation and Exhaust Openings: Outdoor air intakes; exhaust and relief outlets shall be placed at least 10-foot above the floor/grade level. Outside air shall be taken through outdoor air louver with louvers to be "double rain guard type". Ducts at louvers shall be watertight for 8-feet-0-inches from louver and shall pitch to drain to louver or attached 2-inch diameter minimum size drain with trap piped to floor drain.

6.11.2.11 Freeze Protection: All chilled water and hot water piping shall be protected from freezing by use of a 40/60 propylene glycol mixture (40% propylene glycol/60% water). Glycol mixture shall be premixed by manufacturer using deionized water. Contractor shall provide glycol fill station for each separate heating and cooling system with feed water pump, tank, all necessary water treatment equipment, required hydronic controls and accessories for all hydronic systems. Glycol fill station shall be automatically operated, manually filled, with a minimum volume of 50 gallons. Provide test kits and a test coupon assembly with balancing valve, shut-off valve and plugged tees for sampling connections, 1-inch diameter. Provide drum-mounted, manually operated bung pump for the transfer of glycol into the storage and make-up/fill tank. The glycol make-up system shall automatically operate on a reduction of system

pressure. Fluid level in the glycol tank shall be monitored by the DDC system and shall send an alarm when the fluid level is low. Domestic water connection shall not be provided.

6.11.2.12 Air Filters: Two-stage air filtration shall be provided for air-handling units. Pre-filters shall be 25% to 30% efficient, and final filters shall be 85% efficient, as defined by ASHRAE 52.1. All filters shall be UL Class 2. Provide each filter stage with its dedicated automatic alarm (latching) to signal the need for filter change due to loading.

6.11.3 Controls: HVAC system temperature control system shall be a microprocessor based Direct Digital Control (DDC) system. The DDC system shall completely, seamlessly and directly interfaces with the existing base-wide Utility Management and Control System (UMCS) installed at Fort Drum without interpreters or third party devices. Communication with existing base-wide Utility Management and Control System (UMCS) work stations, servers, and laptops shall utilize a BACnet protocol and be configured for operation on VLAN#4003 only, connected by common fiber optic system serving building. The system shall include software with all the necessary means for global data exchange, scheduling, local and remote control and adjustment; load shedding for demand control; event management; monitoring; trending; logging; maintenance notification; and alarms, and shall comply with ASHRAE Guideline 13, latest edition. The Contractor shall install the software in one of the existing PC workstations at Fort Drum, as designated by the Contracting Officer's Representative. The DDC system shall communicate via fiber optics. Wall-mounted temperature sensors located in spaces served by VAV/Reheat units as well as terminal heat shall be of the limited range, dual action heating and cooling type. The Fort Drum systems are Trane and Siemens. The building control systems must have seamless communications with one of the two existing base-wide systems and be capable of sending to, receiving from, and interpreting global commands with the base-wide system and resident software.

6.11.3.1 In addition to fully control and monitor the building HVAC systems, the DDC system shall monitor the following:

- Water meters.
- Gas meters.
- Building electrical power and demand meter.
- Glycol fill-tank fluid level.
- Natural gas detector.
- Carbon monoxide detectors.

Existing global system substations electrical power and demand meters

Existing global system outside air temperature

Existing global system duty cycling modes for demand shedding

Existing global system summer/winter modes

Exiting global system heating/cooling modes

Freezestat points

- Control exterior lighting through a “Hand-Off-Auto” switch.
- Building fire alarm system.

  Low ambient temperature control

6.11.3.2 Instruction: Upon completion of work and acceptance by Government, factory representatives under direct employ of temperature control manufacturer shall provide 8 hours of classroom and “hands-on” instruction to 20 of Government’s operating personnel responsible for mechanical systems. Instruction shall be video recorded and three (3) copies provided on DVDs.

6.11.4 HVAC Systems-Building Specific Design Requirements

6.11.4.1 All areas shall be equipped with HVAC systems that are appropriate for their function and occupancy and that meets all code requirements. Systems shall be designed and installed in accordance with the latest industry standards for each type of application.

Integrate the control system to the installation’s existing UMCS. The existing UMCS is Trane Tracer Compatable

6.12. ENERGY CONSERVATION

6.12.1. General

[Not Supplied - PS_EnergyConservation : ENERGY_CONSERVATION]

6.12.2. Inclusion of Renewable Energy Features. The following renewable energy features have been determined lifecycle cost effective, are included in the project budget and shall be provided:

[Not Supplied - PS_EnergyConservation : RENEWABLE_ENERGY_FEATURES]

6.13. FIRE PROTECTION

6.13 Fire Protection: All materials, equipment, and appurtenances shall be labeled by Underwriters Laboratories, Inc. or a similar organization acceptable to the Government.

6.13.1 Fire Extinguisher Cabinets: Fire extinguishers shall be provided for all buildings installed in accordance with applicable codes and standards. Extinguisher shall be installed in semi-recessed cabinets. Cabinets shall be no locking type with glass window.

6.13.2 Fire Alarm / Mass Notification System: The system shall be a voice evacuation fire alarm system with manual voice paging features to combine both fire alarm and mass notification system features. The system installed in accordance with all applicable codes and standards. It shall utilize an addressable microprocessor based type system with manual and automatic alarm initiation. Signal transmission shall be a mutliplex format and be dedicated to fire alarm service only. Fire alarm control panel shall be mounted in building main electrical room with an auxiliary annunciator panel capable of all control functions mounted in the building main entrance vestibule. The type and location of the fire alarm annunciator shall be coordinated with the Fort Drum Fire Chief.

6.13.2.1 Each Mass Notification system shall have a dedicated control panel and interfaced to a Monaco transceiver that can accept all messages, including live voice messages, from the central control station. Coordinate transceiver connection requirements with the Contracting Officer. The mass notification system will be in accordance with all of the requirements of UFC 4-010-01.

6.13.2.2 Audible alarm indication shall be via fire alarm speakers. Visual alarm indication shall be by synchronized strobes. Spacing and location of speakers and strobes shall be commensurate with the ADA (Americans with Disabilities Act); NFPA 72; and any other applicable codes.

6.13.2.3 The NAC (Notification Appliance Circuits) shall be class “A”, Style “Z”. The SLC (Signal Line Circuits) shall be class “A”, Style “7”. The AID (Alarm Indicating Device) circuits shall be Style “D” (Class “A”). All circuits shall have at least 40% spare capacity for additional devices (initiating and indicating) in each building.

6.13.2.4 All signals from the fire alarm panel shall be transmitted to the FORT DRUM fire department fire alarm receiving station. The transmitter shall be identical to the current base wireless manufacturer and shall be added to the existing base receiving system. The fire alarm radio transmitter shall be a MONACO BTX Series Transceiver.

6.13.2.5 Monitor Module shall be designed to monitor system components that are not equipped for multiplex communication with the fire alarm control panel and cannot transmit a unique identification signal. Monitor Modules shall be provided in the appropriate quantity and location (no greater than 3 feet away) to individually monitor other fire alarm initiating devices or supervisory devices and provide a unique address to the fire alarm control panel. The control module shall contain an integral LED that flashes each time the control module is polled.

6.13.2.6 Control Modules shall be capable of operating as a relay (dry contact FORM C) for interfacing the control panel with other systems or other devices. The module shall be UL Listed as compatible with the control panel. The indicating device or the external load being controlled shall be configured as a STYLE Y notification appliance circuit(s). The system shall be capable of supervising audible, visual and dry contact circuits. The supervision shall detect a short on the supervised circuit and shall prevent power from being applied to the circuit. The control module shall contain an integral LED that flashes each time the control module is polled and be located within 3-feet of the controlled circuit or appliance.

6.13.2.7 All signals from the fire alarm panel shall be transmitted to the Fort Drum Fire Department fire alarm receiving station. The signal shall be transmitted via wireless transmitter provided by the Contractor. The transmitter shall be identical to the current base wireless manufacturer and shall be added to the existing base receiving system. The base at Fort Drum uses a Monaco D700 radio transmitter system and MNS. The fire alarm radio transmitter and MNS panel shall be Monaco BTX. At least three (3) distinct signals shall be transmitted to the receiving station. They are: Alarm, Supervisory, and Trouble. At the discretion of the Fort Drum Fire Chief, specific types of alarm signals shall be required to be transmitted to the receiving station. Pull stations, water flow signals and automatic alarms (heat and/or smoke) may be required to be individually and uniquely transmitted to the Fort Drum receiving station. Gas detection alarms shall be required to be uniquely transmitted. The fire alarm system shall be provided with and connect to a Monaco BTX fire alarm transceiver which shall transmit signals to the existing base-wide Monaco D700 fire alarm monitoring system. At least five (5) distinct signals shall be transmitted to the receiving station for the facility. They are: (1) Alarm for water flow; (2) Alarm for pull station; (3) Alarm for smoke detector; (4) Supervisory and (5) Trouble. The fire alarm transceiver shall be provided with all necessary equipment to interface with the existing base monitoring system and shall have batteries that are sized for 24 hours of supervisory operation and an additional 5 minutes operation under alarm. . Provide an omni-directional antenna for each radio transmitter. The antenna shall be

mounted on a 25 feet high wood or fiberglass pole at the exterior of the building. The antenna shall be corrosion resistant and designed to withstand wind velocities of 100 MPH. The antenna shall not be mounted to any portion of the building roof system. The antenna shall be properly grounded. Also provided shall be a lightning arrester for the antenna mast assembly appropriately grounded. The radio frequency for the existing FORT DRUM fire alarm transmitter system by MONACO is 413.325 (UHF). In addition to its signal transmission capabilities, the radio transceiver shall be capable of receiving voice signals so that live voice messages can be made throughout the building, over the fire alarm/mass notification system, from a remote location. The required features of the BTX-F Fire Alarm Building Transceiver are as follows:

- Hardwire line or narrow band radio communication with any of the D-21 Fire Management Systems.

- Narrow band radio is FCC certified for narrow band operation and meets the requirements of the NTIA (National Telecommunications and Information Administration) “Manual of Regulations and Procedures for Federal Frequency Management”.

- Radio communications with the D-21.

- Provides audio and fire alarm overrides for mass notification per UFC and NFPA.

- Provides automatic and manual control of local or remote devices such as turning on pumps based upon timed events, input from a fire alarm control panel, or manually activated from the D-21.

- Provides eight (8) relay driver outputs and four (4) supervised zone outputs.

- Eight (8) onboard open-collector relay driver outputs can connect to the BTX-F relay board or to relay coils that remotely control equipment such as pump activation inputs, HVAC dampers, lighting, door openers, runway barriers, and gates. These outputs can also drive remote annunciator LEDs.

- Four supervised fire zones inputs for connection to fire detection and monitoring devices located within 15-feet of the BTX-F; these are supervised for open (trouble), short (alarm), single-ground fault, and double-ground fault conditions.

- Four zone LEDs (one for each zone) reflect the condition of the zones: trouble, alarm, or normal.

- Status LEDs reflect the status of the BTX-F; general alarm, general trouble, system fault, in-communication, carrier detect, transmit, primary power, battery boost charge, and battery float charge.

- Supports up to seven (7) zone expansion backplanes into which fire zone cards can be plugged.

- Each zone expansion card can provide four (4) zone input.

- Each expansion card has five (5) LEDs: the PWR LED indicates power is being supplied to the card; the remaining four (4) LEDs indicate the status of the four (4) zone inputs.

- Each BTX-F can support up to sixty (60) zones and eight (8) relay outputs with fourteen (14) expansion cards installed.

- One (1) selectable RS-422/RS-485 port for communication with peripheral equipment or connection to a local access controller.

- Two (2) full-duplex RS-232 ports used to program the BTX-F via connection to a laptop computer or for connection to peripheral equipment that does not have a RS-422 port/RS-485 port.

- 115 or 230 Vac power monitored with automatic switchover to backup battery power that provides standby power; the number of hours depends upon the battery.

- Self-test, stuck transmitter disconnect, reset acknowledge, and battery reconnect switches.

- Local audible alert.

- Real-time clock and calendar.

- ½ Mb of program memory.

- ½ Mb of non-volatile data storage.

- Fits in a variety of enclosures; the enclosure size depends upon how many expansion cards are needed.

- Factory Mutual approved.

6.13.2.8 All mechanical rooms utilizing oil and gas fired equipment shall be provided with both combustible gas detectors (calibrated to alarm at 25% of the LEL of methane) and carbon monoxide gas detectors (calibrated to alarm at 35 ppm). These detectors shall be monitored for alarm and trouble conditions by the building fire alarm system and shall transmit as separate zones to the fire alarm transceiver. When a detector activates it shall sound a horn/strobe with amber lens located in the vicinity of the detector (each detector shall have its own horn/strobe). Signage provided with the horn/strobe shall state what the hazard is and to evacuate the area immediately to fresh air. Activation of any gas detector shall initiate a building general fire alarm, however shall not sound the fire alarm audio/visual appliances in the building and only activate its respective special hazard horn/strobe device. Activation of any gas detector in a mechanical room with a boiler shall shutdown all boilers, and the gas supply to the boilers in the space via solenoid valves at the individual appliances.

6.13.2.8.1 Pseudo fire alarm zones shall be programmed to send signals to the Monaco fire alarm transceiver to transmit zone information to the base-wide fire alarm monitoring center. Also, all fire alarm system trouble and sprinkler system valve supervisory conditions shall be sent as separate signals to the Monaco transmitter. Provide all necessary programming and addressable modules to accomplish general zoning of the fire alarm system and wiring/programming of the Monaco transmitter as directed by the Fort Drum Fire Department Fire Prevention Office.

6.13.2.8.2 The fire alarm system shall be compatible and interface with the Mass Notification System provided for the building(s). Refer to UFC 4-010-01 and UFC 4-021-01 for requirements. See

Specification 01010, Section 10.0. Fire alarm audio and audio/visual appliances shall be the speaker type as to allow integration with the building Mass Notification System.

6.13.3 Testing/Training: Upon completion of the installation, all fire protection systems shall be subjected to functional and operational performance tests. These tests shall be witnessed by the Authority Having Jurisdiction and the Owner, and the Owner's Representative. The Contractor shall notify the above witnesses, in writing, 72 hours prior to the commencement of testing. Failure to contact the above parties will require the Contractor to conduct tests a second time at the Contractor's expense in the presence of the above parties.

6.13.3.1 The Contractor shall provide the on-site services of authorized technical representatives of all manufacturers deemed necessary by the owner, owner's representative, or authority having jurisdiction. Technical representatives shall supervise and assist in fully testing all components of the fire protection systems installed as directed by the owner's representative. The Contractor shall provide the services of the installation personal to accompany and take direction from the owner's representative while conducting final testing/commissioning of the system. All systems shall be tested at random to ensure full functionality.

6.13.3.2 All testing shall be conducting in accordance with all applicable codes and standards for the testing and commissioning of fire protection systems. Copies of all testing paperwork generated and with any additional testing/commissioning paperwork deemed necessary by the owner, owner's representative, and Authority Having Jurisdiction shall be provided to them at the completion of the testing.

6.13.3.3 The Contractor shall provide a minimum of 4 hours of instruction and operation, and maintenance of all elements of the materials and methods utilized for the installation of all fire protection systems and features. Training shall be for "non-technician" personnel prior to the commissioning of the building fire suppression system. All training shall take place prior to final acceptance testing of the system. All demonstration and training provided to Owner personnel shall be witnessed by the owner's representative and the Authority Having Jurisdiction. The Contractor shall notify the above witnesses, in writing, 72 hours prior to the commencement of testing. Failure to contact the above parties will require the Contractor to conduct training a second time at the contractor's expense in the presence of the above parties.

6.13.3.4 Instruction shall be provided by a material or system manufacturer's certified representative familiar with the equipment and special operating requirements of the system provided and the Owner's operating procedures.

6.13.3.5 Instructions shall include classroom training as well as hands on training of all components of the system and their operation.

6.13.3.6 Instruction shall be made available on a schedule acceptable to the Owner and the availability of the operating personnel. Instructions shall be in two separate groupings with the last instruction time frame 30 days after the second grouping. This is to allow the operating personnel to familiarize themselves with the equipment and get follow-up training as required. The last training session shall be a minimum of 2 hour(s).

6.13.3.7 Contractor shall be responsible for providing sufficient training materials for all present at the training session, (minimum 15 personnel). Coordinate actual requirements with the Owner at time of training.

6.13.3.8 The Contractor shall be responsible for providing video-taped training sessions, which will be submitted to the Owner for future employee training. All of the training sessions conducted shall be video-taped.

6.13.4 As an option, the Contractor shall submit an installed, interior wet-pipe sprinkler system that is fed from a fire department (pumper) connection that shall be located a minimum of fifty-feet from the exterior of the building. All design and installation of the proposed option shall be inconformance with NFPA 13 and other applicable codes and standards.

6.14. SUSTAINABLE DESIGN

6.14.1. LEED Rating Tool Version. This project shall be executed using LEED-NC Version 3.

6.14.2. The minimum requirement for this project is to achieve LEED Silver level. Each non-exempt facility (building plus sitework) must achieve this level. In addition to any facilities indicated as exempt in paragraph 3, the following facilities are exempt from the minimum LEED achievement requirement: N/A.

6.14.3. Credit Validation: LEED registration, compiling of documentation at LEED OnLine and use of the LEED Letter Templates is required. Registration and payment of registration fees will be by the Government. Administration/team management of the online project will be by the Contractor. Validation of credits will be accomplished by the Government. LEED certification of the project by the Contractor is required. The Contractor will obtain LEED certification prior to project closeout. Application, payment of certification of fees and all coordination with USGBC during the certification process will be by the Contractor. GBCI interim review of design phase data is not required by the Government but is recommended. Government validation during project execution does not relieve or modify in any way the Contractor's responsibility to satisfy all requirements for certification as defined by LEED and GBCI. Contractor is not responsible for design phase LEED documentation of any unaltered portion of the design that is accomplished by others. If the project includes unaltered complete design by others, during the certification process Contractor will coordinate all GBCI comments on LEED credits that fall outside Contractor's scope of responsibility with the Government for coordination with the Designer of Record, and Contractor will not be penalized if project fails to achieve certification at the minimum required level due to loss of credits that are the responsibility of others.

6.14.4. Commissioning: See Appendix M for Owner's Project Requirements document(s).

6.14.5. LEED Credits Coordination. The following information is provided relative to Sustainable Sites and other credits.

SS Credit 1 Site Selection:

Project site IS NOT considered prime farmland.

Delineation of 100-year flood elevation is shown on site drawings provided in this CONTRACT.

Delineation of threatened or endangered species habitat is shown on site drawings provided in this CONTRACT.

Delineation of water, wetlands and areas of special concern is shown on site drawings provided in this CONTRACT.

Project site WAS NOT previously used as public parkland.

SS Credit 2 Development Density & Community Connectivity.

Project site DOES NOT meets the criteria for this credit.

SS Credit 3 Brownfield Redevelopment.

Project site DOES NOT meets the criteria for this credit.

SS Credit 4.1 Public Transportation Access.

Project site DOES NOT meets the criteria for this credit.

EA Credit 6 Green Power.

35% of the project's electricity WILL NOT be provided through an Installation renewable energy contract. Do not purchase Renewable Energy Credits (REC's) to earn this credit.

MR Credit 2 Construction Waste Management.

The Installation does not have an on-post recycling facility available for Contractor's use.

Regional Priority Credits (Version 3 only)

The project zip code is 13602.

6.14.6. LEED Credit Preferences, Guidance and Resources. See Appendix L LEED Project Credit Guidance for supplemental information relating to individual credits.

6.14.7. Not Used

6.14.8. Additional Information

6.14.8 Sustainable Design-Additional Information:

6.14.8.1 Within fifteen (15) days of the award of the contract, the Designer shall:

- Submit projected LEED credits including a completed LEED 2009 NC Checklist listing minimum anticipated credits to attain rating, possible credits, and credits not being pursued.

- Submit projected energy consumption indicating levels meeting EPAct 2005 requirements for the project

6.14.8.2 At interim design the Designer shall:

- Submit an updated LEED 3.0 NC Checklist reflecting the status of LEED credits.

- Submit calculated energy consumption levels meeting EPAct 2005 requirements. Provide calculation worksheets for review.

6.14.8.3 At completed design the Designer shall:

- Submit a final LEED 3.0 NC Checklist reflecting the final design credits and all anticipated construction credits. (Note: Any changes will require review and approval before being accepted.)

- Submit final calculated energy consumption levels meeting EPAct 2005 requirements. Provide calculation worksheets for review.

6.14.8.4 The following information is provided for LEED Credits:

- Enhanced Commissioning is a requirement for this project.
- SS Credit 1 Site Selection
    - Project site **is not** considered prime farmland
    - Project site is five feet or more above 100-year flood elevation
    - Project site contains no habitat for threatened or endangered species.
    - Delineation of water, wetlands, and areas of special concern is shown on site drawings provided in this CONTRACT.
    - Project site [PARKLAND] previously used as public parkland
- MR Credit 2 Construction Waste Management
    - The Installation does not have an on-post recycling facility available for Contractor's use.
- EA Credit 1 Optimize Energy Performance
    - The project manager will provide project-specific cost factors for kWh and per therm for natural gas for use in calculating the cost savings.

6.18.5 The following LEED Credits shall not be accepted:

- SS Credit 2 Development Density & Community Connectivity
- SS Credit 3 Brownfield Redevelopment
- SS Credit 4.1 Alternative Transportation-Public Transportation Access
- SS Credit 4.3 Alternative Transportation-Low-Emitting/Fuel-Efficient Vehicles
- EA Credit 6 Green Power

6.18.5.1 All Innovative Design (ID) Credits require Government review and approval prior to submission to the USGBC.

6.18.5.2 The Government reserves the right to periodically review LEED documentation and project LEED processes.

6.18.5.3 The following credits are mandatory on this Project:

- EQ 7.1 Thermal Comfort Design

- EA 3 Enhanced Commissioning

6.18.5.4 The following values are required for this Project:

- 40% Energy reduction
- 30% Water use reduction

6.14.8.6 Whole Building Commissioning: Whole building commissioning is required at Fort Drum and will comply with ASRAE Guideline 0, "The Commissioning Process" and when applicable, ASHRAE Guideline 1, "The HVAC & R Commissioning Process".

6.14.8.6.1 For Design-Build projects, the independent Commissioning Agent, engaged to participate in the preparation of the design phases will also be responsible for commissioning activities during the construction phase of the project. Additionally, the Commissioning Agent will be an active participant in developing the final BIM submission.

6.14.8.6.2 While buildings are comprised of static systems (e.g. building envelope, building structure) and dynamic systems (e.g. HVAC, emergency power, elevators, etc.), the whole building commissioning process is intended to address the integrated dynamic performance of the building system. Therefore, when considering which building systems to commission, the primary considerations are driven by the impacts of any given system on the overall performance of the building as a whole.

6.14.8.6.3 The list of commissioned systems included below is intended to identify all systems that can have a significant impact on the ability of the integrated building system to achieve the comfort, reliability, and energy performance goals established by Fort Drum in the commissioning process.

6.14.8.6.4 The intent is to subject all building systems to the commissioning process. With this in mind, the following criteria should be applied to evaluating how each installed system (included below) is prioritized in the commissioning process:

1. Systems with the most significant impacts on either the environmental performance or reliability of the installed building system should have the highest priority in the commissioning process. (For example, the building HVAC systems, central heating/cooling plant systems, building management systems, emergency power systems, and security systems.)

2. Systems that have traditionally caused performance or maintenance problems in a facility should have a high priority in the commissioning process. (For example, the building envelope systems, normal power distribution, etc.)

3. Systems that have a significant dynamic performance component but may have a moderate impact on the net environmental building system performance should have a high priority in the commissioning process. (For example, the building elevators, domestic water distribution, etc.)

6.14.8.5 It is important to note that the list of "Systems To Be Commissioned" will change over the course of the Project's design phases. The list should be developed early and kept updated throughout the design.

6.14.8.7 The following Table provides a list of typical systems used at Fort Drum that should be commissioned in a "Whole Building Commissioning Process". The list is intended for guidance and is not considered comprehensive.

SYSTEMS TO BE COMMISSIONED

Building Foundation:

1. Subgrade: Soil Type and Compaction, Vapor Barrier

2. Foundations: Insulation Installation, Thermal Value

3. Slab: Insulation Where Required, Thermal Value, Thermal Heating System

Building Exterior Closure:

1. Exterior Walls: Air and Vapor Infiltration, Water Leakage, Thermal Value

2. Roofing: Air and Vapor Infiltration, Water Leakage, Thermal Value, Positive Drainage of Storm Water

3. Windows, Doors, Louvers and Other Penetrations : Air and Vapor Infiltration, Water Leakage, Thermal Value

Conveying Equipment:

1. Elevators: Interface with Other Systems (Fire Alarm, etc.) [ASTM testing and certification by others.]

Fire Suppression:

1. Fire Pump: Fire Pump, Jockey Pump, Fire Pump Controller/ATS

2. Fire Sprinkler Systems: Wet Pipe System, Dry Pipe System, Pre-Action System, Any Special Agent System

Plumbing:

1. Domestic Water Distribution: Booster Pumps, Backflow Preventers, Water Softeners, Potable Water Storage Tanks

2. Domestic Hot Water Systems: Water Heaters, Heat Exchangers, Circulation Pumps, Point-Of-Use-Water-Heaters

3. Sewerage Pump Systems: Sewage Ejectors

4. Wastewater Pump Systems: Sump Pumps

5. Sanitary Waste Interceptors: Grease Interceptors, Acid Neutralizers

6. General Service Air Systems: Packaged Compressor Systems, Air Dryers, Filtration

Heating Ventilating and Air Conditioning:

1. Noise and Vibration Control: Noise and vibration levels for critical equipment such as Air Handlers, Chillers, Cooling Towers, Boilers, Generators, etc. will be commissioned as part of the system commissioning.

2. Direct Digital Control System: Operator Interface Computer, Operator Work Station (including graphics, point mapping, trends, Alarms, etc.), Network Communications Modules and Wiring, Integration Panels [DDC Control Panels will be commissioned with the systems controlled by the panels.]

3. Chilled Water System: Chillers (centrifugal, rotary-screw, air-cooled), Pumps (primary, secondary, variable primary), VFDs associated with chilled water system components. DDC Control Panels (including integration w/ Building Control System)

4. Condenser Water System: Cooling Towers, Fluid Coolers, Heat Exchangers/Economizers, Pumps, VFDs associated with condenser system components, DDC Control Panels

5. Steam/Heating Hot Water System: Boilers, Boiler Feed Water System, Economizers/Heat Recovery Equipment, Condensate Recovery, Water Treatment, Boiler Fuel Systems, Controls, Interface with Facility's DDC System

6. HVAC Air Handling Systems: Air Handling Units, Packaged Rooftop AHU, Outdoor Air Conditioning Units, DDC Control Panels

7. HVAC Ventilation/Exhaust Systems: General Exhaust, Toilet Exhaust, Room Pressurization Control Systems

8. HVAC Energy Recovery Systems: Heat Wheels, Heat Recovery Loops, AHU Integrated Heat Recovery

9. HVAC Terminal Unit Systems: VAV Terminal Units, CAV Terminal Units, Fan Coil Units, Fin-Tube-Radiation, Unit Heaters

Electrical:

1. Medium-Voltage Electrical Distribution Systems: Medium-Voltage Switchgear, Switches, Underground Ductbank and Distribution, Pad-Mounted Transformers, Load Interrupter Switches

2. Grounding and Bonding Systems: Witness 3RD Party Testing, Review Reports

3. Electric Power Monitoring Systems: Metering, Sub-Metering, Power Monitoring Systems, PLC Control Systems

4. Electrical System Protective Device Study: Review Reports, Verify Field Settings Consistent with Study

5. Secondary Unit Substations: Medium-Voltage Components, Transformers, Low-Voltage Distribution, Verify Breaker Testing Results (Injection, Current, etc.)

6. Low-Voltage Distribution Systems: Normal Power Distribution, Life-Safety Power Distribution Systems, Critical Power Distribution Systems, Equipment Power Distribution Systems, Switchboards, Distribution Panels, Panelboards, Verify Breaker Testing Results (Injection, Current, etc.)

7. Emergency Power Generation Systems: Generators, Generator Paralleling Switchgear, Automatic Transfer Switches, PLC and other Control Systems

8. Lighting and Lighting Control Systems: Emergency Lighting, Occupancy Sensors, Lighting Control Systems, Architectural Dimming Switches, Theatrical Dimming Switches, Exterior Lighting and Controls

9. Cathodic Protection Systems: Review 3rd party Testing Results

10. Lightning Protection Systems: Witness 3rd party Testing, Review Reports

Telecommunications:

1. Grounding and Bonding Systems: Witness 3rd Party Testing, Review Reports

2. Structured Cabling Systems: Witness 3rd Party Testing, Review Reports

3. Public Address and Mass Notification Systems: Witness 3rd Party Testing, Review Reports

4. Intercom and Program Systems: Witness 3rd Party Testing, Review Reports

5. Security Systems to ensure that multiplexers are coordinated and operating properly.

Electronic Safety and Security:

1. Grounding and Bonding: Witness 3rd Party Testing, Review Reports

2. Physical Access Control Systems: Witness 3rd Party Testing, Review Reports

3. Access Control Systems: Witness 3rd Party Testing, Review Reports

4. Fire Detection and Alarm Systems: 100% Device Acceptance Testing, Battery Draw-Down Test, Verify System Monitoring, Verify Interface with Other Systems

Site Utilities:

1. Water Utilities: City Water Service Entrance, Backflow Prevention, Pressure Control, Booster Pumps, Irrigation Systems

2. Sanitary Sewerage Systems: City Sanitary Connection, Waste Treatment Systems

3. Storm Drainage Utilities: City Storm Water Connection, Site Storm Water Distribution

4. Energy Distribution Systems: Connection to 3rd Party Energy Supply Systems, Metering

5. Renewable Energy Systems: Photovoltaic Electrical Systems, Wind Turbines

Integrated Systems Tests:

1. Loss of Power Response: Loss of Power to Building, Restoration of Power to Building

2. Fire Alarm Response: Integrated System Response to Fire Alarm Condition and Return to Normal

6.14.8.8 The Design-Build Contractor shall, within fifteen (15) days of receiving a Notice To Proceed (NTP), engage the services of an independent Commissioning Authority, whose duties shall include, but not be limited to:

1. Participation in all discipline designs to verify compliance with the Owner's Project Requirements (OPR)

2. Development of an overall Project Commissioning Plan, using ASHRAE Guideline 0-2005 as a model, and incorporating al building systems, assemblies, envelope, operation, and maintenance features as described in the Basis of Design (BOD).

3. Incorporating specific discipline commissioning agents as required to complete the project.

4. Provide a schedule of values for all commissioning activities associated with the project.

5. Incorporation of key commissioning milestones and associated activities into the overall project schedule.

6. Providing value engineering reviews and recommendations.

7. Participation in the review of QA/QC documentation (inspection reports, product and material submittals, deficiency reports, etc.) to verify compliance with the overall Commissioning Plan, OPR, and BOD.

8. Overseeing the training of DPW personnel, operations personnel)or their designated representatives) in the operation and maintenance of all installed systems and assemblies. This includes providing all supplied manuals and warranties.

6.15. ENVIRONMENTAL

6.15 Environmental:

6.15.1 Inadvertent Cultural Resources Discovery: The proposed construction area has been evaluated for potential cultural resources, consultation has been completed and concurrence achieved that any proposed construction at this location will have no impact on any significant cultural resource. However, if an historic archeological district has been set aside in the vicinity of the proposed project, all posted signs will be respected by the Contractors. In addition, the remains the possibility that archeological remains could be accidently discovered during the course of construction. Examples of remains to be expected in the area could include, but are not limited to: bones, Native American stone tools and debris, evidence of fire in the soil including fire-cracked rock, charcoal, and burnt soil, Native American pottery, evidence of

historic foundations, and concentrations of historic artifacts or debris. If accidental discovery of items that appear to be cultural remains occurs during construction, all work shall cease within a ten (10) meter radius of the find. The Contracting Officer shall be contacted immediately who will contact Public Works, Environmental Division, 315-772-4165, or, 315-772-5708.

6.15.2 ENDANGERED SPECIES:

6.15.2.1 The federally endangered Indiana bat is present on Fort Drum and must be considered in all actions. Actions on Fort Drum, must be in accordance with requirements negotiated with the U.S. Fish & Wildlife Service under Section 7 of the Endangered Species Act. Projects involving ANY habitat modification (e.g., vegetation removal) must be addressed by Fort Drum's Fish and Wildlife Management Program. In general, no trees greater than 4-inches (diameter breast height) may be cut from 15 April - 01 October to avoid any direct adverse effects to the Indiana bat. Clearing of natural vegetation (e.g., shrubs and trees) less than 4 inches (diameter breast height) should typically occur between August 1 - April 15 to minimize the impact to migratory birds and to maintain foraging areas for bats. The contractor (and all subcontractors) shall be responsible for coordination with Fort Drum's Fish & Wildlife Management Program to ensure compliance with the Endangered Species Act and all other applicable laws and regulations pertaining to wildlife. Overall the contractor (and all subcontractors) shall minimize interference with, disturbance to, and damage to plants, fish, wildlife, and their habitats on and adjacent to the project area. The contractor shall immediately inform the COR of any coordination or contact with Fort Drum/s Fish and Wildlife Management Program.

6.15.2.2 Flagging or signs must be used to demarcate areas to be cleared vs. not cleared prior to any construction activities or tree clearing for a given project. Clearing must only occur within the flagged area, and flagging must be removed upon completion of the project.

6.15.2.3 If any bats are discovered during the demolition or repair of buildings (to include work such as complete and partial building demo, removal/replacement of roofs, siding, etc.), all work must cease and Fort Drum's Fish and Wildlife Management Program (772-9636 or 772-4999) must be immediately contacted. If the building has pre-existing known bat colonies, then Fort Drum's Fish and Wildlife Management Program must be contacted before demolition is to occur. (At this time, the only structures known to contain bat colonies are within the historic LeRay Area.).

6.15.2.4 All found bats must be immediately reported to Fort Drum's Fish and Wildlife Management Program (772-9636 or 772-4999). Do not attempt to handle any live bats, regardless of condition. If a live bat is found in a building please contact 772-2072 or 772-4999.

6.15.3 Light minimization measures are to be incorporated for all exterior lighting that may include but are not limited to full cutoffs, reflectors, shields, and/or downward angling of lights. The following are guidelines that have been established for light minimization within the draft Installation Design Guide and must be followed to the maximum extent possible.

a. Maximum light at the edge of parking lot/road pavement will be 2 foot candles or its equivalent.

b. Light levels for parking lots/sidewalks shall be in accordance with Illuminating Engineering Society (IES) Lighting Handbook.

c. A Professional Engineer must review the lighting plan and ensure it is sound and meets minimization requirements.

d. Use full cutoff luminaires for road, parking lot, and sidewalk illumination. These are luminaires that allow no direct light emissions above a horizontal plane through the luminaire's lowest light emitting part.

e. Use downward-angling lights and appropriate shields in all applicable locations.

6.15.3.1 No night lighting for construction projects is authorized without prior coordination and authorization from the COR and Fort Drum's Fish and Wildlife Management Program.

6.15.3.2 Project planning and design should attempt to minimize building footprints by combining infrastructure (i.e. roads, utility lines, etc.) for multiple buildings or by constructing multi-story versus multiple or expanded single story buildings whenever possible.

6.15.4 OUTDOOR LIGHTING MINIMIZATION:

The purpose of the Fort Drum Outdoor Lighting Guidelines is to regulate outdoor lighting in order to reduce or prevent light pollution. This means to the extent reasonably possible the reduction or prevention of glare and light trespass, the conservation of energy, and promotion of safety and security. These Guidelines will ensure appropriate outdoor lighting in compliance with the Endangered Species Act and in accordance with the Fort Drum's Army Strategic Plan for Sustainability.

6.15.4.1 Definitions:

a. Fixture Height: height of the fixture shall be the vertical distance from the ground directly below the centerline of the fixture to the lowest direct light emitting part of the fixture.

b. Foot-candles: a unit of illumination of a surface that is equal to one lumen per square foot. For the purposes of these regulations, foot-candles shall be measured at a height of 3 ft. above finished grade.

c. Fully Shielded Light: light fixtures shielded or constructed so that no light rays are directly emitted by the installed fixture at angles above the horizontal plane as certified by a photometric test report. The fixture must also be properly installed to effectively down direct light in order to conform to the definition.

d. Light Trespass: the shining of light produced by a light fixture beyond the boundaries of the property on which it is located.

e. Lumen: the unit of luminous flux, the total amount of light falling uniformly on or passing through an area of 1 square foot, each of which is 1 foot from a 1-candela source, yielding an illuminance of 1 foot candle at that distance (the output of lamps and bulbs is customarily measured in lumens, a common 100 watt incandescent light bulb, for example, having an output less than 1,800 lumens).

f. Point Light Source: the exact place from which illumination is produced (i.e., a light bulb filament or discharge capsule).

g. Sag-lens or Drop-lens: A clear or prismatic refracting lens that extends below the lowest opaque portion of a light fixture.

6.15.4.2 Applicability: All outdoor lighting fixtures installed, retro-fitted, or replaced on Fort Drum property shall comply with these regulations. These regulations do not apply to interior lighting.

6.15.4.2.1 Exemptions: The following are exempt from the provisions of these guidelines:

a. Traffic control signals and devices.

b. Temporary emergency lighting (i.e. fire, police, repair workers).

c. Moving vehicle lights.

d. Navigation lights (i.e. airports, heliports, radio/television towers).

e. Seasonal decorations with individual lights in place no longer than 60 days.

f. Lighting for flags. Efforts should be made in these areas to minimize sky glow and light trespass whenever feasible.

g. Sports field outdoor lighting (i.e. ball fields, football, soccer, ice rink, etc.). Sports outdoor lighting is to be turned off when a sporting event is not occurring.

h. Other special situations for temporary or periodic events (i.e. fairs, festivals, carnivals, night-time construction).

i. Security lights of any wattage that are controlled by a motion-sensor switch and which do not remain on longer than 10 minutes after activation.

j. Access points, Army Supply points, or other high security areas subject to AR 190-11 or TM-8-583-2. Efforts should be made in these areas to minimize sky glow and light trespass whenever feasible.

Additional exemptions may be provided after coordination with Fort Drum's Fish and Wildlife Management Program.

6.15.4.3 General Standards: The following general standards shall apply to all outdoor lighting installed, retrofitted, or replaced on Fort Drum, which is not exempted above:

a. Outdoor lighting must be hooded, fully shielded (i.e. full cutoff fixtures), and/or aimed downward. Outdoor lighting used to illuminate parking spaces, driveways, maneuvering areas, or buildings shall conform to the definition for "fully shielded light fixtures" and be designed, arranged and screened so that the point light source shall not be visible from adjoining lots (i.e. woodlands) or streets.

b. The intensity of light within a site shall not exceed two (2) footcandles at any property line, edge of pavement, or road.

c. The hood or shield must mask the direct horizontal surface of the light source. The light must be aimed to insure that the illumination is only pointing downward onto the ground surface, with no escaping light permitted to contribute to sky glow by shining upward into the sky.

d. Any bright light shining onto adjacent properties (i.e. woodlands) or streets which would result in a nuisance glare or a disabling glare shall not be permitted. Light trespass beyond property boundaries or above the horizontal plane shall be considered non-compliant.

e. Existing fixtures may be adapted to comply with these guidelines by adding a properly designed hood or shield, or by pointing any upward-mounted, shielded fixture downward onto the ground surface.

f. All outdoor lighting fixtures shall be designed, installed, located and maintained such that nuisance glare onto adjacent properties (i.e. woodlands) or streets shall be minimized and all direct illumination kept within the boundaries of a building's property.

g. Accent lighting shall be directed downward onto the building or object and not toward the sky or onto adjacent properties (i.e. woodlands). Direct light emissions shall not be visible above the roof line or beyond the building edge.

h. Spotlighting on landscaping and foliage shall be limited to 150 watts (2220 lumens output) and lighting is to be angled downwards. The lamp shall be fully shielded and not create disabling or nuisance glare.

i. No sag-lens or drop-lens is to be used.

6.15.4.4 Environmentally Preferable Products: Per UFGS 01-35-40-00-20 consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, and disposal of products, and provide products and materials with the least effect on the environment, determined by LCA analysis, released toxins, and other methods.

6.15.4.4.1 Prohibited Materials at Fort Drum: The following items shall not be used at Fort Drum:

- Products containing urea formaldehyde

- Products containing chlorinated fluorocarbons

- Solder or pipe flux containing more than 0.2 percent lead and domestic water pipe and/or pipe fittings containing more than 8 percent lead.

6.15.4.4.2 The Contractor shall provide a written plan that addresses their compliance to the Environmentally Preferable Products requirements. This plan shall contain a certificate stating that none of the prohibited products will be brought on-site or utilized on the project. This plan and certificate will include all subcontractors and suppliers.

6.16. PERMITS

New York State Pollutant Discharge Elimination System Permit

6.17. DEMOLITION

6.17.1 Site Demolition: The Contractor is to perform demolition of buildings, roads, drives, parking areas, and utilities throughout the project site. Demolition is to include the removal and proper disposal of all materials. Utility termination is to include complete and proper coordination with the respective utility Provider(s) prior to performing any work. Termination is to occur back to the utility main with the appropriate caps and plugs.

6.18. ADDITIONAL FACILITIES

N/A

End of Section 01 10 00

SECTION 01 32 01.00 10
PROJECT SCHEDULE

1.0 GENERAL

1.1. REFERENCES

1.2. QUALIFICATION

2.0 PRODUCTS (NOT APPLICABLE)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

3.2. BASIS FOR PAYMENT AND COST LOADING

3.3. PROJECT SCHEDULE DETAILED REQUIREMENTS

3.4. PROJECT SCHEDULE SUBMISSIONS

3.5. SUBMISSION REQUIREMENTS

3.6. PERIODIC SCHEDULE UPDATE MEETINGS

3.7. REQUESTS FOR TIME EXTENSIONS

3.8. DIRECTED CHANGES

3.9. WEEKLY PROGRESS MEETINGS

3.10. OWNERSHIP OF FLOAT

3.11. TRANSFER OF SCHEDULE DATA INTO RMS/QCS

1.0 GENERAL

1.1. REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE) ER 1-1-11 (1995) Progress, Schedules, and Network Analysis Systems (Available through the Publications page of the US Army Corps of Engineers TECHINFO Website at http://www.hnd.usace.army.mil/techinfo/. See link for Engineer Regulation ER 1-1-11).

1.2. QUALIFICATIONS

Designate an authorized representative who shall be responsible for the preparation of the schedule and all required updating (statusing) and preparation of reports. The authorized representative shall be experienced in scheduling projects similar in nature to this project and shall be experienced in the use of the scheduling software that meets the requirements of this specification.

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

3.1.1. Submit a project schedule as specified herein for approval showing the sequence in which the Contractor proposes to perform the work and dates on which the Contractor contemplates starting and completing all schedule activities. The scheduling of the entire project, including the design and construction sequences is required. Contractor management personnel shall actively participate in its development. Designers, subcontractors and suppliers working on the project shall also contribute in developing an accurate project schedule. The schedule must be a forward planning as well as a project monitoring tool. The approved project schedule shall be used to measure the progress of the work and to aid in evaluating requests for excusable time extensions. The schedule shall be cost loaded and activity coded as specified herein. The schedule will provide the basis for all progress payments. If the Contractor fails to submit any schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments until the Contractor submits the required schedule

3.1.2. Status the schedule on at least a monthly basis, as specified herein. If in the opinion of the Contracting Officer, the Contractor falls behind the approved schedule, the Contractor shall take steps necessary to improve its progress including those that may be required by the Contracting Officer, without additional cost to the Government. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained. See paragraph 3.7.4.

3.1.3. Failure of the Contractor to comply with the requirements of the Contracting Officer shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the default terms of the contract.

3.2. BASIS FOR PAYMENT AND COST LOADING

The schedule shall be the basis for determining contract earnings during each update period and therefore the amount of each progress payment. Lack of an approved schedule update or qualified

scheduling personnel will result in an inability of the Contracting Officer to evaluate contract earned value for the purposes of payment. Failure of the Contractor to provide all information, as specified herein will result in the disapproval of the preliminary, initial and subsequent schedule updates. In the event schedule revisions are directed by the Contracting Officer and those revisions have not been included in subsequent revisions or updates, the Contracting Officer may hold retainage up to the maximum allowed by contract, each payment period, until such revisions to the project schedule have been made. Activity cost loading shall be reasonable as determined by the Contracting Officer. The aggregate value of all activities coded to a contract CLIN as specified herein shall equal the value of the CLIN on the Schedule.

3.3. PROJECT SCHEDULE DETAILED REQUIREMENTS

The computer software system utilized to produce and update the project schedule shall be capable of meeting all requirements of this specification. Failure of the Contractor to meet the requirements of this specification will result in the disapproval of the schedule. Scheduling software that meets the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER-1-1-11(1995) referenced herein are Primavera Project Planner (P3) by Primavera, and Open Plan by Deltek.

3.3.1. Use of the Critical Path Method

Use the Critical Path Method (CPM) of network calculation to generate the project schedule. Prepare the project schedule using the Precedence Diagram Method (PDM).

3.3.2. Level of Detail Required

Develop the project schedule to an appropriate level of detail. Failure to develop the project schedule to an appropriate level of detail, as determined by the Contracting Officer, will result in its disapproval. The Contracting Officer will consider, but is not limited to, the following characteristics and requirements to determine appropriate level of detail:

3.3.2.1. Activity Durations

Reasonable activity durations are those that allow the progress of ongoing activities to be accurately determined between update periods. Less than 2 percent of all non-procurement activities shall have Original Durations (OD) greater than 20 work days or 30 calendar days. Procurement activities are defined herein.

3.3.2.2. Design and Permit Activities

Include design and permit activities, including necessary conferences and follow-up actions and design package submission activities. Include the design schedule in the project schedule, showing the sequence of events involved in carrying out the project design tasks within the specific contract period. This shall be at a detailed level of scheduling sufficient to identify all major design tasks, including those that control the flow of work. Include review and correction periods associated with each item.

3.3.2.3. Procurement Activities

Include activities associated with the submittal, approval, procurement, fabrication and delivery of long lead materials, equipment, fabricated assemblies and supplies. Long lead procurement activities are those with an anticipated procurement sequence of over 90 calendar days. A typical procurement sequence includes the string of activities: submit, approve/review, procure, fabricate, and deliver.

3.3.2.4. Mandatory Tasks

Include and properly schedule the following tasks (See also the Sample Preliminary Submittal Register Input Form):

(a) Submission, review and acceptance of design packages, including BIM

(b) Submission of mechanical/electrical/information systems layout drawings

(c) Submission and approval of O & M manuals

(d) Submission and approval of as-built drawings

(e) Submission and approval of 1354 data and installed equipment lists

(f) Submission and approval of testing and air balance (TAB)

(g) Submission of TAB specialist design review report

(h) Submission and approval of fire protection specialist

(i) Submission and approval of testing and balancing of HVAC plus commissioning plans and data. Develop the schedule logic associated with testing and commissioning of mechanical systems to a level of detail consistent with the contract commissioning requirements.

(j) Air and water balancing

(k) HVAC commissioning

(l) Controls testing plan submission

(m) Controls testing

(n) Performance Verification testing

(o) Other systems testing, if required

(p) Contractor's pre-final inspection

(q) Correction of punch list from Contractor's pre-final inspection

(r) Government's pre-final inspection

(s) Correction of punch list from Government's pre-final inspection

(t) Final Inspection

3.3.2.5. Government Activities. Show Government and other agency activities that could impact progress. These activities include but are not limited to: approvals, design reviews, review conferences, release for construction of design package(s), environmental permit approvals by State regulators, inspections, utility tie-ins, Government Furnished Property/Equipment (GFP) and Notice to Proceed for phasing requirements, if any.

3.3.2.6. Activity Responsibility Coding (RESP)

Assign Responsibility Code for all activities to the Prime Contractor, Subcontractor or Government agency responsible for performing the activity. Activities coded with a Government Responsibility code include, but are not limited to: Government approvals, Government design reviews, environmental permit approvals by State regulators, Government Furnished Equipment (GFE) and Notice to Proceed (NTP) for phasing requirements. Code all activities not coded with a Government Responsibility Code to the Prime Contractor or Subcontractor responsible to perform the work. Activities shall not have more than one Responsibility Code. Examples of acceptable activity code values are: DOR (for the designer of record); ELEC (for the electrical subcontractor); MECH (for the mechanical subcontractor); and GOVT (for USACE). Unacceptable code values are abbreviations of the names of subcontractors.

3.3.2.7. Activity Work Area Coding (AREA)

Assign Work Area code to activities based upon the work area in which the activity occurs. Define work areas based on resource constraints or space constraints that would preclude a resource, such as a particular trade or craft work crew from working in more than one work area at a time due to restraints on

resources or space. Examples of Work Area Coding include different areas within a floor of a building, different floors within a building, and different buildings within a complex of buildings. Activities shall not have more than one Work Area Code. Not all activities are required to be Work Area coded. A lack of Work Area coding will indicate the activity is not resource or space constrained.

3.3.2.8. Contract Changes/Requests for Equitable Adjustment (REA) Coding (MODF)

Assign Activity code to any activity or sequence of activities added to the schedule as a result of a Contract Modification, when approved by Contracting Officer, with a Contract Changes/REA Code. Key all Code values to the Government's modification numbering system. Any activity or sequence of activities added to the schedule as a result of alleged constructive changes made by the Government may be added to a copy of the current schedule, subject to the approval of the Contracting Officer. Assign Activity codes for these activities with a Contract Changes/REA Code. Key the code values to the Contractor's numbering system. Approval to add these activities does not necessarily mean the Government accepts responsibility and therefore liability for such activities and any associated impacts to the schedule, but rather the Government recognizes such activities are appropriately added to the schedule for the purposes of maintaining a realistic and meaningful schedule. Such activities shall not be Responsibility Coded to the Government unless approved. An activity shall not have more than one Contract Changes/REA Code

3.3.2.9. Contract Line Item (CLIN) Coding (BIDI)

Code all activities to the CLIN on the Contract Line Item Schedule to which the activity belongs. An activity shall not contain more than one CLIN Item Code. CLIN Item code all activities, even when an activity is not cost loaded.

3.3.2.10. Phase of Work Coding (PHAS)

Assign Phase of Work Code to all activities, based upon the phase of work in which the activity occurs. Code activities to either a Design Phase or a Construction Phase. Code fast track design and construction phases proposed by the Contractor to allow filtering and organizing the schedule by fast track design and construction packages. If the contract specifies construction phasing with separately defined performance periods, identify a Construction Phase Code to allow filtering and organizing the schedule accordingly. Each activity shall have only one Phase of Work code.

3.3.2.11. Category of Work Coding (CATW)

Assign Category of Work code to all Activities based upon the category of work which the activity belongs. Category of Work Code must include, but is not limited to: Design, Design Submittal, design reviews, review conferences, Construction Submittal, Approvals (if any), Acceptance, Procurement, Fabrication, Delivery, Weather Sensitive Installation, Non-Weather Sensitive Installation, Start Up, Test, and Turnover. Assign a Category of Work code to each activity. Each activity shall have only one Category of Work Code.

3.3.2.12. Definable Features of Work Coding (FOW1, FOW2, FOW3)

Assign a Definable Feature of Work Code to appropriate activities based on the definable feature of work to which the activity belongs. Definable Feature of Work is defined in Specification Section 01 45 04.00 10, Contractor Quality Control. An activity shall not have more than one Definable Feature of Work Code. Not all activities are required to be Definable Feature of Work Coded.

3.3.3. Scheduled Project Completion and Activity Calendars

The schedule interval shall extend from NTP date to the required contract completion date. The contract completion activity (End Project) shall finish based on the required contract duration, as adjusted for any

approved contract time extensions. The first scheduled work period shall be the day after NTP is acknowledged by the Contractor. Schedule activities on a calendar to which the activity logically belongs. Activities may be assigned to a 7 day calendar when the contract assigns calendar day durations for the activity such as a Government Acceptance activity. If the Contractor intends to perform physical work less than seven days per week, schedule the associated activities on a calendar with non-work periods identified including weekends and holidays. Assign the Category of Work Code - Weather Sensitive Installation to those activities that are weather sensitive. Original durations must account for anticipated normal adverse weather. The Government will interpret all work periods not identified as non-work periods on each calendar as meaning the Contractor intends to perform work during those periods.

3.3.3.1. Project Start Date

The schedule shall start no earlier than the date on which the NTP was acknowledged. Include as the first activity in the project schedule an activity called "Start Project" or “NTP”. The "Start Project" activity shall have an "ES" constraint date equal to the date that the NTP was acknowledged, with a zero day duration.

3.3.3.2. Schedule Constraints and Open Ended Logic

Constrain completion of the last activity in the schedule by the contract completion date. Schedule calculations shall result in negative float when the calculated early finish date of the last activity is later than the contract completion date. Include as the last activity in the project schedule an activity called "End Project". The "End Project" activity shall have an "LF" constraint date equal to the contract completion date for the project, and with a zero day duration or by using the “project must finish by” date in the scheduling software. The schedule shall have no constrained dates other than those specified in the contract. The use of artificial float constraints such as “zero fee float” or “zero total float” are typically prohibited. There shall only be 2 open ended activities: Start Project (or NTP) with no predecessor logic and End Project with no successor logic.

3.3.3.3. Early Project Completion

In the event the Preliminary or Initial project schedule calculates an early completion date of the last activity prior to the contract completion date, the Contractor shall identify those activities that it intends to accelerate and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. The last activity shall have a late finish constraint equal to the contract completion date and the schedule will calculate positive float. The Government will not approve an early completion schedule with zero float on the longest path. The Government is under no obligation to accelerate activities for which it is responsible to support a proposed early contract completion.

3.3.4. Interim Completion Dates

Constrain contractually specified interim completion dates to show negative float when the calculated early finish date of the last activity in that phase is later than the specified interim completion date.

3.3.4.1. Start Phase

Include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The “Start Phase X" activity shall have an "ES" constraint date equal to the date on which the NTP was acknowledged, and a zero day duration.

3.3.4.2. End Phase

Include as the last activity for a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have an "LF" constraint date equal to the specified completion date for that phase and a zero day duration.

3.3.4.3. Phase “X” Hammock

Include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" hammock activity shall be logically tied to the earliest and latest activities in the phase.

3.3.5. Default Progress Data Disallowed

Do not automatically update Actual Start and Finish dates with default mechanisms that may be included in the scheduling software. Activity Actual Start (AS) and Actual Finish (AF) dates assigned during the updating process shall match those dates provided from Contractor Quality Control Reports. Failure of the Contractor to document the AS and AF dates on the Daily Quality Control report for every in-progress or completed activity, and failure to ensure that the data contained on the Daily Quality Control reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's updated schedule and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. Updating of the percent complete and the remaining duration of any activity shall be independent functions. Disable program features which calculate one of these parameters from the other.

3.3.6. Out-of-Sequence Progress

Activities that have progressed before all preceding logic has been satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case basis subject to approval by the Contracting Officer. Propose logic corrections to eliminate all out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated project schedule..

3.3.7. Negative Lags and Start to Finish Relationships

Lag durations contained in the project schedule shall not have a negative value. Do not use Start to Finish relationships (SF).

3.3.8. Calculation Mode

Schedule calculations shall retain the logic between predecessors and successors even when the successor activity starts and the predecessor activity has not finished. Software features that in effect sever the tie between predecessor and successor activities when the successor has started and the predecessor logic is not satisfied (“progress override”) will not be allowed.

3.3.9. Milestones

Include milestone activities for each significant project event including but not limited to: milestone activities for each fast track design package released for construction; design complete; foundation/substructure construction complete; superstructure construction complete; building dry-in or enclosure complete to allow the initiation of finish activities; permanent power complete; and building systems commissioning complete.

3.3.10. Use of Primavera “P6”

If P6 is being used, the following settings are mandatory in the Preliminary Project Schedule, Initial Project Schedule and all schedule submissions to the Government:

3.3.10.1. Activity Codes shall be Project Level not Global or EPS level.

3.3.10.2. Calendars shall be Project Level not Global or Resource level.

3.3.10.3. Set Activity Duration Types to "Fixed Duration & Units".

3.3.10.4. Set Percent Complete Types to "Physical".

3.3.10.5. Use Default Time Period Admin Preferences "8.0 hr/day, 40 hr/week, 172 hr/month, 2000 hr/year". Set Calendar Work Hours/Day to 8.0 Hour days. This is not to mandate the Contractor's work week. Alternate workweeks may be set up in "Calendar Settings".

3.3.10.6. Set Schedule Option for defining Critical Activities "Longest Path".

3.3.10.7. Set Schedule Option for defining progressed activities "Retained Logic".

3.3.10.8. Set up Cost loading a single lump sum Resource. The Price/Unit shall be $1/hr, Default Units/Time shall be "8h/d", and select settings "Auto Compute Actuals" and "Calculate costs from units".

3.3.10.9. Activity ID's shall not exceed 10 characters.

3.3.10.10. Activity Names shall have the most defining and detailed description within the first 30 characters.

3.4. PROJECT SCHEDULE SUBMISSIONS

Provide the submissions as described below. The data CD, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS.

3.4.1. Preliminary Project Schedule Submission

Submit the Preliminary Project Schedule, defining the Contractor's planned operations for the first 90 calendar days for approval within 15 calendar days after the NTP is acknowledged. The approved Preliminary Project Schedule will be used for payment purposes not to exceed 90 calendar days after NTP. Completely cost load the Preliminary Project Schedule to balance the contract award CLINS shown on the Price Schedule. Detail it for the first 90 calendar days. It may be summary in nature for the remaining performance period. It must be early start and late finish constrained and logically tied as previously specified. The Preliminary Project Schedule forms the basis for the Initial Project Schedule specified herein and must include all of the required Plan and Program preparations, submissions and approvals identified in the contract (for example, Quality Control Plan, Safety Plan, and Environmental Protection Plan) as well as design activities, the planned submissions of all early design packages, permitting activities, design review conference activities and other non-construction activities intended to occur within the first 90 calendar days. Schedule any construction activities planned for the first 90 calendar days after NTP. Constrain planned construction activities by Government acceptance of the associated design package(s) and all other specified Program and Plan approvals. Activity code any activities that are summary in nature after the first 90 calendar days with Responsibility Code (RESP) and Feature of Work code (FOW1, FOW2, FOW3)

3.4.2. Initial Project Schedule Submission

Submit the Initial Project Schedule for approval within 42 calendar days after NTP. The schedule shall demonstrate a reasonable and realistic sequence of activities which represent all work through the entire contract performance period. The Initial Schedule shall be at a reasonable level of detail as determined by the Contracting Officer. Include detailed design and permitting activities, including but not limited to identification of individual design packages, design submission, reviews and conferences; permit submissions and any required Government actions; and long lead procurement activities required prior to design completion. The Initial Project Schedule shall include the entire construction sequence and all fast track construction activities, with as much detail as is known at the time but, as a minimum, shall include all construction start and completion milestone activities, and detailed construction activities through the dry-in milestone, including all activity coding and cost loading. Include the remaining construction, including cost loading, but it may be scheduled summary in nature. As the design proceeds and design

packages are developed, fully detail the remaining construction activities concurrent with the monthly schedule updating process. Constrain construction activities by Government acceptance of associated designs. When the design is complete, incorporate into the then approved schedule update all remaining detailed construction activities that are planned to occur after the dry-in milestone.

3.4.3. Design Package Schedule Submission:

With each design package submitted to the Government, submit a frag-net schedule extracted from the then current Preliminary, Initial or Updated schedule which covers the activities associated with that Design Package including construction, procurement and permitting activities.

3.4.4. Periodic Schedule Updates

Based on the result of the meeting specified in PERIODIC SCHEDULE UPDATE MEETINGS, submit periodic schedule updates. These submissions shall enable the Contracting Officer to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgment of the Contracting Officer or authorized representative is necessary for verifying the Contractor's progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made. Update the schedule to include detailed lower WBS activities procurement and construction activities as the design progresses, but not later than the submission of the final, un-reviewed design submission for each separate design package. The Contracting Officer may require submission of detailed schedule activities for any distinct construction that is started prior to submission of a final design submission, if such activity is authorized.

3.4.5. Standard Activity Coding Dictionary

Use the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11, Appendix A. This exact structure is mandatory, even if some fields are not used. A template SDEF compatible schedule backup file (sdef.prx) is available on the QCS website: http://rms.usace.army.mil .

The SDEF format is as follows:

Field	Activity Code	Length	Description
1	WRKP	3	Workers per Day
2	RESP	4	Responsible Party (e.g. GC, subcontractor, USACE)
3	AREA	4	Area of Work
4	MODF	6	Modification or REA number
5	BIDI	6	Bid Item (CLIN)
6	PHAS	2	Phase of Work
7	CATW	1	Category of Work
8	FOW1	10	Feature of Work (used up to 10 characters in length)

9	FOW2	10	Feature of Work (used up to 20 characters in length)
10	FOW3	10	Feature of Work (used up to 30 characters in length)

3.5. SUBMISSION REQUIREMENTS

Submit the following items for the Preliminary Schedule, Initial Schedule, and every Periodic Schedule Update throughout the life of the project:

3.5.1. Data CD's

Provide two sets of data CD's containing the project schedule in the backup format. Each CD shall also contain all previous update backup files. File medium shall be CD. Label each CD, indicating the type of schedule (Preliminary, Initial, Update), full contract number, Data Date and file names. Each schedule shall have a unique file name as determined by the Contractor.

3.5.2. Narrative Report

Provide a Narrative Report with the Preliminary, Initial, and each Periodic Update of the project schedule, as the basis of the progress payment request. The Narrative Report shall include: a description of activities along the 2 most critical paths where the total float is less than or equal to 20 work days, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken. The narrative report is expected to communicate to the Government, the Contractor's thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through its analysis. Identify and explain why any activities that, based their calculated late dates, should have either started or finished during the update period but did not.

3.5.3. Approved Changes Verification

Include only those project schedule changes in the schedule submission that have been previously approved by the Contracting Officer. The Narrative Report shall specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

3.5.4. Schedule Reports

The format, filtering, organizing and sorting for each schedule report shall be as directed by the Contracting Officer. Typically reports shall contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date Total Float, Actual Start Date, Actual Finish Date, and Percent Complete. The following lists typical reports that will be requested. One or all of these reports may be requested for each schedule submission.

3.5.4.1. Activity Report

A list of all activities sorted according to activity number.

3.5.4.2. Logic Report

A list of detailed predecessor and successor activities for every activity in ascending order sorted by activity number.

3.5.4.3. Total Float Report

A list of all incomplete activities sorted in ascending order of total float. List activities which have the same amount of total float in ascending order of Early Start Dates. Do not show completed activities on this report.

3.5.4.4. Earnings Report by CLIN

A compilation of the Contractor's Total Earnings on the project from the NTP to the data date. This report shall reflect the earnings of specific activities based on the agreements made in the schedule update meeting defined herein. Provided that the Contractor has provided a complete schedule update, this report shall serve as the basis of determining progress payments. Group activities by CLIN Item number and sort by activity number. This report shall: sum all activities coded to a particular CLIN and provide a CLIN Item percent earned value; and complete and sum CLIN items to provide a total project percent complete. The printed report shall contain, for each activity: the Activity Number, Activity Description, Original Budgeted Amount, Quantity to Date, Percent Complete (based on cost), and Earnings to Date.

3.5.5. Network Diagram

The network diagram is required for the Preliminary, Initial and Periodic Updates. Depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.5.1. Continuous Flow

Show a continuous flow from left to right with no arrows from right to left. Show the activity number, description, duration, and estimated earned value on the diagram.

3.5.5.2. Project Milestone Dates

Show dates on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.5.5.3. Critical Path

Clearly show the critical path.

3.5.5.4. Banding

Organize activities as directed to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.

3.5.5.5. S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

3.6. PERIODIC SCHEDULE UPDATE MEETINGS

Conduct periodic schedule update meetings for the purposes of reviewing the Contractor’s proposed out of sequence corrections, determining causes for delay, correcting logic, maintaining schedule accuracy and determining earned value. Meetings shall occur at least monthly within five days of the proposed schedule data date and after the Contractor has updated the schedule with Government concurrence respecting actual start dates, actual finish dates, remaining durations and percent complete for each activity it intend to status. Match the acutal start and finish dates with the dates exported, as described in paragraph 3.3.5. Provide a computer with the scheduling software loaded and a projector during the meeting which allows all meeting participants to view the proposed schedule update during the meeting.

The meeting and resultant approvable schedule update shall be a condition precedent to a formal submission of the update as described in SUBMISSION REQUIREMENTS and to the submission of an invoice for payment. The meeting will be a working interactive exchange which will allow the Government and the Contractor the opportunity review the updated schedule on a real time and interactive basis. The Contractor's authorized scheduling representative will organize, sort, filter and schedule the update as requested by the Government. The meeting will last no longer than 8 hours. A rough draft of the proposed activity logic corrections and narrative report shall be provided to the Government 48 hours in advance of the meeting. The Contractor's Project Manager and Authorized Scheduler shall attend the meeting with the Authorized Representative of the Contracting Officer.

3.6.1. Update Submission Following Progress Meeting

Submit a complete update of the project schedule containing all approved progress, revisions, and adjustments, pursuant to paragraph SUBMISSION REQUIREMENTS not later than 4 working days after the periodic schedule update meeting, reflecting only those changes made during the previous update meeting.

3.6.2. Status of Activities

Update statusing information, including Actual Start Dates (AS), Actual Finish Dates (AF), Remaining Durations (RD) and Percent Complete shall be subject to the approval of the Government prior to the meeting. As a minimum, address the following items on an activity by activity basis during each progress meeting:

3.6.2.1. Actual Start and Finish Dates

Accurately status the AS and/or AF dates for each activity currently in-progress or completed since the last update The Government may allow an AF date to be assigned with the percent complete less than 100% to account for the value of work remaining but not restraining successor activities. Only assign AS dates when actual progress occurs on an activity.

3.6.2.2. Remaining Duration

Update the estimated RD for all incomplete activities independent of Percent Complete. Remaining durations may exceed the activity OD or may exceed the activity's prior update RD if the Government considers the current OD or RD to be understated based on current progress, insufficient work crews actually manning the job, unrealistic OD or deficiencies that must be corrected that restrain successor activities.

3.6.2.3. Percent Complete

Update the percent complete for each activity started based on the realistic assessment of earned value. Activities which are complete but for remaining minor punch list work and which do not restrain the initiation of successor activities may be statused 100 percent complete. To allow for proper schedule management, cost load the correction of punch list from Government pre-final inspection activity(ies) not less than 1% of the total contract value, which activity(ies) may be declared 100 percent complete upon completion and correction of all punch list work identified during Government pre-final inspection(s).

3.6.2.4. Logic Changes

Specifically identify and discuss all logic changes pertaining to NTP on change orders, change orders to be incorporated into the schedule, contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, and other changes that have been made pursuant to contract provisions. The Government will only approve logic revisions for the purpose of keeping the

schedule valid in terms of its usefulness in calculating a realistic completion date, correcting erroneous logic ties, and accurately sequencing the work.

3.6.2.5. Other Changes

Other changes required due to delays in completion of any activity or group of activities include: 1) delays beyond the Contractor's control, such as strikes and unusual weather. 2) delays encountered due to submittals, Government Activities, deliveries or work stoppages which make re-planning the work necessary. 3) Changes required to correct a schedule that does not represent the actual or planned prosecution and progress of the work.

3.7. REQUESTS FOR TIME EXTENSIONS

In the event the Contractor believes it is entitled to an extension of the contract performance period, completion date, or any interim milestone date, furnish the following for a determination by the Contracting Officer: justification, project schedule data, and supporting evidence as the Contracting Officer may deem necessary. Submission of proof of excusable delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is a condition precedent to any approvals by the Government. In response to each Request For Proposal issued by the Government, the Contractor shall submit a schedule impact analysis demonstrating whether or not the change contemplated by the Government impacts the critical path.

3.7.1. Justification of Delay

The project schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with its request. The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in effect for the time period in question, and other factual information.

Actual delays that are found to be caused by the Contractor's own actions, which result in a calculated schedule delay, will not be a cause for an extension to the performance period, completion date, or any interim milestone date.

3.7.2. Submission Requirements

Submit a justification for each request for a change in the contract completion date of less than 2 weeks based upon the most recent schedule update at the time of the NTP or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

3.7.2.1. A list of affected activities, with their associated project schedule activity number.

3.7.2.2. A brief explanation of the causes of the change

3.7.2.3. An analysis of the overall impact of the changes proposed.

3.7.2.4. A sub-network of the affected area

Identify activities impacted in each justification for change by a unique activity code contained in the required data file.

3.7.3. Additional Submission Requirements

The Contracting Officer may request an interim update with revised activities for any requested time extension of over 2 weeks. Provide this disk within 4 days of the Contracting Officer's request.

3.7.4. If Progress Falls Behind the Approved Project Schedule

3.7.4.1. Should progress fall behind the approved schedule (more than 20 work days of negative float) due to Contractor generated problems, promptly provide a supplemental recovery or completion schedule that illustrates its efforts to regain time to assure a completion by the required contract completion date.

3.7.4.2. The supplemental recovery or completion schedule will not replace the original, approved schedule as the official contract schedule. Continue to update the original, approved schedule on at least a monthly basis. In addition, the Contractor and the Contracting Officer will monitor the supplemental recovery or completion schedule on at least a bi-weekly basis to determine its effect on regaining the rate of progress to assure project completion by the contractually required completion date.

3.7.4.3. Do not artificially improve progress by simply revising the schedule logic, modifying or adding constraints, or shortening future work activity durations. Resource and manpower load the supplemental recovery schedule or completion schedule with crew size and productivity for each remaining activity, indicating overtime, weekend work, and/or double shifts needed to regain the schedule, in accordance with FAR 52.236.15, without additional cost to the Government. Indicate assumptions made and the basis for any logic, constraint, or duration changes used in the creation of the supplemental recovery or completion schedule in a narrative submitted for the Contracting Officer’s approval. Any additional resources or manpower must be evident at the work site. Do not modify the official contract schedule to include these assumptions.

3.7.4.4. Failure to perform work and maintain progress in accordance with the supplemental recovery or completion schedule may result in an interim and final unsatisfactory performance rating and/or may result in corrective action by the Contracting Officer in accordance with FAR 52.236-15.

3.8. DIRECTED CHANGES

If the NTP is issued for changes prior to settlement of price and/or time, submit proposed schedule revisions to the Contracting Officer within 2 weeks of the NTP being issued. The Contracting Officer will approve proposed revisions to the schedule prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor with suggested revisions to the project schedule. The Contractor shall include these revisions in the project schedule until revisions are submitted and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, advise the Contracting Officer within 2 weeks of receipt of the revisions. Regardless of the objections, the Contractor shall continue to update the schedule with the Contracting Officer's revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit alternative revisions within 2 weeks of receipt of the Contracting Officer's proposed revisions, the Contractor will be deemed to have concurred with the Contracting Officer's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

3.9. WEEKLY PROGRESS MEETINGS

3.9.1. The Government and the Contractor shall meet weekly (or as otherwise mutually agreed to) between the meetings described in paragraph PERIODIC SCHEDULE UPDATE MEETINGS for the purpose of jointly reviewing the actual progress of the project as compared to the as planned progress and to review planned activities for the upcoming two weeks. The then current and approved schedule update shall be used for the purposes of this meeting and for the production and review of reports. The Contractor’s Project Manager and the Authorized Representative of the Contracting Officer shall attend. The weekly progress meeting will address the status of RFI’s, RFP’s and Submittals.

3.9.2. Provide a bar chart produced by the scheduling software, organized by Total Float and Sorted by Early Start Date, and a two week “look-ahead” schedule by filtering all schedule activities to show only

current ongoing activities and activities schedule to start during the upcoming two weeks, organized by Work Area Code (AREA) and sorted by Early Start Date.

3.9.3. The Government and the Contractor shall jointly review the reports. If it appears that activities on the longest path(s) which are currently driving the calculated completion date (driving activities), are not progressing satisfactorily and therefore could jeopardize timely project completion, corrective action must be taken immediately. Corrective action includes but is not limited to: increasing the number of work crews; increasing the number of work shifts; increasing the number of hours worked per shift; and determining if Government responsibility coded activities require Government corrective action.

3.10. OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

3.11. TRANSFER OF SCHEDULE DATA INTO RMS/QCS

Download and upload the schedule data into the Resident Management System (RMS) prior to RMS databases being transferred to the Government and is considered to be additional supporting data in a form and detail required by the Contracting Officer pursuant to FAR 52.232-5 - Payments under Fixed-Price Construction Contracts. The receipt of a proper payment request pursuant to FAR 52.232-27 - Prompt Payment for Construction Contracts is contingent upon the Government receiving both acceptable and approvable hard copies and electronic export from QCS of the application for progress payment.

End of Section 01 32 01.00 10

SECTION 01 33 00
SUBMITTAL PROCEDURES

1.0 GENERAL

1.1. DEFINITIONS

1.2. NOT USED

1.3. SUBMITTAL CLASSIFICATION

1.4. APPROVED OR CONCURRED WITH SUBMITTALS

1.5. DISAPPROVED SUBMITTALS

1.6. WITHHOLDING OF PAYMENT

1.7. GENERAL

1.8. SUBMITTAL REGISTER

1.9. SCHEDULING

1.10. TRANSMITTAL FORM (ENG FORM 4025)

1.11. SUBMITTAL PROCEDURES

1.12. CONTROL OF SUBMITTALS

1.13. GOVERNMENT APPROVED SUBMITTALS

1.14. INFORMATION ONLY SUBMITTALS

1.15. STAMPS

1.0 GENERAL

1.1. DEFINITIONS

1.1.1. Submittal

Contract Clauses "FAR 52.236-5, Material and Workmanship," paragraph (b) and "FAR 52.236-21, Specifications and Drawings for Construction," paragraphs (d), (e), and (f) apply to all "submittals."

1.1.2. Submittal Descriptions (SD)

Submittals requirements are specified in the technical sections. Submittals are identified by SD numbers and titles as follows.

SD-01 Preconstruction Submittals

- Certificates of insurance.
- Surety bonds.
- List of proposed subcontractors.
- List of proposed products.
- Construction Progress Schedule.
- Submittal register.
- Schedule of prices.
- Accident Prevention Plan.
- Work plan.
- Quality control plan.
- Environmental protection plan.

SD-02 Shop Drawings

- Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.
- Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.
- Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

- Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials or equipment for some portion of the work.
- Samples of warranty language when the contract requires extended product warranties.

SD-04 Samples

- Physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged.
- Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project.
- Field samples and mock-ups constructed on the project site establish standards by which the ensuring work can be judged. Includes assemblies or portions of assemblies that are to be incorporated into the project and those which will be removed at conclusion of the work.

SD-05 Design Data

- Calculations, mix designs, analyses or other data pertaining to a part of work.
- Design submittals, design substantiation submittals and extensions of design submittals.

SD-06 Test Reports

- Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)
- Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.
- Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.
- Investigation reports.
- Daily checklists.
- Final acceptance test and operational test procedure.

SD-07 Certificates

- Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.
- Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.
- Confined space entry permits.
- Text of posted operating instructions.

SD-08 Manufacturer's Instructions

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

SD-09 Manufacturer's Field Reports

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

SD-10 Operation and Maintenance Data

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

SD-11 Closeout Submittals

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

1.1.3. Approving Authority

Office authorized to approve submittal.

1.1.4. Work

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

1.2. NOT USED

1.3. SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.3.1. Designer of Record Approved (DA)

1.3.1.1. Designer of Record (DOR) approval is required for all extensions of design, critical materials, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings". Provide the Government the number of copies designated hereinafter of all DOR approved submittals, after the DOR has taken appropriate action. The DOR shall ensure that submittals conform to the Solicitation, the Accepted Proposal and the completed design, however see below for those submittals proposing a deviation to the contract or a substitution of a material, system, or piece of equipment that was identified by manufacturer, brand name or model description in the accepted contract proposal.

1.3.1.2. The DOR shall ensure that the submittals comply with all applicable Buy American Act and Trade Agreement Act clauses in the contract. The DOR may confer with the Contracting Officer's Representative for advice and interpretation of those clauses, as necessary.

1.3.1.3. The Government may, but is not required to, review any or all DOR approved submittals for conformance to the solicitation, accepted proposal and the completed design. Except for submittals designated as deviating from the Solicitation, the Accepted Proposal or completed design, the Contractor may proceed with acquisition and installation upon DOR approval. Government Approved (GA)

1.3.2. Government Approved (GA)

Government approval is required for any item specifically designated as requiring Government approval in the Solicitation, for internal and external color finish selections and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.3.3. Government Conformance Review of Design (CR)

The Government will review all intermediate and final design submittals for conformance with the technical requirements of the solicitation. Section 01 33 16 **DESIGN AFTER AWARD** covers the design submittal and review process in detail. Review will be only for conformance with the applicable codes, standards and contract requirements. Design data includes the design documents described in Section 01 33 16 **DESIGN AFTER AWARD**. Generally, design submittals should be identified as SD-05 Design Data submittals.

1.3.4. Designer of Record Approved/Government Conformance Review (DA/CR)

1.3.4.1. Deviations to the Accepted Design. Designer of Record approval and the Government’s concurrence are required for any proposed deviation from the accepted design which still complies with the contract (the Solicitation and Accepted Proposal) before the Contractor is authorized to proceed with material acquisition or installation. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings.” If necessary to facilitate the project schedule, the Contractor and the DOR may discuss a submittal proposing a deviation with the Contracting Officer's Representative prior to officially submitting it to the Government. However, the Government reserves the right to review the submittal before providing an opinion, if it deems it necessary. In any case, the Government will not formally agree to or provide a preliminary opinion on any deviation without the DOR's approval or recommended approval. The Government reserves the right to non-concur with any deviation from the design, which may impact furniture, furnishings, equipment selections or operations decisions that were made, based on the reviewed and concurred design.

1.3.4.2. Substitutions. Unless prohibited or provided for otherwise elsewhere in the Contract, where the accepted contract proposal named products, systems, materials or equipment by manufacturer, brand name and/or by model number or other specific identification, and the Contractor desires to substitute manufacturer or model after award, submit a requested substitution for Government concurrence. Include substantiation, identifying information and the DOR's approval, as meeting the contract requirements and that it is equal in function, performance, quality and salient features to that in the accepted contract proposal.

1.3.5. Designer of Record Approved/Government Approved (DA/GA)

Any proposed deviation to the solicitation and/or the accepted proposal constitutes a change to the contract. In addition to the above stated requirements for proposed deviations to the accepted design, both Designer of Record and Government Approval and, where applicable, a contract modification are required before the Contractor is authorized to proceed with material acquisition or installation for any proposed deviation to the contract. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings". The Government reserves the right to accept or reject any such proposed deviation at its discretion.

1.3.6. Information Only

All submittals not requiring Designer of Record or Government approval will be for information only. Provide the Government "For Information Only" copies of all submittals not requiring Government approval or concurrence, after the Designer of Record has taken the appropriate action.

1.4. APPROVED OR CONCURRED WITH SUBMITTALS

Do not construe the Contracting Officer's approval of or concurrence with submittals as a complete check, but only that design, general method of construction, materials, detailing and other information appear to meet the Solicitation and Accepted Proposal. Approval or concurrence will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for design, dimensions, all design extensions, such as the design of adequate connections and details, etc., and the satisfactory construction of all work. The Government won't consider re-submittals for the purpose of substituting previously approved materials or equipment unless accompanied by an explanation of why a substitution is necessary.

1.5. DISAPPROVED SUBMITTALS

Make all corrections required by the Contracting Officer, obtain the Designer of Record's approval when applicable, and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. Resubmit any "information only" submittal found to contain errors or unapproved deviations from the Solicitation or Accepted Proposal as one requiring "approval" action, requiring both Designer of Record and Government approval. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, provide prompt notice in accordance with the Contract Clause "Changes" to the Contracting Officer.

1.6. WITHHOLDING OF PAYMENT

No payment for materials incorporated in the work will be made if all required Designer of Record or required Government approvals have not been obtained. No payment will be made for any materials incorporated into the work for any conformance review submittals or information only submittals found to contain errors or deviations from the Solicitation or Accepted Proposal.

1.7. GENERAL

Make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, the Contractor's Quality Control (CQC) System Manager and the Designer of Record, if applicable, shall check, approve, sign, and stamp all items, indicating action taken. Clearly idenify proposed deviations from the contract requirements. Include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Schedule and make submittals requiring Government approval prior to the acquisition of the material or equipment covered thereby. Pick up and dispose of samples remaining upon completion of the work in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.8. SUBMITTAL REGISTER (GA)

Develop a complete list of submittals, including each separate design package submittal. Submit the initial submittal register within 15 days after Notice to Proceed, including, as a minimum, the design packages and other initial submittals required elsewhere in the contract. The Designer of Record shall identify required submittals in the specifications, and use the list to prepare the Submittal Register, utilizing the government-provided software, QCS (see Section 01 45 01.10), to create the ENG Form 4288. Appendix R is a preliminary submittal register input form for use with the Quality Management System and the Resident Office Management System (QCS and RMS). The Government will provide the Contractor the actual Excel Spreadsheet version of this sample input form after award to modify and to use for input into QCS. The Excel Spreadsheet is not totally inputable into QCS, so additional keystroke input will be necessary. The sample input form is not all-inclusive. In addition, additional submittals may be required by other parts of the contract. After award, the parties will meet to discuss contract specific (or task order specific for a task order contract) distribution for the submittals all-inclusive and additional submittals may be required by other parts of the contract. Develop and complete the submittal register as the design is completed. Submit it to the Contracting Officer with the un-reviewed final design package submission or as soon as the design specifications are completed, if before the final design submission. When applicable, if the Contractor elects to fast track design and construction, using multiple design package submissions, update the submittal register to reflect the submittals associated with each design submission, clearly denoting all revisions to the previous submission. The submittal register serves as a scheduling document for submittals and for control of submittal actions throughout the contract period. Coordinate the submit dates and need dates used in the submittal register with dates in the Contractor prepared progress schedule. Submit monthly updates to the submittal register showing the Contractor action codes and actual dates with Government action codes and actual dates or until all submittals have been satisfactorily completed. Revise and submit the submittal register when revising the progress schedule.

1.9. SCHEDULING

Schedule submittals covering component items forming a system or items that are interrelated to be coordinated and submitted concurrently. Schedule certifications to be submitted with the pertinent drawings. Allow adequate time (a minimum of 15 calendar days exclusive of mailing time) and show on the register for those items requiring Government approval or concurrence. No delay damages or time extensions will be allowed for time lost in late submittals by the Contractor.

1.10. TRANSMITTAL FORM (ENG FORM 4025)

Use the transmittal form (ENG Form 4025) for submitting submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor or are included in the QCS software if the Contractor is required to use QCS for this contract. Use a separate transmittal form for each specification section Complete this form by filling out all the heading blank spaces and identify

each item submitted. Exercise special care to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

1.11. SUBMITTAL PROCEDURES

Make submittals as follows:

1.11.1. Procedures

The Government will further discuss detailed submittal procedures with the Contractor at the Post-Award Conference.

1.11.2. Deviations

For submittals which include proposed deviations requested by the Contractor, check the column "variation" of ENG Form 4025. Set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.12. CONTROL OF SUBMITTALS

Carefully control his procurement operations to ensure that each individual submittal is made on or before the scheduled submittal date shown on the approved "Submittal Register."

1.13. GOVERNMENT APPROVED OR CONCURRED WITH SUBMITTALS

Upon completion of review of submittals requiring Government approval or concurrence, the Government will stamp and date the submittals as approved or concurred.. The Government will retain four (4) copies of the submittal and return zero(0) copy(ies) of the submittal.

1.14. INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe. The Government will retain zero(0) copies of information only submittals.

1.15. STAMPS

Use stamps similar to the following on the submittal data to certify that the submittal meets contract requirements:

CONTRACTOR

(FIRM NAME)

_____ Approved

_____

Approved with corrections as noted on submittal data and/or attached sheet(s)

_____

Signature: _____

Title: _____

Date: _____

For design-build construction, both the Contractor Quality Control System Manager and the Designer of Record shall stamp and sign to certify that the submittal meets contract requirements.

SECTION 01 33 16
DESIGN AFTER AWARD

1.0 GENERAL INFORMATION

1.1. INTRODUCTION

1.2. DESIGNER OF RECORD

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. PRE-WORK ACTIVIES & CONFERENCES

3.1.1. Design Quality Control Plan

3.1.2. Post Award Conference

3.1.3. Partnering & Project Progress Processes

3.1.4. Initial Design Conference

3.1.5. Pre-Construction Conference

3.2. STAGES OF DESIGN SUBMITTALS AND OVER THE SHOULDER PROGRESS REVIEWS

3.2.1. Site/Utilities

3.2.2. Interim Design Submittals

3.2.3. Over-the-Shoulder Progress Reviews

3.2.4. Final Design Submissions

3.2.5. Design Complete Submittals

3.2.6. Holiday Periods for Government Review or Actions

3.2.7. Late Submittals and Reviews

3.3. DESIGN CONFIGURATION MANAGEMENT

3.3.1. Procedures

3.3.2. Tracking Design Review Comments

3.3.3. Design and Code Checklists

3.4. INTERIM DESIGN REVIEWS AND CONFERENCES

3.4.1. General

3.4.2. Procedures

3.4.3. Conference Documentation

3.5. INTERIM DESIGN REQUIREMENTS

3.5.1. Drawings

3.5.2. Design Analyses

3.5.3. Geotechnical Investigations and Reports

3.5.4. LEED Documentation

3.5.5. Energy Conservation

3.5.6. Specifications

3.5.7. Building Rendering

3.5.8. Interim Building Design Contents

3.6. FINAL DESIGN REVIEWS AND CONFERENCES

3.7. FINAL DESIGN REQUIREMENTS

3.7.1. Drawings

3.7.2. Design Analysis

3.7.3. Specifications

3.7.4. Submittal Register

3.7.5. Preparation of DD Form 1354 (Transfer of Real Property)

3.7.6. Acceptance and Release for Construction

3.8. DESIGN COMPLETE CONSTRUCTION DOCUMENT REQUIREMENTS

3.9. SUBMITTAL DISTRIBUTION, MEDIA AND QUANTITIES

3.9.1. Submittal Distribution and Quantities

3.9.2. Web based Design Submittals

3.9.3. Mailing of Design Submittals

3.10. AS-BUILT DOCUMENTS

ATTACHMENT A STRUCTURAL INTERIOR DESIGN (SID) REQUIREMENTS

ATTACHMENT B FURNITURE, FIXTURES AND EQUIPMENT REQUIREMENTS

ATTACHMENT C TRACKING COMMENTS IN DRCHECKS

ATTACHMENT D SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW

ATTACHMENT E LEED SUBMITTALS

ATTACHMENT F BUILDING INFORMATION MODELING REQUIREMENTS

ATTACHMENT G DESIGN SUBMITTAL DIRECTORY AND SUBDIRECTORY FILE ARRANGEMENT

1.0 GENERAL INFORMATION

1.1. INTRODUCTION

1.1.1. The information contained in this section applies to the design required after award. After award, the Contractor will develop the accepted proposal into the completed design, as described herein.

1.1.2. The Contractor may elect to fast track the design and construction that is, proceed with construction of parts of the sitework and facilities prior to completion of the overall design. To facilitate fast tracking, the Contractor may elect to divide the design into no more than six (6) design packages per major facility type and no more than three (3) design packages for site and associated work. Designate how it will package the design, consistent with its overall plan for permitting (where applicable) and construction of the project. See Sections 01 33 00 SUBMITTAL PROCEDURES and 01 32 01.00 10 PROJECT SCHEDULE for requirements for identifying and scheduling the design packaging plan in the submittal register and project schedule. See also Sections 01 10 00 STATEMENT OF WORK and 01 57 20.00 10 ENVIRONMENTAL PROTECTION for any specified permit requirements. If early procurement of long-lead item construction materials or installed equipment, prior to completion of the associated design package, is necessary to facilitate the project schedule, also identify those long-lead items and how it will assure design integrity of the associated design package to meet the contract requirements (The Contract consists of the Solicitation requirements and the accepted proposal). Once the Government is satisfied that the long-lead items meet the contract requirements, the Contracting Officer will allow the Contractor to procure the items at its own risk.

1.1.3. The Contractor may proceed with the construction work included in a separate design package after the Government has reviewed the final (100%) design submission for that package, review comments have been addressed and resolved to the Government's satisfaction and the Contracting Officer (or the Administrative Contracting Officer) has agreed that the design package may be released for construction.

1.1.4. INTEGRATED DESIGN. To the maximum extent permitted for this project, use a collaborative, integrated design process for all stages of project delivery with comprehensive performance goals for siting, energy, water, materials and indoor environmental quality and ensures incorporation of these goals. Consider all stages of the building lifecycle, including deconstruction.

1.2. DESIGNER OF RECORD

Identify, for approval, the Designer of Record (“DOR”) that will be responsible for each area of design. One DOR may be responsible for more than one area. Listed, Professional Registered, DOR(s) shall account for all areas of design disciplines. The DOR’s shall stamp, sign, and date each design drawing and other design deliverables under their responsible discipline at each design submittal stage (see contract clause Registration of Designers). If the deliverables are not ready for release for construction, identify them as "preliminary" or "not for release for construction" or by using some other appropriate designation. The DOR(s) shall also be responsible for maintaining the integrity of the design and for compliance with the contract requirements through construction and documentation of the as-built condition by coordination, review and approval of extensions of design, material, equipment and other construction submittals, review and approval or disapproval of requested deviations to the accepted design or to the contract, coordination with the Government of the above activities, and by performing other typical professional designer responsibilities.

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. PRE-WORK ACTIVITIES & CONFERENCES

3.1.1. Design Quality Control Plan

Submit for Government acceptance, a Design Quality Control Plan in accordance with Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL before design may proceed.

3.1.2. Post Award Conference

3.1.2.1. The government will conduct a post award contract administration conference at the project site, as soon as possible after contract award. This will be coordinated with issuance of the contract notice to proceed (NTP). The Contractor and major sub-contractor representatives shall participate. All designers need not attend this first meeting. Government representatives will include COE project delivery team members, facility users, facility command representatives, and installation representatives. The Government will provide an agenda, meeting goals, meeting place, and meeting time to participants prior to the meeting.

3.1.2.2. The post award conference shall include determination and introduction of contact persons, their authorities, contract administration requirements, discussion of expected project progress processes, and coordination of subsequent meetings for quality control (see Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL), Partnering (see below and SCR: Partnering), and the initial design conference (see below).

3.1.2.3. The government will introduce COE project delivery team members, facility users, facility command representatives, and installation representatives. The DB Contractor shall introduce major subcontractors, and other needed staff. Expectations and duties of each person shall be defined for all participants. A meeting roster shall be developed and distributed by the government with complete contact information including name, office, project role, phone, mailing and physical address, and email address.

3.1.3. Partnering & Project Progress Processes

3.1.3.1. The initial Partnering conference may be scheduled and conducted at any time with or following the post award conference. The Government proposes to form a partnership with the DB Contractor to develop a cohesive building team. This partnership will involve the COE project delivery team members, facility users, facility command representatives, installation representatives, Designers of Record, major subcontractors, contractor quality control staff, and contractor construction management staff. This partnership will strive to develop a cooperative management team drawing on the strengths of each team member in an effort to achieve a quality project within budget and on schedule. This partnership will be bilateral in membership and participation will be totally voluntary. All costs, excluding labor and travel expenses, shall be shared equally between the Government and the Contractor. The Contractor and Government shall be responsible for their own labor and travel costs. Normally, partnering meetings will be held at or in the vicinity of the project installation.

3.1.3.2. As part of the partnering process, the Government and Contractor shall develop, establish, and agree to comprehensive design development processes including conduct of conferences, expectations of design development at conferences, fast-tracking, design acceptance, Structural Interior Design (SID)/ Furniture, Fixtures & Equipment (FF&E) design approval, project closeout, etc. The government will explain contract requirements and the DB Contractor shall review their proposed project schedule and suggest ways to streamline processes.

3.1.4. Initial Design Conference

The initial design conference may be scheduled and conducted at the project installation any time after the post award conference, although it is recommended that the partnering process be initiated with or before the initial design conference. Any design work conducted after award and prior to this conference should be limited to site and is discouraged for other items. All Designers of Record shall participate in

the conference. The purpose of the meeting is to introduce everyone and to make sure any needs the contractor has are assigned and due dates established as well as who will get the information. See also Attachment F, BUILDING INFORMATION MODELING REQUIREMENTS for discussion concerning the BIM Implementation Plan demonstration at this meeting. The DB Contractor shall conduct the initial design conference.

3.1.5. Pre-Construction Conference

Before starting construction activities, the Contractor and Government will jointly conduct a pre-construction administrative conference to discuss any outstanding requirements and to review local installation requirements for start of construction. It is possible there will be multiple Pre-Construction Conferences based on the content of the design packages selected by the Contractor. The Government will provide minutes of this meeting to all participants.

3.2. STAGES OF DESIGN SUBMITTALS AND OVER THE SHOULDER PROGRESS REVIEWS

The stages of design submittals described below define Government expectations with respect to process and content. The Contractor shall determine how to best plan and execute the design and review process for this project, within the parameters listed below. As a minimum, the Government expects to see at least one interim design submittal, at least one final design submittal before construction of a design package may proceed and at least one Design Complete submittal that documents the accepted design. The Contractor may sub-divide the design into separate packages for each stage of design and may proceed with construction of a package after the Government accepts the final design for that package. See discussion on waivers to submission of one or more intermediate design packages where the parties partner during the design process. See also Attachment F, BUILDING INFORMATION MODELING REQUIREMENTS for discussion concerning BIM and the various stages of design submittals and over-the-shoulder progress reviews**.**

3.2.1. Site/Utilities

To facilitate fast-track design-construction activities the contractor may submit a final (100%) site and utility design as the first design submittal or it may elect to submit interim and final site and utility design submittals as explained below. Following review, resolution, and incorporation of all Government comments, and submittal of a satisfactory set of site/utility design documents, after completing all other pre-construction requirements in this contract and after the pre-construction meeting, the Government will allow the Contractor to proceed with site development activities, including demolition where applicable, within the parameters set forth in the accepted design submittal. For the first site and utility design submission, whether an interim or final, the submittal review, comment, and resolution times from this specification apply, except that the Contractor shall allow the Government a 14 calendar day review period, exclusive of mailing time. No on-site construction activities shall begin prior to written Government clearance to proceed.

3.2.2. Interim Design Submittals

The Contractor may submit either a single interim design for review, representing a complete package with all design disciplines, or split the interim design into smaller, individual design packages as it deems necessary for fast-track construction purposes. As required in Section 01 32 01.00 10 PROJECT SCHEDULE, the Contractor shall schedule its design and construction packaging plan to meet the contract completion period. This submission is the Government's primary opportunity to review the design for conformance to the solicitation and to the accepted contract proposal and to the Building Codes at a point where required revisions may be still made, while minimizing lost design effort to keep the design on track with the contract requirements. The requirements for the interim design review submittals and review conferences are described hereinafter. This is not necessarily a hold point for the design process; the Contractor may designate the interim design submittal(s) as a snapshot and proceed with design development at its own risk. See below for a waiver, where the parties establish an effective

over-the-shoulder progress review procedure through the partnering process that would eliminate the need for or expedite a formal intermediate design review on one or more individual design packages.

3.2.3. Over-the-Shoulder Progress Reviews

To facilitate a streamlined design-build process, the Government and the Contractor may agree to one-on-one reviewer or small group reviews, electronically, on-line (if available within the Contractor's standard design practices) or at the Contractor's design offices or other agreed location, when practicable to the parties. The Government and Contractor will coordinate such reviews to minimize or eliminate disruptions to the design process. Any data required for these reviews shall normally be provided in electronic format, rather than in hard copy. If the Government and Contractor establish and implement an effective, mutually agreeable partnering procedure for regular (e.g., weekly) over-the shoulder review procedures that allow the Government reviewers the opportunity to keep fully informed of the progress, contents, design intent, design documentation, etc. of the design package, the Government will agree to waive or to expedite the formal intermediate design review period for that package. The Contractor shall still be required to submit the required intermediate design documentation, however the parties may agree to how that material will be provided, in lieu of a formal consolidated submission of the package. It should be noted that Government funding is extremely limited for non-local travel by design reviewers, so the maximum use of virtual teaming methods must be used. Some possible examples include electronic file sharing, interactive software with on-line or telephonic conferencing, televideo conferencing, etc. The Government must still perform its Code and Contract conformance reviews, so the Contractor is encouraged to partner with the reviewers to find ways to facilitate this process and to facilitate meeting or bettering the design-build schedule. The Contractor shall maintain a fully functional configuration management system as described herein to track design revisions, regardless of whether or not there is a need for a formal intermediate design review. The formal intermediate review procedures shall form the contractual basis for the official schedule, in the event that the partnering process determines that the formal intermediate review process to be best suited for efficient project execution. However, the Government pledges to support and promote the partnering process to work with the Contractor to find ways to better the design schedule.

3.2.4. Final Design Submissions

This submittal is required for each design package prior to Government acceptance of that design package for construction. The requirements for the final design submittal review conferences and the Government's acceptance for start of construction are described herein after.

3.2.5. Design Complete Submittals

After the final design submission and review conference for a design package, revise the design package to incorporate the comments generated and resolved in the final review conferences, perform and document a back-check review and submit the final, design complete documents, which shall represent released for construction documents. The requirements for the design complete submittals are described hereinafter.

3.2.6. Holiday Periods for Government Review or Actions

Do not schedule meetings, Government reviews or responses during the last two weeks of December or other designated Government Holidays (including Friday after Thanksgiving). Exclude such dates and periods from any durations specified herein for Government actions.

3.2.7. Late Submittals and Reviews

If the Contractor cannot meet its scheduled submittal date for a design package, it must revise the proposed submittal date and notify the government in writing, at least one (1) week prior to the submittal, in order to accommodate the Government reviewers' other scheduled activities. If a design submittal is

over one (1) day late in accordance with the latest revised design schedule, or if notification of a proposed design schedule change is less than seven (7) days from the anticipated design submission receipt date, the Government review period may be extended up to seven (7) days due to reviewers' schedule conflicts. If the Government is late in meeting its review commitment and the delay increases the Contractor's cost or delays completion of the project, the Suspension of Work and Defaults clauses provide the respective remedy or relief for the delay.

3.3. DESIGN CONFIGURATION MANAGEMENT

3.3.1. Procedures

Develop and maintain effective, acceptable design configuration management (DCM) procedures to control and track all revisions to the design documents after the Interim Design Submission through submission of the As-Built documents. During the design process, this will facilitate and help streamline the design and review schedule. After the final design is accepted, this process provides control of and documents revisions to the accepted design (See Special Contract Requirement: Deviating From the Accepted Design). The system shall include appropriate authorities and concurrences to authorize revisions, including documentation as to why the revision must be made. Include the DCM procedures in the Design Quality Control Plan. The DCM data shall be available to the Government reviewers at all times. The Contractor may use its own internal system with interactive Government concurrences, where necessary or may use the Government's "DrChecks Design Review and Checking System" (see below and Attachment C).

3.3.2. Tracking Design Review Comments

Although the Contractor may use its own internal system for overall design configuration management, the Government and the Contractor shall use the DrChecks Design Review and Checking System to initiate, respond to, resolve and track Government design compliance review comments. This system may be useful for other data which needs to be interactive or otherwise available for shared use and retrieval. See Attachment C for details on how to establish an account and set-up the DrChecks system for use on the project.

3.3.3. Design and Code Checklists

Develop and complete various discipline-specific checklists to be used during the design and quality control of each submittal. Submit these completed checklists with each design submittal, as applicable, as part of the project documentation. See Section 01 45 04.00 10 Contractor Quality Control, Attachment D for a Sample Fire Protection and Life Safety Code review checklist and Attachment E for LEED SUBMITTALS.

3.4. INTERIM DESIGN REVIEWS AND CONFERENCES

3.4.1. General

At least one interim design submittal, review and review conference is required for each design package (except that, per paragraph 3.2.1, the Contractor may skip the interim design submission and proceed directly to final design on the sitework and utilities package). The DB Contractor may include additional interim design conferences or over-the-shoulder reviews, as needed, to assure continued government concurrence with the design work. Include the interim submittal review periods and conferences in the project schedule and indicate what part of the design work is at what percentage of completion. The required interim design conferences shall be held when interim design requirements are reached as described below. See also Paragraph: **Over-the-Shoulder Progress Reviews** for a waiver to the formal interim design review.

3.4.2. Procedures

After receipt of an Interim Design submission, allow the Government fourteen (14) calendar days after receipt of the submission to review and comment on the interim design submittal. For smaller design packages, especially those that involve only one or a few separate design disciplines, the parties may agree on a shorter review period or alternative review methods (e.g., over-the–shoulder or electronic file sharing), through the partnering process. For each interim design review submittal, the COR will furnish, to the Contractor, a single consolidated, validated listing of all comments from the various design sections and from other concerned agencies involved in the review process using the DrChecks Design Review and Checking System. The review will be for conformance with the technical requirements of the solicitation and the Contractor's RFP proposal. If the Contractor disagrees technically with any comment or comments and does not intend to comply with the comment, he/she must clearly outline, with ample justification, the reasons for noncompliance within five (5) days after receipt of these comments in order that the comment can be resolved. Furnish disposition of all comments, in writing, through DrChecks. The Contractor is cautioned that if it believes the action required by any comment exceeds the requirements of this contract, that it should take no action and notify the COR in writing immediately. The Interim Review conference will be held for each design submittal at the installation. Bring the personnel that developed the design submittal to the review conference. The conference will take place the week after the receipt of the comments by the Contractor. For smaller fast-track packages that involve only a few reviewers, the parties may agree to alternative conferencing methods, such as teleconferencing, or televideo, where available, as determined through Partnering.

3.4.3. Conference Documentation

3.4.3.1. In order to facilitate and accelerate the Government code and contract conformance reviews, identify, track resolution of and maintain all comments and action items generated during the design process and make this available to the designers and reviewers prior to the Interim and subsequent design reviews.

3.4.3.2. The DB Contractor shall prepare meeting minutes and enter final resolution of all comments into DrChecks. Copies of comments, annotated with comment action agreed on, will be made available to all parties before the conference adjourns. Unresolved problems will be resolved by immediate follow-on action at the end of conferences. Incorporate valid comments. The Government reserves the right to reject design document submittals if comments are significant. Participants shall determine if any comments are critical enough to require further design development prior to government concurrence. Participants shall also determine how to proceed in order to obtain government concurrence with the design work presented.

3.5. INTERIM DESIGN REQUIREMENTS

Interim design deliverables shall include drawings, specifications, and design analysis for the part of design that the Contractor considers ready for review.

3.5.1. Drawings

Include comments from any previous design conferences incorporated into the documents to provide an interim design for the “part” submitted.

3.5.2. Design Analyses

3.5.2.1. The designers of record shall prepare and present design analyses with calculations necessary to substantiate and support all design documents submitted. Address design substantiation required by the applicable codes and references and pay particular attention to the following listed items:

3.5.2.2. For parts including sitework, include site specific civil calculations.

3.5.2.3. For parts including structural work, include structural calculations.

(a) Identify all loads to be used for design.

(b) Describe the method of providing lateral stability for the structural system to meet seismic and wind load requirements. Include sufficient calculations to verify the adequacy of the method.

(c) Provide calculations for all principal roof, floor, and foundation members and bracing and secondary members.

(d) Provide complete seismic analyses for all building structural, mechanical, electrical, architectural, and building features as dictated by the seismic zone for which the facility is being constructed.

(e) Computer generated calculations must identify the program name, source, and version. Provide input data, including loads, loading diagrams, node diagrams, and adequate documentation to illustrate the design. The schematic models used for input must show, as a minimum, nodes/joints, element/members, materials/properties, and all loadings, induced settlements/deflections, etc., and a list of load combinations. Include an output listing for maximum/minimum stresses/forces and deflections for each element and the reactions for each loading case and combination.

(f) See also the Security (Anti-Terrorism) requirements below for members subject to Anti-Terrorist Force Protection (ATFP) and Progressive Collapse requirements.

(g) Fully coordinate and integrate the overall structural design between two different or interfacing construction types, such as modular and stick-built or multistory, stacked modular construction. Provide substantiation of structural, consolidation/settlement analysis, etc., as applicable, through the interfaces.

3.5.2.4. For Security (Anti-Terrorism): Provide a design narrative and calculations where applicable, demonstrating compliance with each of the 22 standards in UFC 4-010-01, which includes Design of Buildings to Resist Progressive Collapse (use the most recent version of UFC 4-023-03, regardless of references to any specific version in UFC 4-010-01). Where sufficient standoff distance is not being provided, show calculations for blast resistance of the structural system and building envelope. Show complete calculations for members subjected to ATFP loads, e.g., support members of glazed items (jambs, headers, sills) connections of windows to support members and connections of support members to the rest of the structure. For 3 story and higher buildings, provide calculations to demonstrate compliance with progressive collapse requirements.

3.5.2.5. For parts including architectural work, include building floor area analysis.

3.5.2.6. For parts including mechanical work, include HVAC analysis and calculations. Include complete design calculations for mechanical systems. Include computations for sizing equipment, compressed air systems, air duct design, and U-factors for ceilings, roofs and exterior walls and floors. Contractor shall employ commercially available energy analysis techniques to determine the energy performance of all passive systems and features. Use of hourly energy load computer simulation is required (see paragraph 3.5.5.2 for list of acceptable software). Based on the results of calculations, provide a complete list of the materials and equipment proposed with the manufacturer's published cataloged product installation specifications and roughing-in data.

3.5.2.7. For parts including life safety, include building code analysis and sprinkler and other suppression systems. Notwithstanding the requirements of the Codes, address the following:

(a) A registered fire protection engineer (FPE) must perform all fire protection analyses. Provide the fire protection engineer’s qualifications. See Section 01 10 00, paragraph 5 for qualifications.

(b) Provide all references used in the design including Government design documents and industry standards used to generate the fire protection analysis.

(c) Provide classification of each building in accordance with fire zone, building floor areas and height and number of stories.

(d) Provide discussion and description of required fire protection requirements including extinguishing equipment, detection equipment, alarm equipment and water supply. Alarm and detection equipment shall interface to requirements of Electronic Systems.

(e) Provide hydraulic calculations based on water flow test for each sprinkler system to insure that flow and pressure requirements can be met with current water supply. Include copies of Contractor's water flow testing done to certify the available water source.

3.5.2.8. For parts including plumbing systems:

(a) List all references used in the design.

(b) Provide justification and brief description of the types of plumbing fixtures, piping materials and equipment proposed for use.

(c) Detail calculations for systems such as sizing of domestic hot water heater and piping; natural gas piping; LP gas piping and tanks, fuel oil piping and tanks, etc., as applicable.

(d) When the geotechnical report indicates expansive soils are present, indicate in the first piping design submittal how piping systems will be protected against damage or backfall/backflow due to soil heave (from penetration of slab to the 5 foot building line).

3.5.2.9. For elevator systems:

(a) List all criteria codes, documents and design conditions used.

(b) List any required permits and registrations for construction of items of special mechanical systems and equipment.

3.5.2.10. For parts including electrical work, include lighting calculations to determine maintained foot-candle levels, electrical load analysis and calculations, electrical short circuit and protective device coordination analysis and calculations and arc fault calculations.

3.5.2.11. For parts including telecommunications voice/data (including SIPRNET, where applicable), include analysis for determining the number and placement of outlets

3.5.2.12. For Cathodic Protection Systems, provide the following stamped report by the licensed corrosion engineer or NACE specialist with the first design submission. The designer must be qualified to engage in the practice of corrosion control of buried or submerged metallic surfaces. He/she must be accredited or certified by the National Association of Corrosion Engineers (NACE) as a NACE Accredited Corrosion Specialist or a NACE certified Cathodic Protection Specialist, or must be a registered professional engineer with a minimum of five years experience in corrosion control and cathodic protection, Clearly describe structures, systems or components in soil or water to be protected. Describe methods proposed for protection of each.

3.5.2.13. Air Barrier System: Provide a narrative of the design and installation requirements for the Air Barrier system. As part of the design quality control process an air barrier consultant shall review drawing details to assure that details of critical Air Barrier components are properly detailed and incorporated during the design drawings and process (i.e. window flashing details, penetration in air barrier details, door flashing details, roofing/ceiling barrier interface details and etc.). Furnish the Government written review details and results.

3.5.3. Geotechnical Investigations and Reports:

3.5.3.1. The contractor’s licensed geotechnical engineer shall prepare a final geotechnical evaluation report, to be submitted along with the first foundation design submittal. Make this information available as early as possible during the over-the-shoulder progress review process. Summarize the subsurface conditions and provide recommendations for the design of appropriate utilities, foundations, floor slabs, retaining walls, embankments, and pavements. Include compaction requirements for fill and backfill under

buildings, sidewalks, other structures and open areas. Recommend foundation systems to be used, allowable bearing pressures for footings, lateral load resistance capacities for foundation systems, elevations for footings, grade beams, slabs, etc. Provide an assessment of post-construction settlement potential including total and differential. Provide recommendations regarding lateral earth pressures (active, at-rest, passive) to be used in the design of retaining walls. Include the recommended spectral accelerations and Site Class for seismic design along with an evaluation of any seismic hazards and recommendations for mitigation, if required. Include calculations to support the recommendations for bearing capacity, settlement, and pavement sections. Include supporting documentation for all recommended design parameters such as Site Class, shear strength, earth pressure coefficients, friction factors, subgrade modulus, California Bearing Ratio (CBR), etc. Provide earthwork recommendations, expected frost penetration, expected groundwater levels, recommendations for dewatering and groundwater control and the possible presence of any surface or subsurface features that may affect the construction of the project such as sinkholes, boulders, shallow rock, old fill, old structures, soft areas, or unusual soil conditions. Include pH tests, salinity tests, resistivity measurements, etc., required to design corrosion control and grounding systems. Include the raw field data. Arrange a meeting with the Government subsequent to completion and evaluation of the site specific geotechnical exploration to outline any differences encountered that are inconsistent with the Government provided preliminary soils information. Clearly outline differences which require changes in the foundation type, or pavement and earthwork requirements from that possible and contemplated using the Government furnished preliminary soils investigation, which result in a change to the design or construction. Any equitable adjustment is subject to the provisions of the contract's Differing Site Conditions Clause.

3.5.3.2. Vehicle Pavements: The Contractor's geotechnical report shall contain flexible and rigid pavement designs, as applicable for the project, including design CBR and modulus of subgrade reaction and the required compaction effort for subgrades and pavement layers. Provide Information on the types of base course materials available in the area and design strengths.

3.5.3.3. The Contractor and the professional geotechnical engineer consultant shall certify in writing that the design of the project has been developed consistent with the Contractor's final geotechnical report. The certification shall be stamped by the consulting professional geotechnical engineer and shall be submitted with the first design submission. If revisions are made to the initial design submission, a new certification shall be provided with the final design submission.

3.5.4. LEED Documentation:

Assign a LEED Accredited Professional, responsible to track LEED planning, performance and documentation for each LEED credit through construction closeout. Incorporate LEED credits in the plans, specifications and design analyses. Develop LEED supporting documentation as a separable portion of the Design Analysis and provide with each required design submittal. Include the LEED Project checklist for each non-exempt facility (one checklist may be provided for multiple facilities in accordance with the LEED-NC Application Guide for Multiple Buildings and On-Campus Building Projects and the LEED SUBMITTALS (Attachment E, herein) with each submittal. Final design submittal for each portion of the work must include all required design documentation relating to that portion of work (example - all site credit design documents with final site design). Submittal requirements are as indicated in Attachment E, LEED SUBMITTALS. Submit all documentation indicated on Attachment E as due at final design at final design submittal (for fast-track projects with multiple final design submittals, this shall be at the last scheduled final design submittal). All project documentation related to LEED shall conform to USGBC requirements for both content and format, including audit requirements and be separate from other design analyses. Maintain and update the LEED documentation throughout project progress to construction closeout and shall compile product data, receipts, calculations and other data necessary to substantiate and support all credits claimed. The Government may audit any or all individual credits. Audit documentation is not required to be submitted unless requested. These requirements apply to all projects. If the project requires the Contractor to obtain USGBC certification, the Contractor shall also be responsible for obtaining USGBC certification and shall provide written evidence of certification with the construction closeout LEED documentation submittal. Install the USGBC building plaque at the location

indicated by the Government upon receipt. If Contractor obtains USGBC interim design review, submit the USGBC review to the Government within 30 days of receipt for information only.

3.5.4.1. LEED Documentation for Technology Solution Set. If the Solicitation provides a Prescriptive Technology Solution Set, use of the Technology Solution set has no effect on LEED documentation requirements. Provide all required LEED documentation, including energy analysis, in accordance with LEED requirements when using the Technology Solution Set.

3.5.5. Energy Conservation:

3.5.5.1. Refer to Section 01 10 00, Paragraph 5. Interim and Final Design submittals shall demonstrate that each building including the building envelope, HVAC systems, service water heating, power, and lighting systems meet the Mandatory Provisions and the Prescriptive Path requirements of ASHRAE 90.1. Use Compliance Documentation forms available from ASHRAE and included in the ASHRAE 90.1 User's Manual for this purpose. The Architectural Section of the Design Analysis shall include completed forms titled "Building Envelope Compliance Documentation Parts I and II". The Heating Ventilating and Air Conditioning (HVAC) Section of the Design Analysis shall include a completed form titled "HVAC Simplified Approach Option - Part I" if this approach is allowed by the Standard. Otherwise, the HVAC Section of the Design Analysis shall include completed forms titled "HVAC Mandatory Provisions - Part II" and "HVAC Prescriptive Requirements - Part III". The Plumbing Section of the Design Analysis shall include a completed form titled "Service Water Heating Compliance Documentation". The Electrical Section of the Design Analysis shall include an explanatory statement on how the requirements of ASHRAE 90.1 Chapter 8 Power were met. The Electrical Section of the Design Analysis shall also include a completed form titled "Lighting Compliance Documentation".

3.5.5.2. Interim and Final Design submittals which address energy consuming systems, (heating, cooling, service hot water, lighting, power, etc.) must also include calculations in a separate Energy Conservation Section of the Design Analysis which demonstrate and document (a) the baseline energy consumption for the facility or facilities under contract, that would meet the requirements of ANSI/ASHRAE/IESNA Standard 90.1 and (b) the energy consumption of the facility or facilities under contract utilizing the materials and methods required by this construction contract. Use the USGBC Energy and Atmosphere (EA) Credit 1 compliance template / form or an equivalently detailed form for documenting compliance with the energy reduction requirements. This template / form is titled PERFORMANCE RATING METHOD and is available when the project is registered for LEED. The calculation methodology used for this documentation and analysis shall follow the guidelines set forth in Appendix G of ASHRAE 90.1, with two exceptions: a) receptacle and process loads may be omitted from the calculation; and b) the definition of the terms in the formula for Percentage Improvement found in paragraph G1.2 are modified as follows: Baseline Building Performance shall mean the annual energy consumption calculated for a building design intended for use as a baseline for rating above standard design meeting the minimum requirements of the energy standard, and Proposed Building Performance shall mean annual energy consumption calculated for the proposed building design intended for construction. This calculation shall address all energy consuming systems in a single integrated methodology. Include laboratory fume hoods and kitchen ventilation loads in the energy calculation. They are not considered process loads. Individual calculations for heating, cooling, power, lighting, power, etc. systems will not be acceptable. The following building simulation software is acceptable for use in calculating building energy consumption: Hourly Analysis Program (HAP) by Carrier Corp., TRACE 700 by Trane Corp., DOE-2 by US Department of Energy, EnergyPlus by DOD/DOE.

3.5.6. Specifications

Specifications may be any one of the major, well known master guide specification sources. Uuse only one source. Examples include specifications from MASTERSPEC from the American Institute of Architects, SPECTEXT from Construction Specification Institute or Unified Facility Guide Specifications (UFGS using MASTERFORMAT 2004 numbering system), etc. The UFGS are available through the "Whole Building Design Guide" website, using a websearch engine. Manufacturers' product specifications, utilizing CSI's Manu-Spec, three part format may be used in conjunction with the selected

specifications. The designers of record shall edit and expand the appropriate Specifications to insure that all project design requirements, current code requirements, and regulatory requirements are met. Specifications shall clearly identify, where appropriate, specific products chosen to meet the contract requirements (i.e., manufacturers' brand names and model numbers or similar product information). Note that the UFGS are NOT written for Design-Build and must be edited appropriately. For instance, they assume that the Government will approve most submittals, whereas in Design-Build, the Designer of Record has that action, unless this Solicitation requires Government approval for specific submittals. The Designer of Record should also note that some UFGS sections might either prescribe requirements exceeding the Government's own design standards in applicable references or contain requirements that should be selected where appropriately required by the applicable references. At any rate, where the UFGS are consistent with other major, well known master commercial guide specifications, then generally retain such requirements, as good practices.

3.5.7. Building Rendering

Present and provide a draft color computer, artist, or hand drawn rendering with the conceptual design submittal of the building exterior. Perspective renderings shall include a slightly overhead view of the entire building to encompass elevations and the roof configuration of the building. After Government review and acceptance, provide a final rendering, including the following:

Three (3) 18" x 24" color prints, framed and matted behind glass with project title underneath the print.

One (1) Image file (high resolution) in JPG format on CD for those in the submittal distribution list.

3.5.8. Interim Building Design Contents

The following list represents what the Government considers should be included in the overall completed design for a facility or project. It is not intended to limit the contractor from providing different or additional information as needed to support the design presented, including the require design analyses discussed above. As the Contractor develops individual design packages and submits them for Interim review, include as much of the applicable information for an individual design package as is developed at the Interim design level for review purposes. These pieces shall be developed as the design progresses toward the design complete stage.

3.5.8.1. Lawn and Landscaping Irrigation System

3.5.8.2. Landscape, Planting and Turfing

3.5.8.3. Architectural

(a) Design Narrative

(b) Architectural Floor Plans, Typical Wall and Roof Sections, Elevations

(c) Finish schedule

(d) All required equipment

(e) Special graphics requirements

(f) Door and Window Schedules

(g) Hardware sets using BHMA designations

(h) Composite floor plan showing all pre-wired workstations

(i) Structural Interior Design (SID) package: See ATTACHMENT A for specific requirements

(j) Furniture, Fixtures & Equipment (FF&E) design package: See ATTACHMENT B for specific requirements

(k) Air Barrier Design: Details of all Air Barrier components, (i.e. window flashing details, penetrations in air barrier details, door flashing details, roofing/ceiling barrier interface details and etc.)

3.5.8.4. Structural Systems. Include:

(a) Drawings showing principal members for roof and floor framing plans as applicable

(b) Foundation plan showing main foundation elements where applicable

(c) Typical sections for roof, floor, and foundation conditions

3.5.8.5. Plumbing Systems

(a) Show locations and general arrangement of plumbing fixtures and major equipment

(b) Plan and isometric riser diagrams of all areas including hot water, cold water, waste and vent piping. Include natural gas (and meter as required), (natural gas and meter as required), (LP gas), (fuel oil) and other specialty systems as applicable.

(c) Include equipment and fixture connection schedules with descriptions, capacities, locations, connection sizes and other information as required

3.5.8.6. HVAC Systems

(a) Mechanical Floor Plans: The floor plans shall show all principle architectural features of the building which will affect the mechanical design. The floor plans shall also show the following:

(1) Room designations.

(2) Mechanical legend and applicable notes.

(3) Location and size of all ductwork and piping.

(4) Location and capacity of all terminal units (i.e., registers, diffusers, grilles, hydronic baseboards).

(5) Pre-Fabricated Paint Spray Booth (where applicable to project scope)

(6) Paint Preparation Area (where applicable to project scope)

(7) Exhaust fans and specialized exhaust systems.

(8) Thermostat location.

(9) Location of heating/cooling plant (i.e., boiler, chiller, cooling tower, etc).

(10) Location of all air handling equipment.

(11) Air balancing information.

(12) Flue size and location.

(13) Piping diagram for forced hot water system (if used).

(b) Equipment Schedule: Provide complete equipment schedules. Include:

(1) Capacity

(2) Electrical characteristics

(3) Efficiency (if applicable)

(4) Manufacturer's name

(5) Optional features to be provided

(6) Physical size

(7) Minimum maintenance clearances

(a) Details: Provide construction details, sections, elevations, etc., only where required for clarification of methods and materials of design.

(b) HVAC Controls: Submit complete HVAC controls equipment schedules, sequences of operation, wiring and logic diagrams, Input/Output Tables, equipment schedules, and all associated information. See the Statement of Work for additional specific requirements.

3.5.8.7. Fire Protection and Life Safety.

(a) Provide plan for each floor of each building that presents a compendium of the total fire protection features being incorporated into the design. Include the following types of information:

(1) The location and rating of any fire-resistive construction such as occupancy separations, area separations, exterior walls, shaft enclosures, corridors, stair enclosures, exit passageways, etc.

(2) The location and coverage of any fire detection systems

(3) The location and coverage of any fire suppression systems (sprinkler risers, standpipes, etc.)

(4) The location of any other major fire protection equipment

(5) Indicate any hazardous areas and their classification

(6) Schedule describing the internal systems with the following information: fire hazard and occupancy classifications, building construction type, GPM/square foot sprinkler density, area of operation and other as required

(b) Working plans and all other materials submitted shall meet NFPA 13 requirements, with respect to required minimum level of detail.

3.5.8.8. Elevators. Provide:

(a) Description of the proposed control system

(b) Description, approximate capacity and location of any special mechanical equipment for elevators.

3.5.8.9. Electrical Systems.

(a) Electrical Floor Plan(s): Show all principle architectural features of the building which will affect the electrical design. Show the following:

(1) Room designations.

(2) Electrical legend and applicable notes.

(3) Lighting fixtures, properly identified.

(4) Switches for control of lighting.

(5) Receptacles.

(6) Location and designation of panelboards. Clearly indicate type of mounting required (flush or surface) and reflect accordingly in specifications.

(7) Service entrance (conduit and main disconnect).

(8) Location, designation and rating of motors and/or equipment which requires electrical service. Show method of termination and/or connection to motors and/or equipment. Show necessary junction boxes, disconnects, controllers (approximate only), conduit stubs, and receptacles required to serve the motor and/or equipment.

(b) Building Riser Diagram(s) (from pad-mounted transformer to unit load center panelboard): Indicate the types and sizes of electrical equipment and wiring. Include grounding and metering requirements.

(c) Load Center Panelboard Schedule(s): Indicate the following information:

(1) Panelboard Characteristics (Panel Designation, Voltage, Phase, Wires, Main Breaker Rating and Mounting.

(2) Branch Circuit Designations.

(3) Load Designations.

(4) Circuit Breaker Characteristics. (Number of Poles, Trip Rating, AIC Rating)

(5) Branch Circuit Connected Loads (AMPS).

(6) Special Features

(d) Lighting Fixture Schedule(s): Indicate the following information:

(1) Fixture Designation.

(2) General Fixture Description.

(3) Number and Type of Lamp(s).

(4) Type of Mounting.

(5) Special Features.

(e) Details: Provide construction details, sections, elevations, etc. only where required for clarification of methods and materials of design.

3.5.8.10. Electronic Systems including the following responsibilities:

(a) Fire Detection and Alarm System. Design shall include layout drawings for all devices and a riser diagram showing the control panel, annunciator panel, all zones, radio transmitter and interfaces to other systems (HVAC, sprinkler, etc.)

(b) Fire Suppression System Control. Specify all components of the Fire Suppression (FS) System in the FS section of the specifications. Clearly describe how the system will operate and interact with other systems such as the fire alarm system. Include a riser diagram on the drawings showing principal components and interconnections with other systems. Include FS system components on drawing legend. Designate all components shown on floor plans “FS system components” (as opposed to “Fire Alarm components”). Show location of FS control panels, HVAC control devices, sensors, and 120V power panel connections on floor plans. Indicate zoning of areas by numbers (1, 2, 3) and detectors sub-zoned for cross zoning by letter designations (A and B). Differentiate between ceiling mounted and under floor detectors with distinct symbols and indicate sub-zone of each.

(c) Public Address System

(d) Special Grounding Systems. Completely reflect all design requirements in the specifications and drawings. Specifications shall require field tests (in the construction phase), witnessed by the Government, to determine the effectiveness of the grounding system. Include drawings showing existing construction, if any.

(e) Cathodic Protection.

(f) Intrusion Detection, Card Access System

(g) Central Control and Monitoring System

(h) Mass Notification System

(i) Electrical Power Distribution Systems

3.5.8.11. Separate detailed Telecommunications drawings for Information Systems including the following responsibilities:

(a) Telecommunications Cabling

(b) Supporting Infrastructure

(c) Outside Plant (OSP) Cabling - Campus or Site Plans - Exterior Pathways and Inter-Building Backbones

(d) Include a layout of the voice/data outlets (including voice only wall & pay phones) on telecommunication floor plan drawing, location of SIPRNET data outlets (where applicable), and a legend and symbol definition to indicate height above finished floor. Show size of conduit and cable type and size on Riser Diagram. Do not show conduit runs between backboard and outlets on the floor plans. Show underground distribution conduit and cable with sizing from point of presence to entrance facility of building.

(e) Layout of complete building per floor - Serving Zone Boundaries, Backbone Systems, and Horizontal Pathways including Serving Zones Drawings - Drop Locations and Cable ID's

(f) Communication Equipment Rooms - Plan Views - Tech and AMEP/Elevations - Racks and Walls. Elevations with a detailed look at all telecomm rooms. Indicate technology layout (racks, ladder-racks, etc.), mechanical/electrical layout, rack elevation and backboard elevation. They may also be an enlargement of a congested area of T1 or T2 series drawing.

3.6. FINAL DESIGN REVIEWS AND CONFERENCES

A final design review and review conference will be held upon completion of final design at the project installation, or – where equipment is available - by video teleconference or a combination thereof, for any design package to receive Government acceptance to allow release of the design package for construction. For smaller separate design packages, the parties may agree on alternative reviews and conferences (e.g., conference calls and electronic file sharing, etc.) through the Partnering process. Include the final design conference in the project schedule and shall indicate what part of the design work is at 100% completion. The final design conference will be held after the Government has had seven (7) calendar days after receipt of the submission to review the final design package and supporting data. For smaller packages, especially those involving only one or a few design disciplines the parties may agree on a shorter period.

3.7. FINAL DESIGN REQUIREMENTS

Final design deliverables for a design package shall consist of 100% complete drawings, specifications, submittal register and design analyses for Government review and acceptance. The 100% design submission shall consist of drawings, specifications, updated design analyses and any permits required by the contract for each package submitted. In order to expedite the final design review, prior to the conference, ensure that the design configuration management data and all review comment resolutions are up-to-date. Include the 100% SID and 100% FF&E binders for government approval. The Contractor shall have performed independent technical reviews (ITR's) and back-checks of previous comment resolutions, as required by Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL, including providing documentation thereof. Use DrChecks or other acceptable comment tracking system during the ITR and submit the results with each final design package

3.7.1. Drawings

3.7.1.1. Submit drawings complete with all contract requirements incorporated into the documents to provide a 100% design for each package submitted.

3.7.1.2. Prepare all drawings with the Computer-Aided Design and Drafting (CADD)/Computer-Aided Design (CAD) system, organized and easily referenced electronically, presenting complete construction information.

3.7.1.3. Drawings shall be complete. The Contractor is encouraged to utilize graphics, views, notes, and details which make the drawings easier to review or to construct but is also encouraged to keep such materials to those that are necessary.

3.7.1.4. Provide detail drawings that illustrate conformance with the contract. Include room finish schedules, corresponding color/finish/special items schedules, and exterior finish schedules that agree with the submitted SID binders.

3.7.1.5. The design documents shall be in compliance with the latest version of the A/E/C CAD Standard, available at https://cadbim.usace.army.mil/CAD. Use the approved vertical Corps of Engineers title blocks and borders on all drawings with the appropriate firm name included within the title block area.

3.7.1.6. CAD System and Building Information Modeling (BIM) (NOTE: If this is a Single Award or Multiple Award, Indefinite Delivery/Indefinite Quantity Contract, this information will be provided for each task order.)

All CAD files shall be fully compatible with MicroStation V8 or higher. Save all design CAD files as MicroStation V8 or higher files. All submitted BIM Models and associated Facility Data shall be fully compatible with Bentley BIM v8 with associated USACE Bentley BIM v8 Workspace file formats.

(a) CAD Data Final File Format: During the design development capture geo-referenced coordinates of all changes made to the existing site (facility footprint, utility line installations and alterations, roads, parking areas, etc) as a result of this contract. There is no mandatory methodology for how the geo-referenced coordinates will be captured, however, Engineering and Construction Bulletin No. 2006-15, Subject: Standardizing Computer Aided Design (CAD) and Geographic Information Systems (GIS) Deliverables for all Military Design and Construction Projects identifies the format for final as-built drawings and data sets to be delivered to the government. Close-out requirements at the as-built stage; require final geo-referenced GIS Database of the new facility along with all exterior modifications. The Government will incorporate this data set into the Installation's GIS Masterplan or Enterprise GIS System. See also, Section 01 78 02.00 10 Closeout Submittals.

(b) Electronic Drawing Files: In addition to the native CAD design files, provide separate electronic drawing files (in editable CAD format and Adobe Acrobat PDF version 7.0 or higher) for each project drawing.

(c) Each file (both CAD and PDF) shall represent one complete drawing from the drawing set, including the date, submittal phase, and border. Each drawing file shall be completely independent of any data in any other file, including fonts and shapes not included with the basic CAD software program utilized. Fonts that are not included as part of the default CAD software package installation or recognized as an allowable font by the A/E/C CAD Standard are not acceptable in delivered CAD files. All displayed graphic elements on all levels of the drawing files shall be part of the project drawing image. The drawing files shall not contain any graphic element that is not part of the drawing image.

(d) Deliver BIM Model and associated Facility Data files in their native format. At a minimum, BIM files shall address major architecture design elements, major structural components, mechanical systems and electrical/communication distribution and elements as defined in Attachment F. See Attachment F for additional BIM requirements.

(e) Drawing Index: Provide an index of drawings sheet in CAD as part of the drawing set, and an electronic list in Microsoft Excel of all drawings on the CD. Include the electronic file name, the sheet reference number, the sheet number, and the sheet title, containing the data for each drawing.

(f) Hard Copies: Plot submitted hard copy drawings directly from the "electronic drawing files" and copy for quantities and sizes indicated in the distribution list at the end of this specification section. The Designers of Record shall stamp, sign and date original hard copy sheets as Released For Construction, and provide copies for distribution from this set.

3.7.2. Design Analyses

3.7.2.1. The designers of record shall update, finalize and present design analyses with calculations necessary to substantiate and support all design documents submitted.

3.7.2.2. The responsible DOR shall stamp, sign and date the design analysis. Identify the software used where, applicable (name, version, vendor). Generally, provide design analyses, individually, in an original (file copy) and one copy for the assigned government reviewer.

3.7.2.3. All disciplines review the LEED design analysis in conjunction with their discipline-specific design analysis; include a copy of the separable LEED design analysis in all design analysis submittals.

3.7.2.4. Do not combine multi-disciplined volumes of design-analysis, unless multiple copies are provided to facilitate multiple reviewers (one copy per each separate design analysis included in a volume).

3.7.3. Specifications

Specifications shall be 100% complete and in final form.

3.7.4. Submittal Register

Prepare and update the Submittal Register and submit it with the 100% design specifications (see Specification Section 01 33 00, SUBMITTAL PROCEDURES) with each design package. Include the required submittals for each specification section in a design package in the submittal register.

3.7.5. Preparation of DD Form 1354 (Transfer of Real Property)

This form itemizes the types, quantities and costs of various equipment and systems that comprise the project, for the purpose of transferring the new construction project from the Corps Construction Division to the Installation's inventory of real property. The Government will furnish the DB Contractor's design manager a DD Form 1354 checklist to use to produce a draft Form 1354. Submit the completed checklist and prepared draft Form DD 1354 with the 100% design in the Design Analysis. The Corps will use these documents to complete the final DD 1354 upon completion of construction.

3.7.6. Acceptance and Release for Construction

3.7.6.1. At the conclusion of the Final Design Review (after resolutions to the comments have been agreed upon between DOR and Government reviewers), the Contracting Officer or the ACO will accept the Final Design Submission for the design package in writing and allow construction to start for that design package. The Government may withhold acceptance until all major corrections have been made or if the final design submission requires so many corrections, even though minor, that it isn't considered acceptably complete.

3.7.6.2. Government review and acceptance of design submittals is for contract conformance only and shall not relieve the Contractor from responsibility to fully adhere to the requirements of the contract, including the Contractor’s accepted contract proposal, or limit the Contractor’s responsibility of design as prescribed under Special Contract Requirement: “Responsibility of the Contractor for Design” or limit the Government’s rights under the terms of the contract. The Government reserves the right to rescind inadvertent acceptance of design submittals containing contract deviations not separately and expressly identified in the submittal for Government consideration and approval.

3.8. DESIGN COMPLETE CONSTRUCTION DOCUMENT REQUIREMENTS

After the Final Design Submission and Review Conference and after Government acceptance of the Final Design submission, revise the design documents for the design package to incorporate the comments generated and resolved in the final review conference, perform and document a back-check review and submit the final, design complete documents. Label the final design complete documents “FOR

CONSTRUCTION" or use similar language. In addition to the final drawings and specifications, the following deliverables are required for distribution and field use. The deliverable includes all documentation and supporting design analysis in final form, as well as the final review comments, disposition and the back-check. As part of the quality assurance process, the Government may perform a back-check of the released for construction documentation. Promptly correct any errors or omissions found during the Government back-check. The Government may withhold retainage from progress payments for work or materials associated with a final design package until this submittal has been received and the Government determines that it is complete.

3.9. SUBMITTAL DISTRIBUTION, MEDIA AND QUANTITIES

3.9.1. Submittal Distribution and Quantities

General: The documents which the Contractor shall submit to the Government for each submittal are listed and generally described in preceding paragraphs in this Section. Provide copies of each design submittal and design substantiation as follows (NOTE: If this is a Single Award or Multiple Award, Indefinite Delivery/Indefinite Quantity Contract, this information will be provided for each task order):

Activity and Address	Drawing Size (Full Size) **[Not Supplied - SubmittalReqDistribution : FULL_SIZE]** Full Sets/ *Partial Sets	Design Analyses & Specs Full Sets/ *Partial Sets	Drawing Size (Half Size) **[Not Supplied - SubmittalReqDistribution : HALF_SIZE]** Full Sets/ *Partial Sets	Non-BIM Data CD-ROM or DVD as Necessary (PDF& **.dgn**)	Furniture Submittal (Per Attachment B)	Structural Interior Design Submittal	BIM Data DVD (Per Attach F)
Commander, U.S.Army Engineer District **[Not Supplied - DistrictInfoGeneral : CONSTRUCTION_DISTRICT]**	3/3	3/3	0/0	3	1	0	3
Commander, U.S.Army Engineer District, Center of Standardization **Huntsville District**	3/0	3/0	0/0	3	N/A	0	0
Installation	5/5	5/5	0/0	5	2	0	0

Activity and Address	Drawing Size (Full Size) **[Not Supplied - SubmittalReqDistribution : FULL_SIZE]** Full Sets/ *Partial Sets	Design Analyses & Specs Full Sets/ *Partial Sets	Drawing Size (Half Size) **[Not Supplied - SubmittalReqDistribution : HALF_SIZE]** Full Sets/ *Partial Sets	Non-BIM Data CD-ROM or DVD as Necessary (PDF& **.dgn**)	Furniture Submittal (Per Attachment B)	Structural Interior Design Submittal	BIM Data DVD (Per Attach F)
U.S.Army Corps of Engineers Construction Area Office	4/2	4/2	0/0	4	1	0	3
Information Systems Engineering Command (ISEC)	0/0	0/2	0/0	1	*Partial Set (Work Station/System Furniture- IT Details)	N/A	1
Huntsville Engineer & Support Center, Central Furnishings Program	N/A	N/A	N/A	N/A	1 Interim/Refer to attachment B for the final submission Qty	N/A	N/A
Other Offices	0/0	0/0	0/0	0	N/A	0	0

***NOTE: For partial sets of drawings, specifications and design analyses, see paragraph 3.9.3.3, below.**

****NOTE: When specified below in 3.9.2, furnish Installation copies of Drawings as paper copies, in lieu of the option to provide secure web-based submittals.**

3.9.2. Web based Design Submittals

Except for full or half-sized drawings for Installation personnel, as designated in the Table above, Web based design submittals will be acceptable as an alternative to the paper copies listed in the Table above, provided a single hard-copy PDF based record set is provided to the Contracting Officer for record purposes. Where the contract requires the Contractor to submit documents to permitting authorities, still provide those authorities paper copies (or in an alternate format where required by the authority). Web based design submittal information shall be provided with adequate security and availability to allow unlimited access those specifically authorized to Government reviewers while preventing unauthorized access or modification. File sizes must be of manageable size for reviewers to quickly download or open on their computers. As a minimum, drawings shall be full scale on American National Standards Institute (ANSI) D sheets (34" x 22"). In addition to the optional website, provide the BIM data submission on DVD

to each activity and address noted above in paragraph 3.9.1 for each BIM submission required in Attachment F.

3.9.3. Mailing of Design Submittals

3.9.3.1. Mail all design submittals to the Government during design and construction, using an overnight mailing service. The Government will furnish the Contractor addresses where each copy shall be mailed to after award of the contract (or individual task order if this is an indefinite delivery/indefinite quantity, task order contract). Mail the submittals to four (4) different addresses. Assemble drawing sheets, specs, design analyses, etc. into individual sets; do not combine duplicate pages from individual sets so that the government has to assemble a set.

3.9.3.2. Each design submittal shall have a transmittal letter accompanying it indicating the date, design percentage, type of submittal, list of items submitted, transmittal number and point of contact with telephone number.

3.9.3.3. Provide partial sets of drawings, specifications, design analyses, etc., as designated in the Table in paragraph 3.9.1, to those reviewers who only need to review their applicable portions of the design, such as the various utilities. The details of which office receives what portion of the design documentation will be worked out after award.

3.10. AS-BUILT DOCUMENTS

Provide as-built drawings and specifications in accordance with Section 01 78 02.00 10, CLOSEOUT SUBMITTALS. Update LEED design phase documentation during construction as needed to reflect construction changes and advancing project completion status (example - Commissioning Plan updates during construction phase) and include updated LEED documentation in construction closeout submittal.

ATTACHMENT A
STRUCTURAL INTERIOR DESIGN (SID) REQUIREMENTS

1.0 GENERAL INFORMATION

Structural Interior Design includes all building related elements and components generally part of the building itself, such as wall finishes, ceilings finishes, floor coverings, marker/bulletin boards, blinds, signage and built in casework. Develop the SID in conjunction with the furniture footprint.

2.0 STRUCURAL INTERIOR DESIGN (SID) REQUIREMENTS FOR THE INTERIM AND FINAL DESIGN SUBMITTALS

2.1. FORMAT AND SCHEDULE

Prepare and submit for approval an interior and exterior building finishes scheme for an interim design submittal. The DOR shall meet with and discuss the finish schemes with the appropriate Government officials prior to preparation of the schemes to be presented. Present original sets of the schemes to reviewers at an interim design conference.

At the conclusion of the interim phase, after resolutions to the comments have been agreed upon between DOR and Government reviewers, the Contractor may proceed to final design with the interior finishes scheme presented.

The SID information and samples are to be submitted in 8 ½” x 11” format using three ring binders with pockets on the inside of the cover. When there are numerous pages with thick samples, use more than one binder. Large D-ring binders are preferred to O-ring binders. Use page protectors that are strong enough to keep pages from tearing out. Anchor large or heavy samples with mechanical fasteners, Velcro, or double-faced foam tape rather than rubber cement or glue. Fold out items must have a maximum spread of 25 ½”. Provide cover and spine inserts sheets identifying the document as “Structural Interior Design” package. Include the project title and location, project number, Contractor/A/E name and phone number(s), submittal stage and date.

Design submittal requirements include, but are not limited to:

2.1.1. Narrative of the Structural Interior Design Objectives

The SID shall include a narrative that discusses the building related finishes. Include topics that relate to base standards, life safety, sustainable design issues, aesthetics, durability and maintainability, discuss the development and features as they relate to the occupants requirements and the building design.

2.1.2. Interior Color Boards

Identify and key each item item on the color boards to the contract documents to provide a clear indication of how and where each item will be used. Arrange finish samples to the maximum extent possible by room type in order to illustrate room color coordination. Label all samples on the color boards with the manufacturer’s name, patterns and colors name and number. Key or code samples to match key code system used on contract drawings.

Material and finish samples shall indicate true pattern, color and texture. Provide photographs or colored photocopies of materials or fabrics to show large overall patterns in conjunction with actual samples to show the actual colors. Finish samples must be large enough to show a complete pattern or design where practical.

Color boards shall include but not be limited to original color samples of the following:

All walls finishes and ceiling finishes, including corner guards, acrylic wainscoting and wall guards/chair rail finishes

All tile information, including tile grout color and tile patterns.

- All flooring finishes, including patterns.
- All door, door frame finishes and door hardware finishes
- All signage, wall base, toilet partitions, locker finishes and operable/folding partitions and trim
- All millwork materials and finishes (cabinets, counter tops, etc.)
- All window frame finishes and window treatments (sills, blinds, etc.)

Color board samples shall reflect all actual finish textures, patterns and colors required as specified. Patterned samples shall be of sufficient size to adequately show pattern and its repeat if a repeat occurs.

2.1.3. Exterior Color Boards

Prepare exterior finishes color boards in similar format as the interior finishes color boards, for presentation to the reviewers during an interim design conference. Provide original color samples of all exterior finishes including but not limited to the following:

- All Roof Finishes
- All Brick and Cast Stone Samples
- All Exterior Insulation and Finish Samples
- All Glass Color Samples
- All Exterior Metals Finishes
- All Window & Door Frame Finishes
- All Specialty Item Finishes, including trim

Identify each item on the exterior finishes color boards and key to the building elevations to provide a clear indication of how and where each item will be used.

2.2. STRUCTURAL INTERIOR DESIGN DOCUMENTS

2.2.1. General

Structural interior design related drawings must indicate the placement of extents of SID material, finishes and colors and must be sufficiently detailed to define all interior work. The following is a list of minimum requirements:

2.2.2. Finish Color Schedule

Provide finish color schedule(s) in the contract documents. Provide a finish code, material type, manufacturer, series, and color designations. Key the finish code to the color board samples and drawings.

2.2.3. Interior Finish Plans

Indicate wall and floor patterns and color placement, material transitions and extents of interior finishes.

2.2.4. Furniture Footprint Plans

Provide furniture footprint plans showing the outline of all freestanding and systems furniture for coordination of all other disciplines.

2.2.5. Interior Signage

Include interior signage plans or schedules showing location and quantities of all interior signage. Key each interior sign to a quantitative list indicating size, quantity of each type and signage text.

2.2.6. Interior Elevations, Sections and Details

Indicate material, color and finish placement.

ATTACHMENT B
FURNITURE, FIXTURES & EQUIPMENT (FF&E) REQUIREMENTS

1.0 FF&E REQUIREMENTS FOR THE INTERIM AND FINAL DESIGN SUBMITTALS

1.1. FORMAT AND SCHEDULE

Prepare and submit for approval a comprehensive FF&E scheme for an interim design submittal. The Contractor's interior designer, NOT A FURNITURE DEALER, shall develop the design. FF&E is the selection, layout, specification and documentation of furniture and includes but is not limited to workstations, seating, tables, storage and shelving, filing, trash receptacles, clocks, framed artwork, artificial plants, and other accessories. Contract documentation is required to facilitate pricing, procurement and installation. The FF&E package is based on the furniture footprint developed in the Structural Interior Design (SID) portion of the interior design. Develop the FF&E package concurrently with the building design to ensure that there is coordination between the electrical outlets, switches, J-boxes, communication outlets and connections, and lighting as appropriate. In addition, coordinate layout with other building features such as architectural elements, thermostats, location of TV's, GF/GI equipment (for example computers, printers, copiers, shredders, faxes), etc. Locate furniture in front of windows only if the top of the item falls below the window and unless otherwise noted, do not attach furniture including furniture systems to the building. If project has SIPRNET and/or NIPRNET, coordinate furniture layout with SIPRNET and NIPRNET separation requirements. Verify that access required by DOIM for SIPRNET box and conduit is provided. The DOR shall interview appropriate Government personnel to determine FF&E requirements for furniture and furnishings prior to preparation of the scheme to be presented. Determine FFE items and quantities by, but not limited to: (1) the number of personnel to occupy the building, (2) job functions and related furniture/office equipment to support the job function, (3) room functions, (4) rank and grade. Present original sets of the scheme to reviewers at an interim design conference upon completion of the interim architectural submittal or three months prior to the submittal of the final FF&E package (whichever comes first).

Design may proceed to final with the FF&E scheme presented at the conclusion of the interim phase, after resolutions to the comments have been agreed upon between DOR and Government reviewers.

Provide six copies of the electronic versions of all documents upon completion of the final architectural submittal or ten months prior to the contract completion date (whichever comes first), to ensure adequate time for furniture acquisition. Provide unbound, electronic drawings in CAD and BIM. Provide all files needed to v,/iew complete drawings. Submit all text documents in Microsoft Word or Excel..

Submit four copies of the final and complete FF&E information and samples in 8 ½" x 11" format using three ring binders with pockets on the inside of the cover upon completion of the final architectural submittal or ten months prior to the contract completion date (whichever comes first). Use more than one binder when there are numerous pages with thick samples. Large D-ring binders are preferred to O-ring binders. Use page protectors that are strong enough to keep pages from tearing out for upholstery and finish boards. Anchor large or heavy samples with mechanical fasteners, Velcro, or double-faced foam tape rather than rubber cement or glue. Fold out items must have a maximum spread of 25 ½". Provide cover and spine inserts sheets identifying the document as "Furniture, Fixtures & Equipment" package and include the project title and location, project number, Contractor/A/E name and phone number(s), submittal stage and date.

Provide electronic copies of all documents upon completion of the final architectural submittal or ten months prior to the contract completion date (whichever comes first), to ensure adequate time for furniture acquisition. Provide six compact disks with all drawings files needed to view the complete drawings unbound and in the latest version AutoCAD. Provide six additional compact disks of all text documents in Microsoft Word or Excel.

Design submittal requirements include, but are not limited to:

1.1.1. Narrative of Interior Design Objectives

Provide a narrative description of the furniture, to include functional, safety and ergonomic considerations, durability, sustainability, aesthetics, and compatibility with the building design.

1.1.2. Furniture Order Form

Prepare one Furnishings Order Form for each item specified in the design. This form identifies all information required to order each individual item. In addition to the project name and location, project number, and submittal phase, the order form must include:

(a) Furniture item illustration and code

(b) Furniture item name

(c) Job name, location, and date

(d) General Services Administration (GSA) FSC Group, part, and section

(e) GSA Contract Number, Special Item Number (SIN), and contract expiration date

(f) Manufacturer, Product name and Product model number or National Stock Number (NSN)

(g) Finish name and number (code to finish samples)

(h) Fabric name and number, minimum Wyzenbeek Abrasion Test double rubs (code to fabric samples)

(i) Dimensions

(j) Item location by room number and room name

(k) Quantity per room

(l) Total quantity

(m) Special instructions for procurement ordering and/or installation (if applicable)

(n) Written Product Description: include a non-proprietary paragraph listing the salient features of the item to include but not limited to:

(1) required features and characteristics

(2) ergonomic requirements

(3) functional requirements

(4) testing requirements

(5) furniture style

(6) construction materials

(7) minimum warranty

The following is an example for “m” features and characteristics, ergonomic requirements and functional requirements:

Chair Description:

(1) Mid-Back Ergonomic Task Chair

(2) Pneumatic Gaslift; Five Star Base

(3) Mesh Back; Upholstered Seat

(4) Height and Width Adjustable Task Arms:

a. Arm Height: 6”- 11” (+-1/2”)

b. Arm Width: 2”– 4” adjustment

(5) Height Adjustable Lumbar Support

(6) Adjustable Seat Height 16”-21” (+- 1”)

(7) Sliding Seat Depth Adjustment 15”-18” (+-1”)

(8) Standard Hard Casters (for carpeted areas)

(9) Overall Measurements:

a. Overall width: 25” - 27”

b. Overall depth: 25”– 28”

(10) Must have a minimum of the following adjustments (In addition to the above):

a. 360 Degree Swivel

b. Knee-Tilt with Tilt Tension

c. Back angle

d. Forward Tilt

e. Forward Tilt and Upright Tilt Lock

For projects with systems furniture, also provide a written description of the following minimum requirements:

(1) Type furniture systems (panel, stacking panels, spine wall, desk based system, or a combination)

(2) Minimum noise reduction coefficient (NRC)

(3) Minimum sound transfer coefficient (STC)

(4) Minimum flame spread and smoke development

(5) UL testing for task lighting and electrical system

(6) Panel widths and heights and their locations (this may be done on the drawings)Worksurface types and sizes (this may be done on the drawings)

(7) Worksurface edge type

(8) Varying panel/cover finish materials and locations (locations may be shown on the drawings)

(9) Storage requirements

(10) Keyboard requirements

(11) Lock and keying requirements

(12) Accessory components (examples: tack boards, marker boards, paper management)

(13) Electrical and communication raceway requirement; type, capacity and location (base, beltline, below and/or above beltline)

(14) Locations of communication cables (base, beltline, below and/or above beltline, top channel)

(15) Types of electrical outlets

(16) Types of communication jacks; provided and installed by others

(17) Locations of electrical outlets and communication jacks (this may be done on the drawings)

(18) Type of cable (examples: Cat. 5, Cat. 6, fiber optic; UTP or STP, etc.) system needs to support; provided and installed by others

1.1.3. Manufacturer & Alternate Manufacturer List

Provide a table consisting of all the major furniture items in the order forms and two alternate manufacturers for each item. ALTERNATE MANUFACTURER ITEMS MUST BE SELECTED FROM GSA SCHEDULE AND MEET ALL THE SALIENT FEATURES OF THE ORIGINALLY SPECIFIED ITEM. Provide manufacturer name, address, telephone number, product series and product name for each item and the two alternate items. Major furniture items include, but are not limited to, casegoods, furniture systems, seating, and tables. Organize matrix by item code and item name.

1.1.4. FF&E Procurement List

Provide a table that lists all FF&E furniture, mission unique equipment and building Contractor Furnished/Contractor Installed (CF/CI) items. Give each item a code and name and designate whether item will be procured as part of the FF&E furniture, mission unique equipment or the building construction contract. Use the item code to key all FF&E documents including location plans, color boards, data sheets, cost estimate, etc. Divide the FF&E package into different sections based on this listing, applies to order forms and cost estimates.

1.1.5. Points of Contact (POCs)

Provide a comprehensive list of POCs needed to implement the FF&E package. This would include but not be limited to appropriate project team members, using activity contacts, interior design representatives, construction contractors and installers involved in the project. In addition to name, address, phone, fax and email, include each contact's job function. Divide the FF&E package into different sections based on this listing, applies to order forms and cost estimates.

1.1.6. Color Boards

Provide color boards for all finishes and fabrics for all FF&E items. Finishes to be included but not limited to paint, laminate, wood finish, fabric, etc.

1.1.7. Itemized Furniture Cost Estimate

Provide an itemized cost estimate of furnishings keyed to the plans and specifications of products included in the package. This cost estimate should be based on GSA price schedules. The cost estimate must include separate line items for general contingency, installation, electrical hook-up for systems furniture or other furniture requiring hardwiring by a licensed electrician, freight charges and any other related costs. Installation and freight quotes from vendors should be used in lieu of a percentage allowance when available. Include a written statement that the pricing is based on GSA schedules. An estimate developed by a furniture dealership may be provided as support information for the estimate, but must be separate from the contractor provided estimate.

1.2. INTERIOR DESIGN DOCUMENTS

1.2.1. Overall Furniture and Area Plans

Provide floor Plans showing locations and quantities of all freestanding, and workstation furniture proposed for each floor of the building. Key each room to a large scale Furniture Placement Plan showing the furniture configuration, of all furniture. Provide enlarged area plans with a key plan identifying the area in which the building is located. Key all the items on the drawings by furniture item code. Do not provide manufacturer specific information such as product names and numbers on drawings, Drawings shall be non-proprietary. This is typical for FFE on all plans, including those

mentioned below. Coordinate the overall furniture and area plans with the Life Safety Code Review to ensure adequate clearances are provided for egress. Provide a narrative of this coordination to accompany the Furniture and Area plans.

1.2.2. Workstation Plans

Show each typical workstation configuration in plan view. In addition, provide either elevations or an isometric view. Drawings shall illustrate panels and all major components for each typical workstation configuration. Identify workstations using the same numbering system as shown on the project drawings. Key components to a legend on each sheet which identifies and describes the components along with dimensions. Provide the plan, elevations and isometric of each typical workstation together on the same drawing sheet.

1.2.3. Panel Plans

Show panel locations and critical dimensions from finished face of walls, columns, panels including clearances and aisle widths. Key panel assemblies to a legend which shall include width, height, configuration of frames, panel fabric and finishes (if there are different selections existing within a project), powered or non-powered panel and wall mount locations.

1.2.4. Desk Plans

Provide typical free standing desk configurations in plan view. In addition, provide either elevation or an isometric view and identify components to clearly represent each desk configuration.

1.2.5. Reflected Ceiling Plans

Provide typical plans showing ceiling finishes and heights, lighting fixtures, heating ventilation and air conditioning supply and return, and sprinkler head placement for coordination of furniture.

1.2.6. Electrical and Telecommunication Plans

Show power provisions including type and locations of feeder components, activated outlets and other electrical componentsShow locations and quantities of outlets for workstations. Clearly identify different outlets, i.e. electrical, LAN and telecommunication receptacles indicating each type proposed. Show wiring configuration, (circuiting, switching, internal and external connections) and provide as applicable.

1.2.7. Artwork Placement Plans

Provide an Artwork Placement Plan to show location of artwork, assign an artwork item code to each piece of artwork. As an alternative, artwork can be located on the Furniture Plans. Provide a schedule that identifies each piece by room name and number. Provide installation instructions; include mounting height.

1.2.8. Window Drapery Plans

Provide Interior Window Drapery Plans. Key each drapery treatment to a schedule showing color, pattern, material, drapery size and type, draw direction, location and quantities.

1.2.9. Portable Fire extinguishers:

Provide a list of all required portable fire extinguishers, with descriptions (location, size, type, etc.) and total number per type. See also attachment D, "SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW", paragraph 1.14.

1.3. FURNITURE SELECTION

1.3.1. Select furniture from the GSA Schedules. Specify furniture available open market when an item is not available on the GSA Schedules. Provide justification fort items not available on the GSA Schedules.

1.3.2. To the greatest extent possible when specifying furniture work within a manufacturer's family of furniture for selections, example: Steelcase, Turnstone, Brayton International, Metro, and Vecta are all Steelcase companies. Each alternate should also be specified from a manufacturer's family of furniture, example: first set of alternates would be specified from Knoll's family of furniture and the second from Herman Miller family of furniture. It may be necessary to make some selections from other than a manufacturer's family of furniture if costs are not reasonable for particular items, some items are not available or appropriate for the facility or the items are not on GSA Schedule. If this occurs, consider specifying product from an open line that is accessible by numerous dealerships. Select office furniture including case goods, tables, storage, seating, etc. that is compatible in style, finish and color. Select furniture that complies with ANSI/BIFMA and from manufacturer's standard product line as shown in the most recent published price list and/or amendment and not custom product.

1.4. CONSTRUCTION

1.4.1. Provide knee space at workstations and tables that is not obstructed by panels/legs that interfere with knee space of seated person and specificy modesty panels at walls to be of a height or be hinged to allow access to building wall electrical outlets and communication jacks. Provide desks, storage and tables with leveling devices to compensate for uneven floors.

1.4.2. Unless otherwise noted, specify workstations and storage of steel construction. Provide high pressure laminate worksurface tops constructed to prevent warpage (thermallyfused worksurfaces are not acceptable). Provide user friendly features such as radius edges. Do not use sharp edges and exposed connections and ensure the underside of desks, tables and worksurfaces are completely and smoothly finished. Provide abutting worksurfaces that mate closely and are of equal heights when used in side-by-side configurations in order to provide a continuous and level worksurface.

1.4.3. Drawers shall stay securely closed when in the closed position and protect wires from damage during drawer operation. Include a safety catch to prevent accidental removal when fully open

1.4.4. Unless otherwise noted, provide lockable desks and workstations, filing cabinets and storage. Key all locks within a one person office the same; key all one person offices within a building differently. If an office or open office area has more than one workstation, key all the workstations differently, but key all locks within an individual workstation the same. Use tempered glass glazing when glazing is required. Use light-emitting diode (LED)/solid state lighting where task lighting is required in furniture.

1.5. FINISHES AND UPHOLSTERY

1.5.1. Specify neutral colors for casegoods, furniture systems, storage and tables. Specify desk worksurfaces and table tops that are not too light or too dark in color and have a pattern to help hide soiling. Accent colors are allowed in break and lounge areas. Keep placement of furniture systems panel fabric accent colors to a minimum. All finishes shall be cleanable with ordinary household cleaning solutions.

1.5.2. Use manufacturer's standard fabrics; including textile manufacturers fabrics that have been graded into the furniture manufactures fabric grades and are available through their GSA Schedule. Customers Own Material (COM) can be used in headquarter buildings in command suites with executive furniture. Coordinate specific locations with Corps of Engineers Interior Designer.

1.5.3. Specify seating upholstery that meets Wyzenbeek Abrasion Test, 55,000 minimum rubs. Specify a soil retardant finish for woven fabrics if Crypton or vinyl upholstery is not provided for seating in dining areas. Use manufacturer's standard fabrics. This includes textile manufacturers fabrics that have been graded into the furniture manufactures fabric grades and are available through their GSA Schedule. Specify upholstery and finish colors and patterns that help hide soiling. Specify finishes that can be cleaned with ordinary household cleaning solutions.

1.6. ACCESSORIES

1.6.1. Specify all accessories required for completely finished furniture installation. Provide filing cabinets and storage for office supplies. Provide tack surfaces at workstations with overhead storage. Provide tackable surfaces at workstations with overhead storage.

1.6.2. Not Used.

1.6.3. Workstations are to be equipped with stable keyboard trays that have height adjustability, tilting capability, including negative tilt, have a mouse pad at same height as the keyboard tray that can accommodate both left and right handed users, and retractable under worksurface.

1.7. MISSION UNIQUE EQUIPMENT

Funding for FF&E furniture items and mission unique equipment (MUE) items are from two different sources. Separate the designs and procurement documentation for FFE items and MUE. MUE includes, but is not limited to, items such as commerical appliances, fitness equipment, IT equipment and supporting carts. The User will purchase and install mission unique equipment items, unless otherwise noted. Identify locations of known MUE items such as commercial appliances, etc. for space planning purposes.

1.8. SUSTAINABILITY

1.8.1. For all designs provided regardless of facility type, make every effort to implement all aspects of sustainability to the greatest extent possible for all the selections made in the FF&E package. This includes but is not limited to the selection of products that consider: **Material Chemistry and Safety of Inputs** (What chemicals are used in the construction of the selections?); **Recyclability** (Do the selections contain recycled content?); **Disassembly** (Can the selections be disassembled at the end of their useful life to recycle their materials?).

1.8.2. Make selections to the greatest extent possible of products that possess current McDonough Braungart Design Chemistry (MBDC) certification or other "third-party" certified Cradle to Cradle program, Forest Stewardship Council (FSC) certification, GREENGAURD certification or similar "third-party" certified products consisting of low-emitting materials.

1.9. FURNITURE SYSTEMS

1.9.1. General.

Where appropriate, design furniture systems in open office areas. Coordinate style and color of furniture systems with other storage, seating, etc. in open office areas. Minimize the number of workstation typicals and the parts and pieces required for the design to assist in future reconfiguration and inventorying.

1.9.2. Connector Systems.

Specify a connector system that allows removal of a single panel or spine wall within a typical workstation configuration without requiring disassembly of the workstation or removal of adjacent panels. Specify

connector system with tight connections and continuous visual seals. When Acoustical panels are used, provide connector system with continuous acoustical seals. Specify concealed clips, screws, and other construction elements, where possible.

1.9.3. Panels and Spine Walls

Specify panels and spine walls with hinged or removable covers that permit easy access to the raceway when required but are securely mounted and cannot be accidentally dislodged under normal conditions. Panels shall be capable of structurally supporting more than 1 fully loaded component per panel per side. Raceways are to be an integral part of the panel and must be able to support lay-in cabling and have a large capacity for electrical and IT. Do not thread cables through the frame.

1.9.4. Electrical And Information/Technology (IT)

Design furniture with electrical systems that meets requirements of UL 1286 when powered panels are required and UL approved task lights that meet requirements of NFPA 70. Dependent on user requirements and Section 01 10 00, paragraph 3 requirements, it is recommended that workstation electrical and IT wiring entry come from the building walls to eliminate the use of power poles and access at the floor. Design electrical and IT systems that are easily accessed in the spine wall and panels without having to move return panels and components. Electrical and IT management will be easily accessible by removable wall covers which can be removed while workstation components are still attached. Specify connector system that has continuation of electrical and IT wiring within workstations and workstation to workstation.

1.9.5. Pedestals

Specify pedestals that are interchangeable from left to right, and right to left, and retain pedestal locking system capability.

1.10. EXECUTIVE FURNITURE

1.10.1. Design for executive furniture in command areas, coordinate specific locations with Corps of Engineers Interior Designer. Use upgraded furniture, upholsteries and finishes in command suites. This includes but is not limited to wood casegoods, seating and tables. Select executive furniture casegoods from a single manufacturer and style line, to include workstations, credenzas, filing, and storage, etc.

1.10.2. Specify furniture with wood veneer finish with mitered solid wood edge of same wood type. Other executive office furniture such as seating, tables, executive conference room furniture, etc. shall be compatible in style, finish and color with executive furniture casegoods.

1.11. SEATING

1.11.1. General

Specify appropriate chair casters and glides for the floor finish where the seating is located. All task seating shall support up to a minimum of 250 lbs.

1.11.2. Desk and Guest Seating

Select ergonomic desk chairs with casters, waterfall front, swivel, tilt, variable back lock, adjustable back height or adjustable lumbar support, pneumatic seat height adjustment, and padded, contoured upholstered seat and back. Desk and guest chair backs may be other than upholstered such as mesh fabric if it is ergonomically designed, forms to back and is comfortable. Depending on scale of desk chair provide seat pan forward and back adjustment to increase or decrease depth of seat pan. All desk chairs

shall have an adjustable seat height range of 4 1/2", range to include 16 1/2-20". Select guest chairs that are compatible in style, finish and color with the desk chairs.

1.11.3. Conference Room Seating

At tables, select ergonomic conference seating with casters, non-upholstered arms, waterfall front, swivel, tilt, pneumatic seat height adjustment, and padded, contoured seat and back, unless otherwise noted. Select arm height and/or design that allows seating to be moved up closely to the table top. Conference chair backs may be other than upholstered such as mesh fabric if it is ergonomically designed, forms to back and is comfortable. Perimeter conference chairs shall be compatible in style, finish and color with conference seating at the tables.

1.11.4. Lounge, Waiting and Reception Area Seating

Select seating with arms and cushioned, upholstered seat and back. In heavy use areas, arms shall be easily cleaned such as non-upholstered arms or upholstered arms with wood arm caps unless otherwise noted.

1.11.5. Break Room Seating

Select stackable seating that is easily cleaned. Seating shall be appropriate for table and counter heights as applicable with non-upholstered arms if arms are required. Chairs shall have metal legs and composite materials for seats.

1.12. FILING AND STORAGE.

Select storage and shelving units that meet customer’s functional load requirements for stored items. Specify counterweights for filing cabinets when required by the manufacturer for stability. File drawers shall allow only one drawer to be opened at a time. Provide heavy duty storage and shelving if information is not available.

1.13. TRAINING TABLES.

raining tables shall be reconfigurable, moveable and storable; lighter weight folding with dollies or castered as necessary. Plastic laminate self edges are unacceptable. Specify power and data requirements and dollies as required.

1.14. FURNITURE WARRANTIES.

Specify manufacturer's performance guarantees or warranties that include parts, labor and transportation as follows:

Furniture System, unless otherwise noted – 10 year minimum
Furniture System Task Lights – 2 year minimum, excluding bulbs
Furniture System Fabric – 3 year minimum
Wood Desks - 10 year minimum

Metal Desks – 12 year minimum
Seating, unless otherwise noted - 10 year minimum
Seating Mechanisms and Pneumatic Cylinders - 10 years
Seating Fabric - 3 years minimum
Wood Filing and Storage - 10 year minimum

Tables, unless otherwise noted - 10 year minimum
Table Mechanisms – 5 year minimum

Table Ganging Device - 1 year minimum
Items not listed above - 1 year minimum

ATTACHMENT C
TRACKING COMMENTS IN DRCHECKS

1.0 General

The Government and DB Contractor shall set up the project in Dr Checks. Throughout the design process, the parties shall enter, track, and back-check comments using the DrChecks system. Government and Contractor reviewers enter design review comments into DrChecks. Designers of Record shall annotate comments timely and specifically to indicate for the review conference exactly what action will be taken or why the action is not required. After the design review conference and prior to the next design submittal for the package, the DOR's will annotate those comments that require DOR action, design revision, etc. to show how and where it has been addressed in the design documents, This shall be part of the required design configuration management plan. Comments considered critical by the conference participants shall be flagged as such.

2.0 DrChecks Review Comments

The Contractor and the Government shall monitor DrChecks to assure all comments are annotated and resolved prior to the next submittal. Print and include the DrChecks comments and responses and included in the design analysis for record in the next design submittal for that package.

2.1. Upon review of comments prior to the design review conference, the DOR(s) shall identify whether they concur, non-concur, mark it "for information only" or mark it "check and resolve". Indicate exactly what action will be taken or why the action is not required.

2.2. Conference participants (reviewers) will expect coordination between Design Analysis calculations and the submitted design. Reviewers will also focus on the design submittal's satisfaction of the contract requirements.

2.3. After the conference, the DOR(s) shall formally respond to each applicable comment in DrChecks a second time prior to the next submittal, clearly indicating what action was taken and what drawing/spec/design analysis changed. Designers of Record are encouraged to directly contact reviewers to discuss and agree to the formal comment responses rather than relying only on DrChecks and review meetings to discuss comments. With the next submittal, reviewers will back-check answers to the comments against the new submittal, in addition to reviewing additional design work.

2.4. Clearly annotate in DrChecks those comments that, in the DB Contractor's opinion, require effort outside the scope of the contract. Do not proceed with work outside the contract until a modification to the contract is properly executed, if one is necessary.

3.0 DrChecks Initial Account Set-Up

To initialize an office's use of DrChecks, choose a contact person within the office to call the DrChecks Help Desk at 800-428-HELP, M-F, 8AM-5PM, Central time. This POC will be given an office password to distribute to others in the office. Individuals can then go to the hyperlink at http://www.projnet.org and register as a first time user. Upon registration, each user will be given a personal password to the DrChecks system.

3.1. Once the office and individuals are registered, the COE's project manager or lead reviewer will assign the individuals and/or offices to the specific project for review. At this point, persons assigned can make comments, annotate comments, and close comments, depending on their particular assignment.

4.0 DrChecks Reviewer Role

The Contractor is the technical reviewer and the Government is the compliance reviewer of the DB's design documents. Each reviewer enters their own comments into the Dr Checks system. To enter comments:

4.1. Log into DrChecks.

4.2. Click on the appropriate project.

4.3. Click on the appropriate review conference. An Add comment screen will appear.

4.4. Select or fill out the appropriate sections (particularly comment discipline and type of document for sorting) of the comment form and enter the comment in the space provided.

4.5. Click the Add Comment button. The comment will be added to the database and a fresh screen will appear for the next comment you have.

4.6. Once comments are all entered, exit DrChecks by choosing "My Account" and then Logout.

5.0 DrChecks Comment Evaluation (Step 1 of 2)

The role of the DOR(s) is to evaluate and respond to the comments entered by the Government's and DB Contractor's reviewers. To respond to comments:

5.1. Log into DrChecks.

5.2. Click on the appropriate project.

5.3. Under "Evaluate" click on the number under "Pending".

5.4. Locate the comments that require your evaluation. (Note: If you know the comment number you can use the Quick Pick window on your home page in DrChecks; enter the number and click on go.)

5.5. Select the appropriate evaluation radio button (concur, non-concur, for information only, or check and resolve) and respond with a brief explanation in the Discussion field. An explanation other than to say "concur" is not necessary for "Concur", but may be useful for the Design Configuration Management purposes.

5.6. Click on the Add button. The evaluation will be added to the database and a fresh screen will appear with the next comment.

5.7. Once evaluations are all entered, exit DrChecks by choosing "My Account" and then Logout.

6.0 DrChecks Comment Evaluation (Step 2 of 2)

This is where the DOR(s) respond to each applicable comment in DrChecks after the design review conference, prior to the next submittal, clearly indicating what action was taken and what drawing/spec/design analysis changed. Respond to the previous comments, following the same steps as above, adding the narrative in the discussion field.

7.0 DrChecks Back-Check

At the following design conference, (where applicable) or at some other agreed time, Government and Contractor reviewers will back-check comment annotations against newly presented documents to verify that the designers' responses are acceptable and that all revisions have been completed. Reviewers

shall either enter additional back-check comments, if necessary, or close those where actions are complete.

7.1. Log into DrChecks.

7.2. Click on the appropriate project.

7.3. Under “My Backcheck” click on the number under “Pending”.

7.4. If you agree with the designer’s response select “Close Comment” and add a closing response if desired.

7.5. If you do not agree with the designer’s response or the submittal does not reflect the response given, select “Issue Open”, enter additional information.

7.6. Click on the Add button. The back-check will be added to the database and a fresh screen will appear with the next comment.

7.7. Once back-checks are all entered, exit DrChecks by choosing “My Account” and then Logout. The design is completed and final when there are no pending comments to be evaluated and there are no pending or open comments under back-check.

ATTACHMENT D
SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW

Instructions: Use the information outlined in this document to provide the minimum requirement for development of Fire Protection and Life Safety Code submittals for all building projects. Additional and supplemental information may be used to further develop the code review. Insert N/A after criteria, which may be “not applicable”.

1.0 SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW

1.1. Project Name (insert name and location)

1.2. Applicable Codes and Standards

1.2.1. Unified Facilities Criteria (UFC): 3-600-01, Design: Fire Protection Engineering For Facilities

1.2.2. International Building Code (IBC) for fire resistance requirements, allowable floor area, building height limitations and building separation distance requirements, except as modified by UFC 3-600-01.

1.2.3. National Fire Protection Association (NFPA) 101 Life Safety Code (latest edition), for building egress and life safety and applicable criteria in UFC 3-600-01.

1.2.4. ADA and ABA Accessibllity Guidelines. For Buildings and Facilities See Section 01 10 00, Paragraph 3 for facility specific criteria.

1.3. Occupancy Classification
IBC chapters 3 and 4

1.4. Construction Type
IBC chapter 6

1.5. Area Limitations
IBC chapter 5, table 503

1.6. Allowable Floor Areas
IBC section 503, 505

1.7. Allowable area increases
IBC section 506, 507

1.8. Maximum Height of Buildings
IBC section 504

1.9. Fire-resistive substitution

1.10. Occupancy Separations
IBC table 302.3.2

1.11. Fire Resistive Requirements

1.11.1. Exterior Walls - [_____] hour rating, IBC table 601, 602

1.11.2. Interior Bearing walls - [_____] hour rating

1.11.3. Structural frame - [_____] hour rating

1.11.4. Permanent partitions - [_____] hour rating

1.11.5. Shaft enclosures - [_____] hour rating

1.11.6. Floors & Floor-Ceilings - [_____] hour rating

1.11.7. Roofs and Roof Ceilings - [_____] hour rating

1.12. Automatic Sprinklers and others used to determine the need for automatic Extinguishing Equipment, Extinguishing Systems, Foam Systems, Standpipe

1.12.1. UFC 3-600-01, chapters 4 and 6 systems, wet chemical systems, etc. State which systems are required and to what criteria they will be designed.

1.12.2. UFC 3-600-01, Appendix B Occupancy Classification. Note the classification for each room. This may be accomplished by classifying the entire building and noting exceptions for rooms that differ (E.g. The entire building is Light Hazard except boiler room and storage rooms which are [_____], etc.)

1.12.3. UFC 3-600-01, Chapter 3 Sprinkler Design Density, Sprinkler Design Area, Water Demand for Hose Streams (supply pressure and source requirements).

1.12.4. UFC 3-600-01, Chapter 4 Coverage per sprinkler head. Extended coverage sprinkler heads are not permitted.

1.12.5. Available Water Supply. Provide the results of the water flow tests showing the available water supply static pressure and residual pressure at flow. Based on this data and the estimated flow and pressure required for the sprinkler system, determine the need for a fire pump.

1.12.6. NFPA 13, Para. 8.16.4.6.1. Provide backflow preventer valves as required by the local municipality, authority, or water purveyor. Provide a test valve located downstream of the backflow preventer for flow testing the backflow preventer at full system demand flow. Route the discharge to an appropriate location outside the building.

1.13. Kitchen Cooking Exhaust Equipment

Describe when kitchen cooking exhaust equipment is provided for the project. Type of extinguishing systems for the equipment should be provided. per NFPA 96. Show all interlocks with manual release switches, fuel shutoff valves, electrical shunt trips, exhaust fans, and building alarms.

1.14. Portable Fire Extinguishers, fire classification and travel distance. per NFPA 10

1.15. Enclosure Protection and Penetration Requirements. - Opening Protectives and Through Penetrations

1.15.1. IBC Section712, 715 and Table 715.3. Mechanical rooms, exit stairways, storage rooms, janitor [_____] hour rating. IBC Table 302.1.1

1.15.2. Fire Blocks, Draft Stops, Through Penetrations and Opening Protectives

1.16. Fire Dampers. Describe where fire dampers and smoke dampers are to be used (IBC Section 716 and NFPA 90A}. State whether isolation smoke dampers are required at the air handler.

1.17. Detection Alarm and Communication. UFC 3-600-01, (Chapter 5); NFPA 101 para. 3.4 (chapters 12-42); NFPA 72

1.18. Mass Notification. Describe building/facility mass notification system (UFC 4-021-01) type and type of base-wide mass notification/communication system. State whether the visible notification appliances will be combined with the fire alarm system or kept separate. (Note: Navy has taken position to combine visible notification appliances with fire alarm).

1.19. Interior Finishes (classification). NFPA 101.10.2.3 and NFPA 101.7.1.4

1.20. Means of Egress

1.20.1. Separation of Means of Egress, NFPA 101 chapters 7 and 12-42; NFPA101.7.1.3

1.20.2. Occupant Load, NFPA101.7.3.1 and chapters 12-42.

1.20.3. Egress Capacity (stairs, corridors, ramps and doors) NFPA101.7.3.3

1.20.4. Number of Means of Egress, NFPA101.7.4 and chapters 12-42.

1.20.5. Dead end limits and Common Path of Travel, NFPA 101.7.5.1.6 and chapters 12-42.

1.20.6. Accessible Means of Egress (for accessible buildings), NFPA101.7.5.4

1.20.7. Measurement of Travel Distance to Exits, NFPA101.7.6 and chapters 12-42.

1.20.8. Discharge from Exits, NFPA101.7.7.2

1.20.9. Illumination of Means of Egress, NFPA101.7.8

1.20.10. Emergency Lighting, NFPA101.7.9

1.20.11. Marking of Means of Egress, NFPA101.7.10

1.21. Elevators, UFC 3-600-01, Chapter 6; IBC and ASME A17.1 - 2000,(Safety Code for Elevators and Escalators)

1.22. Accessibility Requirements, ADA and ABA Accessibility Guidelines for Buildings and Facilities

1.23. Certification of Fire Protection and Life Safety Code Requirements. (Note: Edit the Fire team membership if necessary). Preparers of this document certify the accuracy and completeness of the Fire Protection and Life Safety features for this project in accordance with the attached completed form(s).

1.24. Designer of Record. Certification of Fire protection and Life Safety Code Requirements. (Note: Edit the Fire team members if necessary). Preparers of this document certify the accuracy and completeness of the Fire Protection and Life Safety features of this project.

Fire Protection Engineer of Record:

_____

Signature and Stamp

Date

OR

Architect of Record:

_____

Signature and Stamp

Date

Mechanical Engineer of Record:

_____

Signature and Stamp

Date

Electrical Engineer of Record:

_____

Signature/Date

ATTACHMENT E
LEED SUBMITTALS

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	**LEED-NC v3 Submittals (OCT09)**		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
GENERAL							
	GENERAL - All calculations shall be in accordance with LEED 2009 Reference Guide.						
	GENERAL: Obtain excel version of this spreadsheet at http://en.sas.usace.army.mil/enWeb, "Engineering Criteria".						
	GENERAL - For all credits, narrative/comments may be added to describe special circumstances or considerations regarding the project's credit approach.						
	GENERAL - Include all required LEED drawings indicated below in contract drawings with applicable discipline drawings, labeled For Reference Only.						
	NOTE: Each submittal indicated with "**" differs from LEED certified project submittals by either having a different due date or being an added submittal not required by GBCI.						
	NOTE: Projects seeking LEED certification need only submit to GBCI whatever documentation is acceptable to GBCI (for example, licensed professional certifications). This checklist identifies what must be submitted to the Government for internal review purposes. Government review of LEED documentation in no way supercedes or modifies the requirements and rulings of of GBCI for purposes of compliance with project requirement to obtain LEED certifiaction.						
	GENERAL - Audit documentation may include but is not limited to what is indicated in this table.						
			Closeout		List of all Final Design submittals revised after final design to reflect actual closeout conditions. Revised Final Design submittals. - OR - Statement confirming that no changes have been made since final design that effect final design submittal documents.		Proj Engr (PE)
CATEGORY 1 - SUSTAINABLE SITES							
SSPR1		Construction Activity Pollution Prevention (PREREQUISITE)	**Final Design		List of drawings and specifications that address the erosion control, particulate/dust control and sedimentation control measures to be implemented.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			**Final Design		Narrative that indicates which compliance path was used (NPDES or Local standards) and describes the measures to be implemented on the project. If a local standard was followed, provide specific information to demonstrate that the local standard is equal to or more stringent than the NPDES program.		CIV
SS1		Site Selection	Final Design		Statement confirming that project does not meet any of the prohibited criteria.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	X	LEED Site plan drawing that shows all proposed development, line depicting boundary of all bodies of water and/or wetlands within 100 feet of project boundary and a line depicting 5' elevation above 100 year flood line that falls within project boundary. Not required if neither condition applies.		CIV
SS2		Development Density & Community Connectivity	Final Design		Option 1: LEED Site vicinity plan showing project site and surrounding development. Show density boundary or note drawing scale.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: Table indicating, for project site and all surrounding sites within density radius (keyed to site vicinity plan), site area and building area. Project development density calculation. Density radius calculation. Development density calculation within density radius.		CIV
			Final Design		Option 2: LEED Site vicinity plan showing project site, the 1/2 mile community radius, pedestrian walkways and the locations of the residential development(s) and Basic Services surrounding the project site.		CIV
			Final Design		Option 2: List (including business name and type) of all Basic Services facilities within the 1/2 mile radius, keyed to site vicinity plan.		CIV
SS3		Brownfield Redevelopment	Final Design		Narrative describing contamination and the remediation activities included in project. Include statement indicating how site was determined to be a brownfield.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS4.1		Alternative Transportation: Public Transportation Access	Final Design		Statement indicating which option for compliance applies. State whether public transportation is existing or proposed and, if proposed, cite source of this information.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: LEED Site vicinity plan showing project site, mass transit stops and pedestrian path to them with path distance noted.		CIV
			Final Design		Option 2: LEED Site vicinity plan showing project site, bus stops and pedestrian path to them with path distance noted.		CIV
SS4.2		Alternative Transportation: Bicycle Storage & Changing Rooms	Final Design		FTE calculation. Bicycle storage spaces calculation. Shower/changing facilities calculation.		CIV
			Final Design		List of drawings that show the location(s) of bicycle storage areas. Statement indicating distance from building entrance.		CIV
			Final Design		List of drawings that show the location(s) of shower/changing facilities and, if located outside the buiding, statement indicating distance from building entrance.		ARC

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PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
SS4.3		Alternative Transportation: Low Emitting & Fuel Efficient Vehicles	Final Design		Statement indicating which option for compliance applies. FTE calculation. Statement indicating total parking capacity of site.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: Low-emission & fuel-efficient vehicle calculation.		CIV
			Final Design		Option 1: List of drawings and specification references that show location and number of preferred parking spaces for low-emission & fuel-efficient vehicles and signage.		CIV
			Final Design		Option 1: Statement indicating quantity, make, model and manufacturer of low-emission & fuel-efficient vehicles to be provided. Statement confirming vehicles are zero-emission or indicating ACEEE vehicle scores.		CIV
			Final Design		Option 2: Low-emission & fuel-efficient vehicle parking calculation.		CIV
			Final Design		Option 2: List of drawings and specification references that show location and number of preferred parking spaces and signage.		CIV
			Final Design		Option 3: Low-emission & fuel-efficient vehicle refueling station calculation.		CIV
			Final Design		Option 3: List of drawings and specifications indicating location and number of refueling stations, fuel type and fueling capacity for each station for an 8-hour period.		CIV
			Closeout	X	Option 3: Construction product submittals indicating what was provided and confirming compliance with respect to fuel type and fueling capacity for each station for an 8-hour period.		CIV
SS4.4		Alternative Transportation: Parking Capacity	Final Design		Statement indicating which option for compliance applies.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: Preferred parking calculation including number of spaces required, total provided, preferred spaces provided and percentage.		CIV
			Final Design		Option 2: FTE calculation. Preferred parking calculation including number of spaces provided, preferred spaces provided and percentage.		CIV
			Final Design		Options 1 and 2: List of drawings and specification references that show location and number of preferred parking spaces and signage.		CIV
			Final Design		Option 3: Narrative indicating number of spaces required and provided and describing infrastructure and support programs with description of project features to support them.		CIV
SS5.1		Site Development: Protect or Restore Habitat	**Final Design		Option 1: List of drawing and specification references that convey site disturbance limits.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			**Final Design		Option 2: LEED site plan drawing that delineates boundaries of each preserved and restored habitat area with area (sf) noted for each.		CIV
			**Final Design		Option 2: Percentage calculation of restored/preserved habitat to total site area. List of drawings and specification references that convey restoration planting requirements.		CIV
SS5.2		Site Development: Maximize Open Space	Final Design		Option 2: LEED site plan drawing delineating boundary of vegetated open space adjacent to building with areas of building footprint and designated open space noted.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS6.1		Stormwater Design: Quantity Control	Final Design		Statement indicating which option for compliance applies.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: Indicate pre-development and post-development runoff rate(cfs) and runoff quantity (cf) -OR - Narrative describing site conditions, measures and controls to be implemented to prevent excessive stream velocities and erosion.		CIV
			Final Design		Option 2: Indicate pre-development and post-development runoff rate(cfs) and runoff quantity (cf). Indicate percent reduction in each.		CIV
SS6.2		Stormwater Design: Quality Control	Final Design		For non-structural controls, list all BMPs used and, for each, describe the function of the BMP and indicate the percent annual rainfall treated. List all structural controls and, for each, describe the pollutant removal and indicate the percent annual rainfall treated.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS7.1		Heat Island Effect: Non-Roof	**Final Design		LEED site plan drawing indicating locations and quantities of each paving type, including areas of shaded pavement. Percentage calculation indicating percentage of reflective/shaded/open grid area.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV

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PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
SS7.2		Heat Island Effect: Roof	Final Design		Option 1: Percentage calculation indicating percentage of SRI compliant roof area. List of drawings and specification references that convey SRI requirements and roof slopes.		ARC
			Final Design		Option 1: List of specified roof materials indicating, for each, type, manufacturer, product name and identification if known, SRI value and roof slope.		ARC
			**Closeout		Option 1: List of installed roof materials indicating, for each, manufacturer, product name and identification, SRI value and roof slope.		PE
			Closeout	X	Option 1: Manufacturer published product data or certification confirming SRI		PE
			Final Design		Option 2: Percentage calculation indicating percentage of vegetated roof area.		ARC
			Final Design		Option 3: Combined reflective and green roof calculation.		ARC
			Final Design		Option 3: List of specified roof materials indicating, for each, type, manufacturer, product name and identification if known, SRI value and roof slope.		ARC
			**Closeout		Option 3: List of installed roof materials indicating, for each, manufacturer, product name and identification, SRI value and roof slope.		PE
			Closeout	X	Option 3: Manufacturer published product data or certification confirming SRI		PE
SS8		Light Pollution Reduction	Final Design		Interior Lighting: List of drawings and specification references that convey interior lighting requirements (location and type of all installed interior lighting, location of non-opaque exterior envelope surfaces, allowing confirmation that maximum candela value from interiorfixtures does not intersect non-opaque building envelope surfaces). - OR - List of drawings and specification references that show automatic lighting controls compliance with credit requirement.		ELEC
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		ELEC
			Final Design		Exterior Lighting: List of drawings and specification references that convey exterior lighting requirements (location and type of all site lighting and building façade/landscape lighting).		ELEC
			Final Design		Exterior Site Lighting Power Density (LPD): Tabulation for exterior site lighting indicating, for each location identification or description, units of measure, area or distance of the location, actual LPD using units consistent with ASHRAE 90.1, and the ASHRAE allowable LPD for that type of location. Percentage calculation of actual versus allowable LPD for all site lighting.		ELEC
			Final Design		Exterior Building Facade/Landscape Lighting Power Density (LPD): Tabulation for exterior building facade/landscape lighting indicating, for each location identification or description, units of measure, area or distance of the location, actual LPD using units consistent with ASHRAE 90.1, and the ASHRAE allowable LPD for that type of location. Percentage calculation of actual versus allowable LPD for all building facade/landscape lighting.		ELEC
			Final Design		Exterior Lighting IESNA Zone: Indicate which IESNA zone is applicable to the project.		ELEC
			Final Design		Exterior Lighting Site Lumen table indicating, for each fixture type, quantity installed, initial lamp lumens per luminaire, initial lamp lumens above 90 degrees from Nadir, total lamp lumens and total lamp lumens above 90 degrees. Percentage of site lamp lumens above 90 degrees from nadir to total lamp lumens.		ELEC
			Final Design		Exterior Lighting Narrative describing analysis used for addressing requirements for light trespass at site boundary and beyond.		ELEC
CATEGORY 2 – WATER EFFICIENCY							
WEPR1		Water Use Reduction: 20% Reduction	Final Design		Statement confirming which occupancy breakdown applies (default or special). For special occupancy breakdown, indicate source and explanation for ratio.		MEC
			Final Design		Occupancy calculation including male/female numbers for FTEs, visitors, students, customers, residential and other type occupants/users		MEC
			Final Design		Statement indicating percent of male restrooms with urinals. Statement indicating annual days of operation.		MEC

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PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
			Final Design		Baseline flush fixture calculation spreadsheet indicating, for each fixture type, gender, flush rate, daily uses per person for each occupant type identified in occupancy calculation and annual baseline flush fixture water usage.		MEC
			Final Design		Design case flush fixture calculation spreadsheet indicating, for each fixture type, gender, fixture manufacturer, fixture model number, flush rate, percent of occupants using this fixture type, daily uses per person for each occupant type identified in occupancy calculation and annual design case flush fixture water usage.		MEC
			Closeout	X	Manufacturer published product data or certification confirming fixture water usage.		PE
WE1.1		Water Efficient Landscaping: Reduce by 50%	Final Design		Statement indicating which option for compliance applies.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Calculation indicating, for baseline and design case, total water applied, total potable water applied, total non-potable water applied. Design case percent potable water reduction. If nonpotable water is used, indicate source of nonpotable water.		CIV
			Final Design		List of landscape plan drawings.		CIV
			Final Design		Narrative describing landscaping and irrigation design strategies, including water use calculation methodology used to determine savings and, if non-potable water is used, specific information about source and available quantity.		CIV
WE1.2		Water Efficient Landscaping: No Potable Water Use or No Irrigation	Same as WE1.1		Same as WE1.1		CIV
WE2		Innovative Wastewater Technologies	Final Design		Statement confirming which option for compliance applies.		MEC
			Final Design		Statement confirming which occupancy breakdown applies (default or special). For special occupancy breakdown, indicate source and explanation for ratio.		MEC
			Final Design		Occupancy calculation including male/female numbers for FTEs, visitors, students, customers, residential and other type occupants/users		MEC
			Final Design		Statement indicating percent of male restrooms with urinals. Statement indicating annual days of operation.		MEC
			Final Design		Baseline flush fixture calculation spreadsheet indicating, for each fixture type, gender, flush rate, daily uses per person for each occupant type identified in occupancy calculation and annual baseline flush fixture water usage.		MEC
			Final Design		Design case flush fixture calculation spreadsheet indicating, for each fixture type, gender, fixture manufacturer, fixture model number, flush rate, percent of occupants using this fixture type, daily uses per person for each occupant type identified in occupancy calculation and annual design case flush fixture water usage.		MEC
			Final Design		Option 1: If onsite non-potable water is used, identify source(s), indicate annual quantity from each source and indicate total annual quantity from all onsite non-potable water sources.		MEC
			Final Design		Option 1: Summary calculation indicating baseline annual water consumption, design case annual water consumption, non-potable annual water consumption and total percentage annual water savings.		MEC
			Final Design		Option 2: Statement confirming on-site treatment of all generated wastewater to tertiary standards and all treated wastewater is either infiltrated or used on-site.		MEC
			Final Design		Option 2: List of drawing and specification references that convey design of on-site wastewater treatment features.		CIV
			Final Design		Option 2: On-site water treatment quantity calculation indicating all on-site wastewater source(s), annual quantity treated, annual quantity infiltrated and annual quantity re-used on site from each source and totals for annual quantity treated, annual quantity infiltrated and annual quantity re-used on site from all sources.		CIV
			Final Design		Option 2: Wastewater summary calculation indicating design case annual flush fixture water usage, annual on-site water treatment and percentage sewage convyance reduction.		MEC
			Final Design		Narrative describing project strategy for reduction of potable water use for sewage conveyance, including specific information on reclaimed water usage and treated wastewater usage.		MEC
WE3		Water Use Reduction: 30% - 40% Reduction	Same as WEPR1		Same as WEPR1		MEC
CATEGORY 3 – ENERGY AND ATMOSPHERE							

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EAPR1		Fundamental Commissioning of the Building Energy Systems (PREREQUISITE)	**Final Design		**Owner's Project Requirements document		ALL
			**Final Design		**Basis of Design document for commissioned systems		MEC, ELEC
			**Final Design		**Commissioning Plan		MEC, ELEC
			Closeout		Statement confirming all commissioning requirements have been incorporated into construction documents.		PE
			Closeout		Commissioning Report		PE
EAPR2		Minimum Energy Performance (PREREQUISITE)	Final Design		Statement listing the mandatory provisions of ASHRAE 90.1 that project meets relative to compliance with this prerequisite and indicating which compliance path was used.		MEC ELEC ARC
			Final Design		Statement indicating which compliance path option applies.		MEC
			Final Design		Option 1: Statement confirming simulation software capabilities and confirming assumptions and methodology.		MEC
			Final Design		Option 1: General information including simulation program, principal heating source, percent new construction and renovation, weather file, climate zone and Energy Star Target Finder score.		MEC
			Final Design		Option 1: Space summary listing, for each building use, the conditioned area, unconditioned area and total area and include total area for each category		MEC
			Final Design		Option 1: List of all simulation output advisory message data and show difference between baseline and proposed design		MEC
			Final Design		Option 1: Comparison summary for energy model inputs including description of baseline and design case energy model inputs, showing both by element type		MEC
			Final Design		Option 1: Energy type summary lising, for each energy type, utility rate description, units of energy and units of demand		MEC
			Final Design		Option 1: Statement indicating whether project uses on-site renewable energy. If yes, list all sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost		MEC
			Final Design		Option 1: If analysis includes exceptional calculation methods, statement describing how exceptional calculation measure cost savings is determined		MEC
			Final Design		Option 1: If analysis includes exceptional calculation methods, for each exceptional calculation method indicate energy types and, for each energy type, annual energy savings, annual cost savings, and brief descriptive narrative		MEC
			Final Design		Option 1: Baseline performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand for all four orientations. For each orientation indicate total annual energy use for each orientation and total annual process energy use.		MEC
			Final Design		Option 1: Baseline energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design		Option 1: Proposed Design performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand, baseline annual and peak energy demand and percent savings. Indicate total annual energy use and total annual process energy use for both proposed design and baseline and percent savings.		MEC
			Final Design		Option 1: Proposed Design energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design		Option 1: Energy cost and consumption by energy type report indicating, for each energy type, proposed design and baseline annual use and annual cost, percent savings annual use and annual cost. Indicate for renewable energy annual energy generated and annual cost. Indicate exceptional calculations annual energy savings and annual cost savings. Indicate building total annual energy use, annual energy cost for proposed design and baseline and indicate percent savings annual energy use and annual energy cost.		MEC

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			Final Design		Option 1: Compliance summaries from energy simulation software. If software does not produce compliance summaries provide output summaries and example input summaries for baseline and proposed design supporting data in the tables. Output summaries must include simulated energy consumption by end use and total energy use and cost by energy type. Example input summaries should represent most common systems and must include occupancy, use pattern, assumed envelope component sizes and descriptive features and assumed mechanical equipment types and descriptive features		MEC
			Final Design		Option 1: Energy rate tariff from project energy providers (only if not using LEED Reference Guide default rates)		MEC
EAPR3		Fundamental Refrigerant Management (PREREQUISITE)	Final Design		Statement indicating which option for compliance applies.		MEC
			Final Design		Option 2: Narrative describing phase out plan, including specific information on phase out dates and refrigerant quantities.		MEC
EA1		Optimize Energy Performance	Final Design		Statement indicating which compliance path option applies.		MEC
			Final Design		Option 1: Statement confirming simulation software capabilities and confirming assumptions and methodology.		MEC
			Final Design		Option 1: General information including simulation program, principal heating source, percent new construction and renovation, weather file, climate zone and Energy Star Target Finder score.		MEC
			Final Design		Option 1: Space summary listing, for each building use, the conditioned area, unconditioned area and total area and include total area for each category		MEC
			Final Design		Option 1: List of all simulation output advisory message data and show difference between baseline and proposed design		MEC
			Final Design		Option 1: Comparison summary for energy model inputs including description of baseline and design case energy model inputs, showing both by element type		MEC
			Final Design		Option 1: Energy type summary lising, for each energy type, utility rate description, units of energy and units of demand		MEC
			Final Design		Option 1: Statement indicating whether project uses on-site renewable energy. If yes, list all sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost		MEC
			Final Design		Option 1: If analysis includes exceptional calculation methods, statement describing how exceptional calculation measure cost savings is determined		MEC
			Final Design		Option 1: If analysis includes exceptional calculation methods, for each exceptional calculation method indicate energy types and, for each energy type, annual energy savings, annual cost savings, and brief descriptive narrative		MEC
			Final Design		Option 1: Baseline performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand for all four orientations. For each orientation indicate total annual energy use for each orientation and total annual process energy use.		MEC
			Final Design		Option 1: Baseline energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design		Option 1: Proposed Design performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand, baseline annual and peak energy demand and percent savings. Indicate total annual energy use and total annual process energy use for both proposed design and baseline and percent savings.		MEC
			Final Design		Option 1: Proposed Design energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design		Option 1: Energy cost and consumption by energy type report indicating, for each energy type, proposed design and baseline annual use and annual cost, percent savings annual use and annual cost. Indicate for renewable energy annual energy generated and annual cost. Indicate exceptional calculations annual energy savings and annual cost savings. Indicate building total annual energy use, annual energy cost for proposed design and baseline and indicate percent savings annual energy use and annual energy cost.		MEC

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			Final Design		Option 1: Compliance summaries from energy simulation software. If software does not produce compliance summaries provide output summaries and example input summaries for baseline and proposed design supporting data in the tables. Output summaries must include simulated energy consumption by end use and total energy use and cost by energy type. Example input summaries should represent most common systems and must include occupancy, use pattern, assumed envelope component sizes and descriptive features and assumed mechanical equipment types and descriptive features		MEC
			Final Design		Option 1: Energy rate tariff from project energy providers (only if not using LEED Reference Guide default rates)		MEC
EA2.1		On-Site Renewable Energy	Final Design		Statement indicating which compliance path option applies.		ELEC
			Final Design		List all on-site renewable energy sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost. Indicate total annual energy use (all sources), total annual energy cost (all sources) and percent renewable energy cost.		ELEC MEC
			Final Design		Option 1: Indicate, for renewable energy,proposed design total annual energy generated and annual cost.		ELEC MEC
			Final Design		Option 2: Indicate CBECS building type and building gross area. Provide the following CBECS data: median annual electrical intensity, median annual non-electrical fuel intensity, average electric energy cost, average non-electric fuel cost, annual electric energy use and cost, annual non-electric fuel use and cost.		ELEC MEC
			Final Design		Option 2: Narrative describing renewable systems and explaining calculation method used to estimate annual energy generated, including factors influencing performance.		ELEC MEC
EA2.2		On-Site Renewable Energy	Same as EA2.1		Same as EA2.1		ELEC MEC
EA2.3		On-Site Renewable Energy	Same as EA2.1		Same as EA2.1		ELEC MEC
EA3		Enhanced Commissioning	**Final Design		**Owner's Project Requirements document (OPR)		ALL
			**Final Design		**Basis of Design document for commissioned systems (BOD)		ELEC MEC
			**Final Design		**Commissioning Plan		ELEC MEC
			Closeout		Statement confirming all commissioning requirements have been incorporated into construction documents.		PE
			Closeout		**Commissioning Report		PE
			**Final Design		Statement by CxA confirming Commissioning Design Review		
			Closeout		Statement by CxA confirming review of Contractor submittals for compliance with OPR and BOD		PE
			Closeout		**Systems Manual		PE
			Closeout		Statement by CxA confirming completion of O&M staff and occupant training		PE
			Closeout		**Scope of work for post-occupancy review of building operation, including plan for resolution of outstanding issues		PE
			**Predesign		Statement confirming CxA qualifications and contractual relationships relative to work on this project, demonstrating that CxA is an independent third party.		MEC
EA4		Enhanced Refrigerant Management	Final Design		Refrigerant impact calculation table with all building data and calculation values as shown in LEED 2009 Reference Guide Example Calculations		MEC
			Final Design		Narrative describing any special circumstances or explanatory remarks		
			Closeout	X	Cut sheets highlighting refrigerant data for all HVAC components.		PE
EA5		Measurement & Verification	Closeout		Statement indicating which compliance path option applies.		PE
			Closeout		Measurement and Verification Plan including Corrective Action Plan		PE
			Closeout		**Scope of work for post-occupancy implementation of M&V plan including corrective action plan.		PE
EA6		Green Power	Closeout		Statement indicating which compliance path option applies.		PE
			Closeout		Option 1: Indicate proposed design total annual electric energy usage		PE
			Closeout		Option 2: Indicate actual total annual electric energy usage		PE
			Closeout		Option 3: Calculation indicating building type, total gross area, median electrical intensity and annual electric energy use		PE

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			Closeout		Green power provider summary table indicating, for each purchase type, provider name, annual quantity green power purchased and contract term. Indicate total annual green power use and indicate percent green power		PE
			Closeout		Narrative describing how Green Power or Green Tags are purchased		PE
CATEGORY 4 – MATERIALS AND RESOURCES							
MRPR1		Storage & Collection of Recyclables (PREREQUISITE)	Final Design		Statement confirming that recycling area will accommodate recycling of plastic, metal, paper, cardboard and glass. Narrative indicating any other materials addressed and coordination with pickup.		ARC
MR1.1		Building Reuse: Maintain 55% of Existing Walls, Floors & Roof	**Final Design		If project includes a building addition, confirm that area of building addition does not exceed 2x the area of the existing building.		ARC
			**Final Design		Spreadsheet listing, for each building structural/envelope element, the existing area and reused area. Total percent reused.		ARC
MR1.2		Building Reuse: Maintain 75% of Existing Walls, Floors & Roof	Same as MR1.1		Same as MR1.1		ARC
MR1.3		Building Reuse: Maintain 95% of Existing Walls, Floors & Roof	Same as MR1.1		Same as MR1.1		ARC
MR1.4		Building Reuse: Maintain 50% of Interior Non-Structural Elements	**Final Design		If project includes a building addition, confirm that area of building addition does not exceed 2x the area of the existing building.		ARC
			**Final Design		Spreadsheet listing, for each building interior non-structural element, the existing area and reused area. Total percent reused.		ARC
MR2.1		Construction Waste Management: Divert 50% From Disposal	**Preconstruction		Waste Management Plan		PE
			**Construction Quarterly and Closeout		Spreadsheet calculations indicating material description, disposal/diversion location (or recycling hauler), weight, total waste generated, total waste diverted, diversion percentage		PE
			**Construction Quarterly and Closeout		Receipts/tickets for all items on spreadsheet		PE
MR2.2		Construction Waste Management: Divert 75% From Disposal	Same as MR2.1		Same as MR2.1		PE
MR3.1		Materials Reuse: 5%	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each reused/salvaged material, material description, source or vendor, cost. Total reused/salvaged materials percentage.		PE
MR3.2		Materials Reuse: 10%	Same as MR3.1		Same as MR3.1		PE
MR4.1		Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each recycled content material, material name/description, manufacturer, cost, post-consumer recycled content percent, pre-consumer recycled content percent, source of recycled content data. Total post-consumer content materials cost, total pre-consumer content materials cost, total combined recycled content materials cost, recycled content materials percentage.		PE
			Final Design or NLT Preconstruction		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		PE
			Closeout	X	Manufacturer published product data or certification, confirming recycled content percentages in spreadsheet		PE
MR4.2		Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	Same as MR4.1		Same as MR4.1		PE
MR5.1		Regional Materials:10% Extracted, Processed & Manufactured Regionally	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each regional material, material name/description, manufacturer, cost, percent compliant, harvest distance, manufacture distance, source of manufacture and harvest location data. Total regional materials cost, regional materials percentage.		PE
			Preconstruction		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		PE
			Closeout	X	Manufacturer published product data or certification confirming regional material percentages in spreadsheet		PE

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MR5.2		Regional Materials:20% Extracted, Processed & Manufactured Regionally	Same as MR5.1		Same as MR5.1		PE
MR6		Rapidly Renewable Materials	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each rapidly renewable material, material name/description, manufacturer, cost, rapidly renewable content percent, rapidly renewable product value. Total rapidly renewable product value, rapidly renewable materials percentage.		PE
			Final Design		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		ARC
			Closeout	X	Manufacturer published product data or certification confirming rapidly renewable material percentages in spreadsheet		PE
MR7		Certified Wood	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each certified wood material, material name/description, vendor, cost, wood component percent, certified wood percent of wood component, FSC chain of custody certificate number. Total certified wood product value, certified wood materials percentage.		PE
			Final Design or NLT Preconstruction		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		PE
			Closeout	X	Vendor invoices, FSC chain of custody certificates and anufacturer published product data or certification confirming all certified wood materials percentages in spreadsheet.		PE
INDOOR ENVIRONMENTAL QUALITY							
EQPR1		Minimum IAQ Performance (PREREQUISITE)	Final Design		Statement indicating which option for compliance applies, stating applicable criteria/requirement, and confirming that project has been designed to meet the applicable requirements.		MEC
			Final Design		Narrative describing the project's ventilation design, including specifics about fresh air intake volumes and special considerations.		MEC
EQPR2		Environmental Tobacco Smoke (ETS) Control (PREREQUISITE)	Final Design		Statement indicating which option for compliance applies, stating applicable criteria/requirement, and confirming that project has been designed to meet the applicable requirements.		ARC
			Final Design		List of drawing and specification references that convey conformance to applicable requirements (signage, exhaust system, room separation details, etc).		ARC
EQ1		Outdoor Air Delivery Monitoring	Final Design		Statement indicating which option for compliance applies and confirming that project has been designed to meet the applicable requirements.		MEC
			Final Design		List of drawing and specification references that convey conformance to applicable requirements.		MEC
			Final Design		Narrative describing the project's ventilation design and CO2 monitoring system, including specifics about monitors, operational parameters and setpoints.		MEC
			Closeout	X	Cut sheets for CO2 monitoring system.		PE
EQ2		Increased Ventilation	Final Design		Statement indicating which option for compliance applies and confirming that project has been designed to meet the applicable requirements.		MEC
			Final Design		Narrative describing the project's ventilation design, including specifics about zone fresh air intake volumes and demonstrating compliance.		MEC
			Final Design		Option 2: Narrative describing design method used for determining natural ventilation design, including calculation methodology/model results and demonstrating compliance.		MEC
			Final Design		List of drawing and specification references that convey conformance to applicable requirements.		MEC
EQ3.1		Construction IAQ Management Plan: During Construction	**Preconstruction		Construction IAQ Management Plan		PE
			Closeout		Statement confirming whether air handling units were operated during construction		PE
			Closeout		Dated jobsite photos showing examples of IAQ management plan practices being implemented. Label photos to indicate which practice they demonstrate. Minimum one photo of each practice at each building.		PE

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			Closeout		Spreadsheet indicating, for each filter installed during construction, the manufacturer, model number, MERV rating, location installed, and if it was replaced immediately prior to occupancy.		PE
EQ3.2		Construction IAQ Management Plan: Before Occupancy	**Preconstruction		Construction IAQ Management Plan		PE
			Closeout		Statement indicating which option for compliance applies and confirming that required activities have occurred that meet the applicable requirements.		PE
			Closeout		Option 1a: Narrative describing the project's flushout process, including specifics about temperature, airflow and duration, special considerations (if any) and demonstrating compliance.		PE
			Closeout		Option 1b: Narrative describing the project's pre-occupancy and post-occupancy flushout processes, including specifics about temperature, airflow and duration, special considerations (if any) and demonstrating compliance.		PE
			Closeout		Option 2: Narrative describing the project's IAQ testing process, including specifics about contaminants tested for, locations, remaining work at time of test, retest parameters and special considerations (if any).		PE
			Closeout		Option 2: IAQ testing report demonstrating compliance.		PE
EQ4.1		Low Emitting Materials: Adhesives & Sealants	Closeout		Spreadsheet indicating, for each applicable indoor adhesive, sealant and sealant primer used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data.		PE
			Closeout		Spreadsheet indicating, for each applicable indoor aerosol adhesive, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data - OR - Statement confirming no indoor aerosol adhesives were used for the project.		PE
			Closeout	X	Manufacturer published product data or certification confirming material VOCs in spreadsheet		PE
EQ4.2		Low Emitting Materials: Paints & Coatings	Closeout		Spreadsheet indicating, for each applicable indoor paint and coating used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data.		PE
			Closeout		Spreadsheet indicating, for each applicable indoor anti-corrosive/anti-rust paint and coating used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data - OR - Statement confirming no indoor anti-corrosive/anti-rust paints were used for the project .		PE
			Closeout	X	Manufacturer published product data or certification confirming material VOCs in spreadsheet		PE
EQ4.3		Low Emitting Materials: Flooring Systems	Closeout		Spreadsheet indicating, for each indoor flooring system used, the manufacturer, product name/model number, if it meets LEED requirement (yes/no) and source of LEED compliance data.		PE
			Closeout		Spreadsheet indicating, for each indoor carpet cushion used, the manufacturer, product name/model number, if it meets LEED requirement (yes/no) and source of LEED compliance data - OR - Statement confirming no indoor carpet cushion was used for the project.		PE
			Closeout	X	Manufacturer published product data or certification confirming material compliance label in spreadsheet		PE
EQ4.4		Low Emitting Materials: Composite Wood & Agrifiber Products	Closeout		Spreadsheet indicating, for each indoor composite wood and agrifiber product used, the manufacturer, product name/model number, if it contains added urea formaldehyde (yes/no) and source of LEED compliance data.		PE
			Closeout	X	Manufacturer published product data or certification confirming material urea formaldehyde in spreadsheet		PE
EQ5		Indoor Chemical & Pollutant Source Control	Closeout		Spreadsheet indicating, for each permanent entryway system used, the manufacturer, product name/model number and description of system.		PE
			Final Design		List of drawing and specification references that convey locations and installation methods for entryway systems.		ARC
			Final Design		Spreadsheet indicating, for each chemical use area, the room number, room name, description of room separation features (walls, floor/ceilings, openings) and pressure differential from surrounding spaces with doors closed - OR - Statement confirming that project includes no chemical use areas and that no hazardous cleaning materials are needed for building maintenance.		ARC MEC
			Final Design		If project includes chemical use areas: List of drawing and specification references that convey locations of chemical use areas, room separation features and exhaust system.		ARC MEC

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			Final Design		If project includes places where water and chemical concentrate mixing occurs: List of drawing and specification references that convey provisions for containment of hazardous liquid wastes OR - Statement confirming that project includes no places where water and chemical concentrate mixing occurs.		ARC MEC
			Closeout		If project includes chemical use areas: Spreadsheet indicating, for AHUs/mechanical ventilation equipment serving occupied areas, the manufacturer, model number, MERV rating, location installed, and if it was replaced immediately prior to occupancy (yes/no) - OR - Statement confirming that project does not use mechanical equipment for ventilation of occupied areas.		PE
EQ6.1		Controllability of Systems: Lighting	Final Design		Calculation indicating total number of individual workstations, number of workstations with individual lighting controls and the percentage of workstations with individual lighting controls.		ELEC
			Final Design		For each shared multi-occupant space, provide a brief description of lighting controls.		ELEC
			Final Design		Narrative describing lighting control strategy, including type and location of individual controls and type and location of controls in shared multi-occupant spaces.		ELEC
EQ6.2		Controllability of Systems: Thermal Comfort	Final Design		Calculation indicating total number of individual workstations, number of workstations with individual thermal comfort controls and the percentage of workstations with individual thermal comfort controls.		MEC
			Final Design		For each shared multi-occupant space, provide a brief description of thermal comfort controls.		MEC
			Final Design		Narrative describing thermal comfort control strategy, including type and location of individual and shared multi-occupant controls.		MEC
EQ7.1		Thermal Comfort: Design	Final Design		Design criteria spreadsheet indicating, for spring, summer, fall and winter, maximum indoor space design temperature, minimum indoor space design temperature and maximum indoor space design humidity.		MEC
			Final Design		Narrative describing method used to establish thermal comfort control conditions and how systems design addresses the design criteria, including compliance with the referenced standard.		MEC
EQ7.2		Thermal Comfort: Verification	Final Design		Narrative describing the scope of work for the thermal comfort survey, including corrective action plan development		MEC
			Final Design		List of drawing and specification references that convey permanent monitoring system.		MEC
EQ8.1		Daylight & Views: Daylight 75% of Spaces	Final Design		Option 2: Table indicating all regularly occupied spaces with space area and space area with compliant daylight zone. Sum of regularly occupied areas and regularly occupied areas withcompliant daylight zone. Percentage calculation of areas withcompliant daylight zone to total regularly occupied areas.		ARC
			Final Design		Option 1: Simulation model method, software and output data		ELEC
			Final Design		Option 1: Table indicating all regularly occupied spaces with space area, space area with minimum 25 footcandles daylighting illumination, and method of providing glare control. Sum of regularly occupied areas and regularly occupied areas with 25 fc daylighting. Percentage calculation of areas with 25 fc daylighting to total regularly occupied areas.		ELEC
			Final Design		For all occupied spaces excluded from the calculation, provide narrative indicating reasons for excluding the space.		ARC
			Final Design		List of drawing and specification references that convey exterior glazed opening head and sill heights, glazing performance properties and glare control/sunlight redirection devices.		ARC
			Closeout	X	Manufacturer published product data or certification confirming glazing Tvis in spreadsheet		PE
EQ8.2		Daylight & Views: Views for 90% of Spaces	Final Design		Table indicating all regularly occupied spaces with space area and space area with access to views. Sum of regularly occupied areas and regularly occupied areas with access to views. Percentage calculation of areas with views to total regularly occupied areas.		ARC
			Final Design		For all occupied spaces excluded from the calculation, provide narrative indicating reasons for excluding the space.		ARC
			Final Design		LEED Floor plan drawings showing line of sight diagramming of views areas in each regularly occupied space. List of drawing/specification references that convey exterior glazed opening head and sill heights.		ARC
INNOVATION & DESIGN PROCESS							

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	**LEED-NC v3 Submittals (OCT09)**		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
IDc1.1		Innovation in Design	Final Design		Narrative decribing intent, requirement for credit, project approach to the credit. List of drawings and specification references that convey implementation of credit. All other documentation that validates claimed credit.		
IDc1.2		Innovation in Design	Final Design				
IDc1.3		Innovation in Design	Final Design				
IDc1.4		Innovation in Design	Final Design				
IDc2		LEED Accredited Professional	Final Design		Narrative indicating name of LEED AP, company name of LEED AP, description of LEED AP's role and responsiblilities in the project.		ARC

ATTACHMENT F
Version 02-03-2010

BUILDING INFORMATION MODELING REQUIREMENTS

1.0 Section 1 - Submittal Format

1.1. Design Deliverables. Develop all designs using Building Information Modeling (BIM) and Computer Aided Design (CAD) software. Design submittal drawings shall be [Not Supplied - SubmittalReqDistribution : FULL_SIZE] size, suitable for half-size scaled reproduction.

2.0 Section 2 – Design Requirements

2.1. BIM Model and Facility Data. Contractor shall use BIM application(s) and software(s) to develop project designs. "Facility Data" is defined as associated intelligent attribute data. The "Model" is defined as 3D graphics that includes Facility Data and output as described in the paragraph 'Output' below. Contractors will use the Model to produce accurate Construction Documents. All submitted BIM Models and associated Facility Data shall be fully compatible with Bentley V8 with associated USACE Bentley BIM Workspace

2.1.1. Reference. Refer to ERDC TR-06-10, "U.S. Army Corps of Engineers Building Information Modeling Road Map" from the CAD/BIM Technology Center website for more information on the USACE BIM implementation goals.

2.2. Drawings. Deliver CAD files used for the creation of the Construction Documents Drawings per requirements in Section 01 33 16, the criteria of the USACE [Not Supplied - DistrictInfoGeneral : ISSUING_DISTRICT] District, and as noted herein. Specification of a CAD file format for these Drawings does not limit which BIM application(s) or software(s) may be used for project development and execution.

2.2.1. IFC Support. The Contractor's selected BIM application(s) and software(s) must support the IFC (Industry Foundation Class - see www.iai-tech.org). Submit any deviations from or additions to the IFC property sets for any new spaces, systems, and equipment for Government approval.

2.2.2. Submittal Requirements. BIM submittals shall conform to the requirements of Sections 3 and 4 below.

2.2.3. BIM Project Execution Plan.

2.2.3.1. Develop a BIM Project Execution Plan ("Plan" or "PxP") documenting the BIM and analysis technologies selected for the Project Model (integrated with the AEC CAD Standard) from concept development through As-Builts as a design, production, coordination, construction, and documentation tool and the collaborative process by which it shall be executed. See Section 7 for additional guidance on developing the Plan.

2.2.4. BIM Requirements.

2.2.4.1. Facility Data. Develop the Facility Data consisting of a set of intelligent elements for the Model (e.g., doors, air handlers, electrical panels). This Facility Data shall include all material definitions and attributes that are necessary for the Project facility design and construction. Additional data in support of Section 6 Contractor Electives is encouraged.

2.2.4.2. Model Content. The Model and Facility Data shall include, at a minimum, the requirements of Section 4 below.

2.2.4.3. Model Granularity. Models may vary in level of detail for individual elements within a model, but at a minimum must include all features that would be included on a quarter inch (1/4" = 1'0") scaled drawing (e.g. at least 1/16th, 1/8th and 1/4th), or appropriately scaled civil drawings.

2.2.4.4. Output. Submitted CAD drawings (e.g., plans, elevations, sections, schedules, details, etc.) shall be derived (commonly known as extractions, views or sheets) and maintained from the submitted Model and Facility Data.

2.3. Quality Control. Implement quality control (QC) parameters for the Model, including:

2.3.1. Model Standards Checks. QC validation used to ensure that the Project Facility Data set has no undefined, incorrectly defined or duplicated elements. Report non-compliant elements and corrective action plan to correct non-compliant elements. Provide the government with detailed justification and request government approval for any non-compliant element which the contractor proposes to be allowed to remain in the Model.

2.3.2. CAD Standards Checks. QC checking performed to ensure that the fonts, dimensions, line styles, levels and other construction document formatting issues are followed per the A/E/C CADD Standard.

2.3.3. Other Parameters. Develop such other QC parameters as Contractor deems appropriate for the Project and provide to the Government for concurrence.

2.4. Design and Construction Reviews. Perform design and construction reviews at each submittal stage under Section 3 to test the Model, including:

2.4.1. Visual Checks. Check to ensure the design intent has been followed and that there are no unintended elements in the Model.

2.4.2. Interference Management Checks. Locate conflicting spatial data in the Model where two elements are occupying the same space. Log hard interferences (e.g., mechanical vs. structural or mechanical vs. mechanical overlaps in the same location) and soft interferences, (e.g., conflicts regarding equipment clearance, service access, fireproofing, insulation) in a written report and resolve.

2.4.3. IFC Coordination View. Provide an IFC Coordination View in IFC Express format for all deliverables. Provide exported property set data for all IFC supported named building elements.

2.4.4. Other Parameters. Develop such other Review parameters as the Contractor deems appropriate for the Project and provide to the Government for concurrence.

3.0 Section 3 – Design Stage Submittal Requirements

3.1. General Submittal Requirements.

3.1.1. Provide submittals in compliance with BIM Project Execution Plan deliverables at stages as described hereinafter.

3.1.2. At each Stage in Paragraphs 3.3 through 3.6, provide a Contractor-certified written report confirming that consistency checks as identified in Paragraphs 2.3 and 2.4 have been completed. This report shall be discussed as part of the review process and shall address cross-discipline interferences, if any.

3.1.3. At each Stage in Paragraphs 3.3 through 3.6, provide the Government with:

- The Model, Facility Data, and CAD Data files.

- A 3-D interactive review format of the Model in Bentley Navigator, Autodesk Navisworks, Adobe 3D PDF 7.0 (or later), Google Earth KMZ or other format per Plan requirements. The file format for reviews can change between submittals.

- A list of all submitted files. The list should include a description, directory, and file name for each file submitted. For all CAD sheets, include the sheet title and sheet number. Identify files that have been produced from the submitted Model and Facility Data.

3.1.4. The Government shall confirm acceptability of all submittals identified in Section 3 in coordination with the USACE [Not Supplied - DistrictInfoGeneral : ISSUING_DISTRICT] BIM Manager

3.2. Initial Design Conference Submittal.

3.2.1. Submit a digital copy of the Plan where, in addition to Paragraph 3.1.4, the USACE [Not Supplied - DistrictInfoGeneral : ISSUING_DISTRICT] District BIM Manager will confirm acceptability of the Plan or advise as to additional processes or activities necessary to be incorporated.

3.2.2. Within thirty (30) days after the approval of the Plan, conduct a demonstration to review the Plan for clarification, and to verify the functionality of Model technology workflow and processes. If modifications are required, the Contractor shall complete the modifications and resubmit the Plan and perform subsequent demonstration for Government acceptance. There will be no payment for design or construction until the Plan is acceptable to the Government. The Government may also withhold payment for design and construction for unacceptable performance in executing the approved Plan.

3.3. Interim Design Submittals.

3.3.1. BIM and CAD Data. The Model shall include the requirements identified in Paragraph 2.2.4 as applicable to the Interim Design package(s).

3.4. Final Design Submissions and Design Complete Submittals.

3.4.1. BIM and CAD Data. The Model shall include the requirements identified in Paragraph 2.2.4. Acceptance according to Paragraph 3.1.4 is required before commencement of construction, as described in Paragraph 3.7.6 of Section 01 33 16.

3.5. Submittals – Over-The-Shoulder Progress Reviews. Periodic quality control meetings or construction progress review meetings shall include quality control reviews on the implementation and use of the Model, including interference management and design change tracking information.

3.6. Final As-Builts BIM and CAD Data Submittal. Submit the final Model, Facility Data, and CAD files reflecting as-built conditions for Government Approval, as specified in Section 01 78 02.00 10, PROJECT CLOSEOUT.

4.0 Section 4 – BIM Model Minimum Requirements and Output

4.1. General Provisions. The deliverable Model shall be developed to include the systems described below as they would be built and the processes of installing them, and to reflect final as-built conditions. The deliverable model at the interim design stage and at the final design stage ("released for construction") shall be developed to include as many of the systems described below as are necessary and appropriate at that design stage.

4.2. Architectural/Interior Design. The Architectural systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4"=1'0") scaled drawing. Additional minimum Model requirements include:

4.2.1. Spaces. The Model shall include spaces defining accurate net square footage and net volume, and holding data for the room finish schedule for including room names and numbers. Include Programmatic Information provided by the Government or validated program to verify design space against programmed space, using this information to validate area quantities.

4.2.2. Walls and Curtain Walls. Each wall shall be depicted to the exact height, length, width and ratings (thermal, acoustic, fire) to properly reflect wall types. The Model shall include all walls, both interior and exterior, and the necessary intelligence to produce accurate plans, sections and elevations depicting these design elements.

4.2.3. Doors, Windows and Louvers. Doors, windows and louvers shall be depicted to represent their actual size, type and location. Doors and windows shall be modeled with the necessary intelligence to produce accurate window and door schedules.

4.2.4. Roof. The Model shall include the roof configuration, drainage system, penetrations, specialties, and the necessary intelligence to produce accurate plans, building sections and generic wall sections where roof design elements are depicted.

4.2.5. Floors. The floor slab shall be developed in the structural Model and then referenced by the architectural Model for each floor of the Project building.

4.2.6. Ceilings. All heights and other dimensions of ceilings, including soffits, ceiling materials, or other special conditions shall be depicted in the Model with the necessary intelligence to produce accurate plans, building sections and generic wall sections where ceiling design elements are depicted.

4.2.7. Vertical Circulation. All continuous vertical components (i.e., non-structural shafts, architectural stairs, handrails and guardrails) shall be accurately depicted and shall include the necessary intelligence to produce accurate plans, elevations and sections in which such design elements are referenced.

4.2.8. Architectural Specialties and Woodwork. All architectural specialties (i.e., toilet room accessories, toilet partitions, grab bars, lockers, and display cases) and woodwork (i.e., cabinetry and counters) shall be accurately depicted with the necessary intelligence to produce accurate plans, elevations and sections in which such design elements are referenced.

4.2.9. Signage. The Model shall include all signage and the necessary intelligence to produce accurate plans and schedules.

4.2.10. Schedules. Provide door, window, hardware sets using BHMA designations, flooring, wall finish, and signage schedules from the Model, indicating the type, materials and finishes used in the design.

4.3. Furniture. The furniture systems Model may vary in level of detail for individual elements within a Model, but at a minimum must include all features that would be included on a quarter inch (1/4”=1’0”) scaled drawing, and have necessary intelligence to produce accurate plans. Representation of furniture elements is to be 2D. Contractor may provide a minimal number of 3D representations as examples. Examples of furniture include, but are not limited to, desks, furniture systems, seating, tables, and office storage.

4.3.1. Furniture Coordination. Furniture that makes use of electrical, data or other features shall include the necessary intelligence to produce coordinated documents and data.

4.4. Equipment. The Model may vary in level of detail for individual elements within a Model. Equipment shall be depicted to meet layout requirements with the necessary intelligence to produce

accurate plans and minimum schedules depicting their configuration. Examples of equipment include but are not limited to copiers, printers, refrigerators, ice machines and microwaves.

4.4.1. Schedules. Provide furniture and equipment schedules from the model indicating the materials, finishes, mechanical, and electrical requirements.

4.5. Structural. The structural systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4”=1’0”) scaled drawing. Additional minimum Model requirements include:

4.5.1. Foundations. All necessary foundation and/or footing elements, with necessary intelligence to produce accurate plans and elevations.

4.5.2. Floor Slabs. Structural floor slabs shall be depicted, including all necessary recesses, curbs, pads, closure pours, and major penetrations accurately depicted.

4.5.3. Structural Steel. All steel columns, primary and secondary framing members, and steel bracing for the roof and floor systems (including decks), including all necessary intelligence to produce accurate structural steel framing plans and related building/wall sections.

4.5.4. Cast-in-Place Concrete. All walls, columns, and beams, including necessary intelligence to produce accurate plans and building/wall sections depicting cast-in-place concrete elements.

4.5.5. Expansion/Contraction Joints. Joints shall be accurately depicted.

4.5.6. Stairs. The structural Model shall include all necessary openings and framing members for stair systems, including necessary intelligence to produce accurate plans and building/wall sections depicting stair design elements.

4.5.7. Shafts and Pits. The structural Model shall include all necessary shafts, pits, and openings, including necessary intelligence to produce accurate plans and building/wall sections depicting these design elements.

4.6. Mechanical. The mechanical systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4”=1’0”) scaled drawing. Small diameter (less than 1-1/2” NPS) field-routed piping is not required in the model. Additional minimum Model requirements include:

4.6.1. HVAC. All necessary heating, ventilating, air-conditioning and specialty equipment, including air distribution ducts for supply, return, and ventilation and exhaust ducts, including control system, registers, diffusers, grills and hydronic baseboards with necessary intelligence to produce accurate plans, elevations, building/wall sections and schedules.

4.6.1.1. Mechanical Piping. All necessary piping and fixture layouts, and related equipment, including necessary intelligence to produce accurate plans, elevations, building/wall sections, and schedules.

4.6.2. Plumbing. All necessary plumbing piping and fixture layouts, floor and area drains, and related equipment, including necessary intelligence to produce accurate plans, elevations, building/wall sections, riser diagrams, and schedules.

4.6.3. Equipment Clearances. All HVAC and Plumbing equipment clearances shall be modeled for use in interference management and maintenance access requirements.

4.6.4. Elevator Equipment. The Model shall include the necessary equipment and control system, including necessary intelligence to produce accurate plans, sections and elevations depicting these design elements.

4.7. Electrical/Telecommunications. The electrical systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4”=1’0”) scaled drawing. Small diameter (less than 1-1/2”Ø) field-routed conduit is not required in the model. Additional minimum Model requirements include:

4.7.1. Interior Electrical Power and Lighting. All necessary interior electrical components (i.e., lighting, receptacles, special and general purpose power receptacles, lighting fixtures, panelboards, cable trays and control systems), including necessary intelligence to produce accurate plans, details and schedules. Lighting and power built into furniture/equipment shall be modeled.

4.7.2. Special Electrical Systems. All necessary special electrical components (i.e., security, Mass Notification, Public Address, nurse call and other special occupancies, and control systems), including necessary intelligence to produce accurate plans, details and schedules.

4.7.3. Grounding Systems. All necessary grounding components (i.e., lightning protection systems, static grounding systems, communications grounding systems, bonding), including necessary intelligence to produce accurate plans, details and schedules.

4.7.4. Communications. All existing and new communications service controls and connections, both above ground and underground with necessary intelligence to produce accurate plans, details and schedules. Cable tray routing shall be modeled without detail of cable contents.

4.7.5. Exterior Building Lighting. All necessary exterior lighting with necessary intelligence to produce accurate plans, elevations and schedules. The exterior building lighting Model shall include all necessary lighting, relevant existing and proposed support utility lines and equipment required with necessary intelligence to produce accurate plans, details and schedules.

4.7.6. Equipment Clearances. The model shall incorporate and define all electrical and communications working spaces, clearances, and required access

4.8. Fire Protection. The fire protection system Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4”=1’0”) scaled drawing. Additional minimum Model requirements include:

4.8.1. Fire Protection System. All relevant fire protection components (i.e., branch piping, sprinkler heads, fittings, drains, pumps, tanks, sensors, control panels) with necessary intelligence to produce accurate plans, elevations, building/wall sections, riser diagrams, and schedules. All fire protection piping shall be modeled.

4.8.2. Fire Alarms. Fire alarm/mass notification devices and detection system shall be indicated with necessary intelligence to produce accurate plans depicting them.

4.9. Civil. The civil Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a one inch (1”=100’) scaled drawing. Additional minimum Model requirements include:

4.9.1. Terrain (DTM). All relevant site conditions and proposed grading, including necessary intelligence to produce accurate Project site topographical plans and cross sections.

4.9.2. Drainage. All existing and new drainage piping, including upgrades thereto, including necessary intelligence to produce accurate plans and profiles for the Project site.

4.9.3. Storm Water and Sanitary Sewers. All existing and new sewer structures and piping, including upgrades thereto, on the Project site with necessary connections to mains or other distribution points as appropriate, including necessary intelligence to produce accurate plans and profiles for the Project site.

4.9.4. Utilities. All necessary new utilities connections from the Project building(s) to the existing or newly-created utilities, and all existing above ground and underground utility conduits, including necessary intelligence to produce accurate plans and site-sections.

4.9.5. Roads and Parking. All necessary roadways and parking lots or parking structures, including necessary intelligence to produce accurate plans, profiles and cross-sections.

5.0 Section 5 - Ownership and Rights in Data

5.1. Ownership. The Government has ownership of and rights at the date of Closeout Submittal to all CAD files, BIM Model, and Facility Data developed for the Project in accordance with FAR Part 27, clauses incorporated in Section 00 72 00, Contract Clauses and Special Contract Requirement 1.14 GOVERNMENT RE-USE OF DESIGN (Section 00 73 00). The Government may make use of this data following any deliverable.

6.0 Section 6 – Contractor Electives

6.1. Applicable Criteria. If the Contractor elected to include one or more of the following features as an elective in its accepted contract proposal for additional credit during the source selection, as described in the proposal submission requirements and evaluation criteria, the following criteria are requirements, as applicable to those elective feature(s).

6.2. COBIE Compliance. The Model and Facility Data for the Project shall fulfill Construction Operations Building Information Exchange (COBIE) requirements as defined by the Whole Building Design Guide organization, including all requirements for the indexing and submission of Portable Document Format (PDF) and other appropriate file formats that would otherwise be printed and submitted in compliance with Project operations and maintenance handover requirements.

6.3. Project Scheduling using the Model. In the BIM Execution Plan and during the Preliminary BIM Execution Plan Review, provide an overview of the use of BIM in the development and support of the project construction schedule.

6.3.1. Submittal Requirements. During the Submittal stages, the Contractor shall deliver the construction schedule with information derived from the Model.

6.3.1.1. Construction Submittals – Over-The-Shoulder Progress Reviews. Periodic quality control meetings or construction progress review meetings shall include quality control reviews on the implementation and use of the Model for project scheduling.

6.4. Cost Estimating. In the BIM Execution Plan and during the Preliminary BIM Execution Plan Review, provide an overview of the use of BIM in the development and support of cost estimating requirements, or other applications such as cost analysis and estimate validation.

6.4.1. Submittal Requirements. During the Submittal stages, the Contractor shall deliver cost estimating information derived from the Model.

6.4.2. Project completion. At project completion, the Contractor shall provide an MII (Micro Computer Aided Cost Estimating System Generation II) Cost Estimate which follows the USACE Cost Engineering Military Work Breakdown System (WBS), a modified Uniformat, to at least the sub-systems level and uses quantity information supplied directly from BIM output to the maximum extent possible,

though other "Gap" quantity information will be included as necessary for a complete and accurate cost estimate.

6.4.2.1. Sub system level extracted quantities from the BIM for use within the estimate shall be provided according to how detailed line items or tasks should be installed/built so that accurate costs can be developed and/or reflected. Therefore, when developing a BIM, the designer shall be cognizant of what tasks need to be separated appropriately at the beginning stages of model development, such as tasks done on the first floor versus the same task on higher floors that will be more labor intensive and therefore need to have a separate quantity and be priced differently. Tasks and their extracted quantities from the BIM shall be broken done by their location (proximity in the structure) as well as the complexity of its installation.

6.4.2.2. At all design stages it shall be understood that BIM output as described in this document will not generate all quantities that are necessary in order to develop a complete and accurate cost estimate of the project based on the design. An example of this would be plumbing that is less than 1.5" diameter and therefore not expected to be modeled due to granularity; this information is commonly referred to as The Gap. Quantities from The Gap and their associated costs shall be included in the final project actual cost estimates as well.

6.5. Other Analyses and Reports. Structural, energy and efficiency, EPACT 2005 & EISA 2007, lighting design, daylighting, electrical power, psychrometric processing, shading, programming, LEED, fire protection, code compliance, Life Cycle Cost, acoustic, plumbing.

7.0 Section 7 – BIM Project Execution Plan Template

7.1. Contractors will utilize the latest version of the USACE BIM PROJECT EXECUTION PLAN (USACE PxP) Template to develop an acceptable Plan. The template can be downloaded from the CAD/BIM Technology Center website.

ATTACHMENT G
DESIGN SUBMITTAL DIRECTORY AND SUBDIRECTORY FILE ARRANGEMENT

Organize electronic design submittal files in a subdirectory/file structure in accordance with the following table.

The Contractor may suggest a slightly different structure, subject to the discretion of the government.

Design Submittal Directory and Subdirectory File Arrangement.

Directory	Sub-Directory	Sub-Directory or Files	Files
Submittal/Package Name	Narratives	PDF file or files with updated design narrative for each applicable design discipline	
	Drawings	PDF (subdirectory)	Single PDF file with all applicable drawing sheets - bookmarked by sheet number and name
		BIM (subdirectory) See Attachment F.	BIM project folder (with files) per the USACE Workspace. Include an Excel drawing index file with each drawing sheet listed by sheet #, name and corresponding dgn file name (Final Design & Design Complete only)
	Design Analysis & Calculations	Individual PDF files containing design analysis and calculations for each discipline applicable to the submittal	
		PDF file with Fire Protection and Life Safety Code Review checklist	
	LEED	PDF file with updated Leed Check List	
		PDF file or files with LEED Templates for each point with applicable documentation included in each file.	
		LEED SUBMITTALS	
	Energy Analysis	PDF with baseline energy consumption analysis	
		PDF with actual building energy consumption analysis	
	Specifications	Single PDF file with table of contents and all applicable specifications sections.	
		Submittal Register (Final Design & Design Complete submittal only)	
	Design Quality Control	PDF file or files with DQC checklist(s) and/or statements	
	Building Rendering(s)	PDF file of rendering for each building type included in contract (Final Design & Design Complete).	

ATTACHMENT H
USACE BIM Project Execution Plan (PxP) Template Version 1.0

This template is a tool that is provided to assist in the development of a USACE BIM Project Execution Plan as required per contract. The template provides a standard format for organizations to establish their general means and methods for meeting the scope and deliverable requirements in Attachment F. It was adapted from the buildingSMART alliance™ (bSa) Project "BIM Project Execution Planning" as developed by The Computer Integrated Construction (CIC) Research Group of The Pennsylvania State University. The bSa project is sponsored by The Charles Pankow Foundation, Construction Industry Institute (CII), Penn State Office of Physical Plant (OPP), and The Partnership for Achieving Construction Excellence (PACE). The template can be found at the following link:

https://mrsi.usace.army.mil/rfp/Shared%20Documents/USACE_BIM_PXP_TEMPLATE_V1.0.pdf

Please note: Instructions and examples to assist with the completion of this template are currently in grey. The text can and should be modified to suit the needs of the organization filling out the template. If modified, the format of the text should be changed to match the rest of the document. This can be completed, in most cases, by selecting the normal style in the template styles.

SECTION 01 45 01.10
QUALITY CONTROL SYSTEM (QCS)

1.0 GENERAL

1.1. CORRESPONDENCE AND ELECTRONIC COMMUNICATIONS

1.2. QCS SOFTWARE

1.3. SYSTEM REQUIREMENTS

1.4. RELATED INFORMATION

1.5. CONTRACT DATABASE

1.6. DATABASE MAINTENANCE

1.7. IMPLEMENTATION

1.8. DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

1.9. MONTHLY COORDINATION MEETING

1.10. NOTIFICATION OF NONCOMPLIANCE

1.0 GENERAL

The Government will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor shall use the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. The Contractor module, user manuals, updates, and training information can be downloaded from the RMS web site. This joint Government-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

- Administration
- Finances
- Quality Control
- Submittal Monitoring
- Scheduling
- Import/Export of Data
- Request for Information
- Accident Reporting
- Safety Exposure Manhours

1.1. CORRESPONDENCE AND ELECTRONIC COMMUNICATIONS

For ease and speed of communications, both Government and Contractor will exchange correspondence and other documents in electronic format. Correspondence, pay requests and other documents comprising the official contract record shall also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

1.2. OTHER FACTORS

Particular attention is directed to Contract Clause, "Schedules for Construction Contracts", Contract Clause, "Payments", Section 01 32 01.00 10, PROJECT SCHEDULE, Section 01 33 00, SUBMITTAL PROCEDURES, and Section 01 45 04.00 10, CONTRACTOR QUALITY CONTROL, which have a direct relationship to the reporting to be accomplished through QCS. Also, there is no separate payment for establishing and maintaining the QCS database; all costs associated therewith shall be included in the contract pricing for the work.

1.3. QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. The Government will make available the QCS software to the Contractor after award of the construction contract. Prior to the Pre-Construction Conference, the Contractor shall be responsible to download, install and use the latest version of the QCS software from the Government's RMS Internet Website. Upon specific justification and request by the Contractor, the Government can provide QCS on CD-ROM. Any program updates of QCS will be made available to the Contractor via the Government RMS Website as they become available.

1.4. SYSTEM REQUIREMENTS

The following listed hardware and software is the minimum system configuration that the Contractor shall have to run QCS:

(a) Hardware

- IBM-compatible PC with 1000 MHz Pentium or higher processor
- 256 MB RAM for workstation / 512+ MB RAM for server

- 1 GB hard drive disk space for sole use by the QCS system
- Compact disk (CD) Reader, 8x speed or higher
- SVGA or higher resolution monitor (1024 x 768, 256 colors)
- Mouse or other pointing devise
- Windows compatible printer (Laser printer must have 4+ MB of RAM)
- Connection to the Internet, minimum 56K BPS

(b) Software

- MS Windows 2000 or higher
- MS Word 2000 or newer
- Latest version of : Netscape Navigator, Microsoft Internet Explorer, or other browser that supports HTML 4.0 or higher
- Electronic mail (E-mail), MAPI compatible
- Virus protection software that is regularly upgraded with all issued manufacturer's updates

1.5. RELATED INFORMATION

1.5.1. QCS USER GUIDE

After contract award, the Contractor shall download instructions for the installation and use of QCS from the Government RMS Internet Website. In case of justifiable difficulties, the Government will provide the Contractor with a CD-ROM containing these instructions.

1.5.2. CONTRACTOR QUALITY CONTROL (CQC) TRAINING

The use of QCS will be discussed with the Contractor's QC System Manager during the mandatory CQC Training class.

1.6. CONTRACT DATABASE

Prior to the pre-construction conference, the Government will provide the Contractor with basic contract award data to use for QCS. The Government will provide data updates to the Contractor as needed, generally by using the government's SFTP repository built into QCS import/export function. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

1.7. DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract. The Contractor shall establish and maintain the QCS database at the Contractor's site office. Data updates to the Government, e.g., daily reports, submittals, RFI's, schedule updates, payment requests, etc. shall be submitted using the government's SFTP repository built into QCS export function. If permitted by the Contracting Officer, email or CD-ROM may be used instead (see Paragraph DATA SUBMISSION VIA CD-ROM). The QCS database typically shall include current data on the following items:

1.7.1. ADMINISTRATION

1.7.1.1. Contractor Information

The database shall contain the Contractor's name, address, telephone numbers, management staff, and other required items. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver Contractor administrative data in electronic format.

1.7.1.2. Subcontractor Information

The database shall contain the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor must be listed separately for each trade to be performed. Each subcontractor/trade shall be assigned a unique Responsibility Code, provided in QCS. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver subcontractor administrative data in electronic format.

1.7.1.3. Correspondence

All Contractor correspondence to the Government shall be identified with a serial number. Correspondence initiated by the Contractor's site office shall be prefixed with "S". Letters initiated by the Contractor's home (main) office shall be prefixed with "H". Letters shall be numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

All Requests For Information (RFI) shall be exchanged using the Built-in RFI generator and tracker in QCS.

1.7.1.4. Equipment

The Contractor's QCS database shall contain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.7.1.5. Management Reporting

QCS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet, QA/QC comments, Submittal Register Status, Three-Phase Inspection checklists.

1.7.2. FINANCES

1.7.2.1. Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the design and construction schedule. The sum of all pay activities shall be equal to the total contract amount, including modifications. Pay activities shall be grouped by Contract Line Item Number (CLIN), and the sum of the activities shall equal the amount of each CLIN. The total of all CLINs equals the Contract Amount.

1.7.2.2. Payment Requests

All progress payment requests shall be prepared using QCS. The Contractor shall complete the payment request worksheet prompt payment certification, and payment invoice in QCS. The work completed under the contract, measured as percent or as specific quantities, shall be updated at least monthly. After the update, the Contractor shall generate a payment request report using QCS. The Contractor shall submit the payment request, prompt payment certification, and payment invoice with supporting data by using the government's SFTP repository built into QCS export function. If permitted by the Contracting Officer, E-mail or a CD-ROM may be used. A signed paper copy of the approved payment request is also required, which shall govern in the event of discrepancy with the electronic version.

1.7.3. Quality Control (QC)

QCS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other contractor QC requirements. The Contractor shall maintain this data on a daily basis. Entered data will automatically output to the QCS generated daily report. The Contractor shall provide the Government a Contractor

Quality Control (CQC) Plan within the time required in Section 01 45 04.00 10, CONTRACTOR QUALITY CONTROL. Within seven calendar days of Government acceptance, the Contractor shall submit a QCS update reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.7.3.1. Daily Contractor Quality Control (CQC) Reports

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, the Daily CQC Report generated by QCS shall be the Contractor's official report. Data from any supplemental reports by the Contractor shall be summarized and consolidated onto the QCS-generated Daily CQC Report. Daily CQC Reports shall be submitted as required by Section 01 45 04.00 10, CONTRACTOR QUALITY CONTROL. Reports shall be submitted electronically to the Government within 24 hours after the date covered by the report. The Contractor shall also provide the Government a signed, printed copy of the daily CQC report.

1.7.3.2. Deficiency Tracking

The Contractor shall use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC punch list items. The Contractor shall maintain a current log of its QC punch list items in the QCS database. The Government will log the deficiencies it has identified using its QA punch list items. The Government's QA punch list items will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of both QC and QA punch list items.

1.7.3.3. QC Requirements

The Contractor shall develop and maintain a complete list of QC testing and required structural and life safety special inspections required by the International Code Council (ICC), transferred and installed property, and user training requirements in QCS. The Contractor shall update all data on these QC requirements as work progresses, and shall promptly provide this information to the Government via QCS.

1.7.3.4. Three-Phase Control Meetings

The Contractor shall maintain scheduled and actual dates and times of preparatory and initial control meetings in QCS.

1.7.3.5. Labor and Equipment Hours

The Contractor shall log labor and equipment exposure hours on a daily basis. This data will be rolled up into a monthly exposure report.

1.7.3.6. Accident/Safety Tracking Reporting

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of the safety comments. In addition, the Contractor shall utilize QCS to advise the Government of any accidents occurring on the jobsite. This supplemental entry is not to be considered as a substitute for completion of mandatory notification and reports, e.g., ENG Form 3394 and OSHA Form 300.

1.7.3.7. Features of Work

The Contractor shall include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

1.7.3.8. Hazard Analysis

The Contractor shall use QCS to develop a hazard analysis for each feature of work included in its CQC Plan. The hazard analysis shall address any hazards, or potential hazards, that may be associated with the work

1.7.4. Submittal Management

The Government will provide the submittal register form, ENG Form 4288, SUBMITTAL REGISTER, in electronic format. The Contractor and Designer of Record (DOR) shall develop and maintain a complete list of all submittals, including completion of all data columns and shall manage all submittals. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal register update, ENG Form 4288, shall be produced using QCS. QCS and RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.7.5. Schedule

The Contractor shall develop a design and construction schedule consisting of pay activities, in accordance with Section 01 32 01.00 10, PROJECT SCHEDULE, as applicable. This schedule shall be input and maintained in the QCS database either manually or by using the Standard Data Exchange Format (SDEF) (see Section 01 32 01.00 10 PROJECT SCHEDULE). The updated schedule data shall be included with each pay request submitted by the Contractor.

1.7.5.1. Import/Export of Data

QCS includes the ability to export Contractor data to the Government and to import submittal register and other Government-provided data from RMS, and schedule data using SDEF.

1.8. IMPLEMENTATION

Contractor use of QCS as described in the preceding paragraphs is mandatory. The Contractor shall ensure that sufficient resources are available to maintain its QCS database, and to provide the Government with regular database updates. QCS shall be an integral part of the Contractor's management of quality control.

1.9. DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

The Government-preferred method for Contractor's submission of QCS data is by using the government's SFTP repository built into QCS export function.. Other data should be submitted using E-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of CD-ROM for data transfer. Data on CDs shall be exported using the QCS built-in export function. If used, CD-ROMs will be submitted in accordance with the following:

1.9.1. File Medium

The Contractor shall submit required data on CD-ROMs. They shall conform to industry standards used in the United States. All data shall be provided in English.

1.9.2. Disk Or Cd-Rom Labels

The Contractor shall affix a permanent exterior label to each diskette and CD-ROM submitted. The label shall indicate in English, the QCS file name, full contract number, contract name, project location, data date, name and telephone number of person responsible for the data.

1.9.3. File Names

The files will be automatically named by the QCS software. The naming convention established by the QCS software shall not be altered in any way by the Contractor.

1.10. MONTHLY COORDINATION MEETING

The Contractor shall update the QCS database each workday. At least monthly, the Contractor shall generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, the Contractor shall meet with the Government representative to review the planned progress payment data submission for errors and omissions.

The Contractor shall make all required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

1.11. NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification.

End of Section 01 45 01.10

SECTION 01 45 04.00 10
CONTRACTOR QUALITY CONTROL

1.0 GENERAL

1.1. REFERENCES

1.2. PAYMENT

2.0 PRODUCTS (NOT APPLICABLE)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

3.2. QUALITY CONTROL PLAN

3.3. COORDINATION MEETING

3.4. QUALITY CONTROL ORGANIZATION

3.5. SUBMITTALS AND DELIVERABLES

3.6. CONTROL

3.7. TESTS

3.8. COMPLETION INSPECTION

3.9. DOCUMENTATION

3.10. NOTIFICATION OF NONCOMPLIANCE

1.0 GENERAL

1.1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. Refer to the latest edition, as of the date of the contract solicitation.

- ASTM INTERNATIONAL (ASTM)
- ASTM D 3740 Minimum Requirements for Agencies

  Engaged in the Testing and/or Inspection
  of Soil and Rock as Used in Engineering
  Design and Construction
- ASTM E 329 Agencies Engaged in the Testing

  and/or Inspection of Materials Used in
  Construction
- U.S. ARMY CORPS OF ENGINEERS (USACE)

  ER 1110-1-12 Quality Management

1.2. PAYMENT

There will be no separate payment for providing and maintaining an effective Quality Control program. Include all costs associated therewith in the applicable unit prices or lump-sum prices contained in the Contract Line Item Schedule.

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product, which complies with the contract requirements. The system shall cover all design and construction operations, both onsite and offsite, and shall be keyed to the proposed design and construction sequence. The site project superintendent is responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager at the site, responsible for the overall site activities, including but not limited to quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site. Different contractors have different names for the on-site overall project supervisor. For clarification, the term “site project superintendent” refers to the Contractor’s senior site representative or “on-site manager”, or other similar title, as those terms are used in contract Clause 52.236-7, “Superintendence by the Contractor” and in the Division 00 Section(s) of the solicitation for this contract or task order,.or elsewhere in the contract. It does not refer to a construction superintendent, unless that person is also the Contractor’s permanently assigned senior site representative in charge of all on-site activities.

3.2. QUALITY CONTROL PLAN

Furnish for Government review, not later than 30 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 30 days of operation. Design and construction may begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. The Government will not permit work outside of the features of work included in an accepted interim plan to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started. Where the applicable Code issued by the International Code Council calls for an inspection by the Building Official, the Contractor shall include the inspections in the Quality Control Plan and shall perform the inspections. The Designer of Record shall develop a program for any special inspections required by the applicable International Codes and the Contractor shall perform these inspections, using qualified inspectors. Include the special inspection plan in the QC Plan.

3.2.1. Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all design and construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants, architect/engineers (AE), fabricators, suppliers, and purchasing agents:

3.2.1.1. A description of the quality control organization. Include a chart showing lines of authority and an acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. A CQC System Manager shall report to the project superintendent or someone higher in the contractor's organization.

3.2.1.2. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function. Also include those responsible for performing and documenting the inspections required by the International Codes and the special inspection program developed by the designer of record.

3.2.1.3. A copy of the letter to the CQC System Manager, signed by an authorized official of the firm, which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Furnish copies of these letters.

3.2.1.4. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants, architect engineers (AE), offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

3.2.1.5. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. Use only Government approved Laboratory facilities.

3.2.1.6. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

3.2.1.7. Procedures for tracking design and construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

3.2.1.8. Reporting procedures, including proposed reporting formats.

3.2.1.9. A list of the definable features of work. A definable feature of work is a task, which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the coordination meeting.

3.2.1.10. A list of all inspections required by the International Codes and the special inspection program required by the code and this contract.

3.2.2. Additional Requirements for Design Quality Control (DQC) Plan

The following additional requirements apply to the Design Quality Control (DQC) plan:

3.2.2.1. The Contractor's QCP Plan shall provide and maintain a Design Quality Control (DQC) Plan as an effective quality control program which will assure that all services required by this design-build contract are performed and provided in a manner that meets professional architectural and engineering quality standards. As a minimum, competent, independent reviewers identified in the DQC Plan shall review all documents. Use personnel who were not involved in the design effort to produce the design to perform the independent technical review (ITR). The ITR is intended as a quality control check of the design. Include, at least, but not necessarily limited to, a review of the contract requirements (the accepted contract or task order proposal and amended RFP), the basis of design, design calculations, the design configuration management documentation and check the design documents for errors, omissions, and for coordination and design integration. The ITR team is not required to examine, compare or comment concerning alternate design solutions but should concentrate on ensuring that the design meets the contract requirements. Correct errors and deficiencies in the design documents prior to submitting them to the Government.

3.2.2.2. Include in the DQC Plan the discipline-specific checklists to be used during the design and quality control of each submittal. Submit these completed checklists at each design phase as part of the project documentation.

3.2.2.3. A Design Quality Control Manager, who has the responsibility of being cognizant of and assuring that all documents on the project have been coordinated, shall implement the DQC Plan This individual shall be a person who has verifiable engineering or architectural design experience and is a registered professional engineer or architect. Notify the Government, in writing, of the name of the individual, and the name of an alternate person assigned to the position.

3.2.2.4. Develop and maintain effective, acceptable design configuration management (DCM) procedures to control and track all revisions to the design documents after the Interim Design Submission through submission of the As-Built documents. Include the DCM plan as a subset of the DQC Plan. See Section ‘Design After Award’.

3.2.3. Acceptance of Plan

Government acceptance of the Contractor's plan is required prior to the start of design and construction. Acceptance is conditional and will be predicated on satisfactory performance during the design and construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4. Notification of Changes

After acceptance of the CQC Plan, notify the Government in writing of any proposed change. Proposed changes are subject to Government acceptance.

3.3. COORDINATION MEETING

After the Postaward Conference, before start of design or construction, and prior to acceptance by the Government of the CQC Plan, the Contractor and the Government shall meet and discuss the Contractor's quality control system. Submit the CQC Plan for review a minimum of 7 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, design activities, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. The Government will prepare minutes of the meeting for signature by both parties. . The minutes shall become a part of the contract file. There may be occasions when either party will call for subsequent conferences to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4. QUALITY CONTROL ORGANIZATION

3.4.1. Personnel Requirements

The requirements for the CQC organization are a CQC System Manager, a Design Quality Manager, and sufficient number of additional qualified personnel to ensure contract compliance. The CQC organization shall also include personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. Provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Promptly furnish complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation to the CQC organization. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2. CQC System Manager

Identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a graduate engineer, graduate architect, or a BA/BS graduate of an ACCE accredited construction management college program. The CQC system Manager may alternately be an engineering technician with at least 2 years of college and an ICC certification as a Commercial Building Inspector (Residential Building Inspector certification will be required for Military Family Housing projects). In addition, the CQC system manager shall have a minimum of 5 years construction experience on construction similar to this contract. The CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. Assign the CQC System Manager no other duties (except may also serve as Safety and Health Officer, if qualified and if allowed by Section 00 73 00, or by Section 00 73 10 if this is a task order). Identify an alternate for the CQC System Manager in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager but the alternate may have other duties in addition to serving in a temporary capacity as the acting QC manager.

3.4.3. CQC Personnel

3.4.3.1. In addition to CQC personnel specified elsewhere in the contract provide specialized CQC personnel to assist the CQC System Manager in accordance with paragraph titled Area Qualifications.

3.4.3.2. These individuals may be employees of the prime or subcontractor; be responsible to the CQC System Manager; **are not intended to be full time, but must be physically present at the construction site during work on their areas of responsibility**; have the necessary education and/or

experience in accordance with the experience matrix listed herein. These individuals may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the Quality Control Plan. **One person may cover more than one area, provided that they are qualified to perform QC activities for the designated areas below and provided that they have adequate time to perform their duties:**

3.4.4. Experience Matrix

3.4.4.1. Area Qualifications

3.4.4.1.1. Civil - Graduate Civil Engineer or (BA/BS) graduate in construction management with 4 years experience in the type of work being performed on this project or engineering technician with 5 yrs related experience.

3.4.4.1.2. Mechanical - Graduate Mechanical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or engineering technician with an ICC certification as a Commercial Mechanical Inspector with 5 yrs related experience.

3.4.4.1.3. Electrical - Graduate Electrical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or engineering technician with an ICC certification as a Commercial Electrical Inspector with 5 yrs related experience.

3.4.4.1.4. Structural - Graduate Structural Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or person with an ICC certification as a Reinforced Concrete Special Inspector and Structural Steel and Bolting Special Inspector (as applicable to the type of construction involved) with 5 yrs related experience.

3.4.4.1.5. Plumbing - Graduate Mechanical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience, or person with an ICC certification as a Commercial Plumbing Inspector with 5 yrs related experience.

3.4.4.1.6. Concrete, Pavements and Soils Materials Technician (present while performing tests) with 2 yrs experience for the appropriate area

3.4.4.1.7. Testing, Adjusting and Balancing Specialist must be a member (TAB) Personnel of AABC or an experienced technician of the firm certified by the NEBB (present while testing, adjusting, balancing).

3.4.4.1.8. Design Quality Control Manager Registered Architect or Professional Engineer (not required on the construction site)

3.4.4.1.9. Registered Fire Protection Engineer with 4 years related experience or engineering technician with 5 yrs related experience (but see requirements for Fire Protection Engineer of Record to witness final testing in Section 01 10 00, paragraph 5.10, Fire Protection).

3.4.4.1.10. QC personnel assigned to the installation of the telecommunication system or any of its components shall be Building Industry Consulting Services International (BICSI) Registered Cabling Installers, Technician Level. Submit documentation of current BICSI certification. In lieu of BICSI certification, QC personnel shall have a minimum of 5 years experience in the installation of the specified copper and fiber optic cable and components. They shall have factory or factory approved certification from each equipment manufacturer indicating that they are qualified to install and test the provided products. QC personnel shall witness and certify the testing of telecommunications cabling and equipment.

3.4.5. Additional Requirement

In addition to the above experience and/or education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management for Contractors". This course is periodically offered at TBD. Inquire of the District or Division sponsoring the course for fees and other expenses involved, if any, for attendance at this course.

3.4.6. Organizational Changes

When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5. SUBMITTALS AND DELIVERABLES

Make submittals as specified in Section 01 33 00 ***SUBMITTAL PROCEDURES***. The CQC organization shall certify that all submittals and deliverables are in compliance with the contract requirements.

3.6. CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. The CQC organization shall conduct at least three phases of control for each definable feature of the construction work as follows:

3.6.1. Preparatory Phase

Perform this phase prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

3.6.1.1. A review of each paragraph of applicable specifications, reference codes, and standards. Make a copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field at the preparatory inspection. Maintain these copies in the field, available for use by Government personnel until final acceptance of the work.

3.6.1.2. A review of the contract drawings.

3.6.1.3. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

3.6.1.4. Review of provisions that have been made to provide required control inspection and testing.

3.6.1.5. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

3.6.1.6. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

3.6.1.7. A review of the appropriate activity hazard analysis to assure safety requirements are met.

3.6.1.8. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

3.6.1.9. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

3.6.1.10. Discussion of the initial control phase.

3.6.1.11. Notify the Government at least 24 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. Document the results of the preparatory phase actions by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2. Initial Phase

Accomplish this phase at the beginning of a definable feature of work. Include the following actions:

3.6.2.1. Check work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

3.6.2.2. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

3.6.2.3. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

3.6.2.4. Resolve all differences.

3.6.2.5. Check safety to include compliance with and upgrading of the Accident Prevention plan and activity hazard analysis. Review the activity analysis with each worker.

3.6.2.6. Notify the Government at least 24 hours in advance of beginning the initial phase. The CQC System Manager shall prepare and attach to the daily CQC report separate minutes of this phase. Indicate exact location of initial phase for future reference and comparison with follow-up phases.

3.6.2.7. Repeat the initial phase any time acceptable specified quality standards are not being met.

3.6.3. Follow-up Phase

Perform daily checks to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Conduct final follow-up checks and correct deficiencies prior to the start of additional features of work which may be affected by the deficient work. Do not build upon nor conceal non-conforming work.

3.6.4. Additional Preparatory and Initial Phases

Conduct additional preparatory and initial phases on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7. TESTS

3.7.1. Testing Procedure

Perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements and project design documents. Upon request, furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory, or establish an approved testing laboratory at the project

site. The Contractor may elect to use a laboratory certified and accredited by the Concrete and cement Reference Laboratory (CCRL) or by AASHTO Materials Reference Laboratory (AMRL) for testing procedures that those organizations certify. The Contractor shall perform the following activities and record and provide the following data:

3.7.1.1. Verify that testing procedures comply with contract requirements and project design documents.

3.7.1.2. Verify that facilities and testing equipment are available and comply with testing standards.

3.7.1.3. Check test instrument calibration data against certified standards.

3.7.1.4. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

3.7.1.5. Include results of all tests taken, both passing and failing tests, recorded on the CQC report for the date taken. Include specification paragraph reference, location where tests were taken, and the sequential control number identifying the test. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. Provide an information copy of tests performed by an offsite or commercial test facility directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2. Testing Laboratories

3.7.2.1. Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.2.2. Capability Recheck

If the selected laboratory fails the capability check, the Government will assess the Contractor a charge of $1,375 to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

3.7.3. Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.7.4. Furnishing or Transportation of Samples for Government Quality Assurance Testing

The Contractor is responsible for costs incidental to the transportation of samples or materials. Deliver samples of materials for test verification and acceptance testing by the Government to the Corps of Engineers Laboratory, f.o.b., at the following address:

- For delivery by mail:

  [Not Supplied - ConstructionReqQC : LAB_NAME]

  [Not Supplied - ConstructionReqQC : LAB_ATTN]

  [Not Supplied - ConstructionReqQC : LAB_MAIL]

[Not Supplied - ConstructionReqQC : LAB_STATE]

- For other deliveries:

  [Not Supplied - ConstructionReqQC : LAB_NAME_OTHER]

  [Not Supplied - ConstructionReqQC : LAB_ATTN_OTHER]

  [Not Supplied - ConstructionReqQC : LAB_MAIL_OTHER]

  [Not Supplied - ConstructionReqQC : LAB_STATE_OTHER]

The area or resident office will coordinate, exact delivery location, and dates for each specific test.

3.8. COMPLETION INSPECTION

3.8.1. Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. Prepare a punch list of items which do not conform to the approved drawings and specifications and include in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2. Pre-Final Inspection

As soon as practicable after the notification above, the Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Correct any items noted on the Pre-Final inspection in a timely manner. Accomplish these inspections and any deficiency corrections required by this paragraph within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3. Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall attend the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups and major commands may also attend. The Government will formally schedule the final acceptance inspection based upon results of the Pre-Final inspection. Provide notice to the Government at least 14 days prior to the final acceptance inspection and include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

3.9. DOCUMENTATION

3.9.1. Maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers using

government-provided software, QCS (see Section 01 45 01.10). The report includes, as a minimum, the following information:

3.9.1.1. Contractor/subcontractor and their area of responsibility.

3.9.1.2. Operating plant/equipment with hours worked, idle, or down for repair.

3.9.1.3. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.

3.9.1.4. Test and/or control activities performed with results and references to specifications/drawings requirements. Identify the applicable control phase (Preparatory, Initial, Follow-up). List deficiencies noted, along with corrective action.

3.9.1.5. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

3.9.1.6. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

3.9.1.7. Offsite surveillance activities, including actions taken.

3.9.1.8. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

3.9.1.9. Instructions given/received and conflicts in plans and/or specifications.

3.9.1.10. Provide documentation of design quality control activities. For independent design reviews, provide, as a minimum, identity of the ITR team, the ITR review comments, responses and the record of resolution of the comments.

3.9.2. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. Furnish the original and one copy of these records in report form to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, submit one report for every 7 days of no work and on the last day of a no work period. Account for all calendar days throughout the life of the contract. The first report following a day of no work shall be for that day only. The CQC System Manager shall sign and date reports. The report shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel. The Contractor may submit these forms electronically, in lieu of hard copy.

3.10. NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

End of Section 01 45 04.00 10

SECTION 01 50 02
TEMPORARY CONSTRUCTION FACILITIES

1.0 OVERVIEW

1.1. GENERAL REQUIREMENTS

1.2. AVAILABILITY AND USE OF UTILITY SERVICES

1.3. BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.4. PROTECTION AND MAINTENANCE OF TRAFFIC

1.5. MAINTENANCE OF CONSTRUCTION SITE

1.6. GOVERNMENT FIELD OFFICE

1.0 OVERVIEW

1.1. GENERAL REQUIREMENTS

1.1.1. Site Plan

Prepare a site plan indicating the proposed location and dimensions of any area to be fenced and used by the Contractor, the number of trailers to be used, 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. Also indicate if the use of a supplemental or other staging area is desired.

1.2. AVAILABILITY AND USE OF UTILITY SERVICES

1.2.1. See Section 00 72 00, Contract Clauses and Section 00 73 00, Special Contract Requirements, for Utility Availability requirements.

1.2.2. Sanitation

Provide and maintain within the construction area minimum field-type sanitary facilities approved by the Contracting Officer. Government toilet facilities will not be available to Contractor's personnel.

1.2.3. Telephone

Make arrangements and pay all costs for desired telephone facilities.

1.3. BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.3.1. Bulletin Board

Immediately upon beginning of onsite work, provide a weatherproof glass-covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and other information approved by the Contracting Officer. Locate the bulletin board at the project site in a conspicuous place easily accessible to all employees, as approved by the Contracting Officer. Display legible copies of the aforementioned data until work is completed. Remove the bulletin board from the site upon completion of the project.

1.3.2. Project and Safety Signs

Erect a project sign and a site safety sign with informational details as provided by the Government at the Post award conference, within 15 days prior to any work activity on project site. Update the safety sign data daily, with light colored metallic or non-metallic numerals. Remove the signs from the site upon completion of the project. Engineer Pamphlet EP 310-1-6a contains the standardized layout and construction details for the signs. It can be found through a GOOGLE Search or try the US Army Corps of Engineers Techinfo Website at http://www.hnd.usace.army.mil/techinfo/. Click on Publications then go to Engineer Pamphlets and select EP 310-1-6a.

1.4. PROTECTION AND MAINTENANCE OF TRAFFIC

Provide access and temporary relocated roads as necessary to maintain traffic. Maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Take measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, as required by the State and local authorities having jurisdiction. Protect the traveling public from damage to person and property.

The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. Investigate the adequacy of existing roads and the allowable load limit on these roads. Repair any damage to roads caused by construction operations.

1.4.1. Haul Roads

The Contractor shall, at its own expense, construct access and haul roads necessary for proper prosecution of the work under this contract. Construct haul roads with suitable grades and widths. Avoid sharp curves, blind corners, and dangerous cross traffic. Provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control, although optional, shall be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and hauling roads shall be subject to approval by the Contracting Officer. Provide adequate lighting to assure full and clear visibility for full width of haul road and work areas during any night work operations. Remove haul roads designated by the Contracting Officer upon completion of the work and restore those areas.

1.4.2. Barricades

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

1.5. MAINTENANCE OF CONSTRUCTION SITE

Mow grass and vegetation located within the boundaries of the construction site for the duration of the project, from NTP to contract completion. Edge or neatly trim grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers from NTP to contract completion.

1.6. GOVERNMENT FIELD OFFICE

1.6.1. Resident Engineer's Office

Provide the Government Resident Engineer with an office, approximately 800 square feet in floor area, co-located on the project site with the Contractor’s office and providing space heat, air conditioning, electric light and power, power and communications outlets and toilet facilities consisting of at least one lavatory and at least one water closet complete with connections to water and sewer mains. Provide a mail slot in the door or a lockable mail box mounted on the surface of the door. Provide outlets for 2 government phones and same number of LAN connections for Government computers. Coordinate with the Resident Engineer for locations. Provide a conference room with space large enough for 10 personnel to hold meetings. Provide a minimum of two outlets per government work station and at least one outlet per 10 feet of wall space for other government equipment. Provide at least twice weekly janitorial service. Remove the office facilities upon completion of the work and restore those areas. Connect and disconnect utilities in accordance with local codes and to the satisfaction of the Contracting Officer.

1.6.2. Trailer-Type Mobile Office

The Contractor may, at its option, furnish and maintain a trailer-type mobile office acceptable to the Contracting Officer and providing as a minimum the facilities specified above Securely anchor the trailer to the ground at all four corners to guard against movement during high winds, per EM 385-1-1.

End of Section 01 50 02

SECTION 01 57 20.00 10
ENVIRONMENTAL PROTECTION

1.0 GENERAL REQUIREMENTS

1.1. SUBCONTRACTORS

1.2. ENVIRONMENTAL PROTECTION PLAN

1.3. PROTECTION FEATURES

1.4. ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

1.5. NOTIFICATION

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION

3.1. LAND RESOURCES

3.2. WATER RESOURCES

3.3. AIR RESOURCES

3.4. CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

3.5. RECYCLING AND WASTE MINIMIZATION

3.6. HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

3.7. BIOLOGICAL RESOURCES

3.8. INTEGRATED PEST MANAGEMENT

3.9. PREVIOUSLY USED EQUIPMENT

3.10. MILITARY MUNITIONS

3.11. TRAINING OF CONTRACTOR PERSONNEL

3.12. POST CONSTRUCTION CLEANUP

1.0 GENERAL REQUIREMENTS

Minimize environmental pollution and damage that may occur as the result of construction operations. Protect the environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire duration of this contract. Comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations

1.1. SUBCONTRACTORS

Ensure compliance with this section by subcontractors.

1.2. ENVIRONMENTAL PROTECTION PLAN

1.2.1. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Define issues of concern within the Environmental Protection Plan as outlined in this section. Address each topic in the plan at a level of detail commensurate with the environmental issue and required construction task(s). Identify and discuss topics or issues which are not identified in this section, but which the Contractor considers necessary, after those items formally identified in this section. Prior to commencing construction activities or delivery of materials to the site, submit the Plan for review and Government approval. The Contractor shall meet with the Government prior to implementation of the Environmental Protection Plan, for the purpose of discussing the implementation of the initial plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. Maintain and keep the Environmental Protection Plan current onsite.

1.2.2. Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.2.3. Contents

The plan shall include, but shall not be limited to, the following:

1.2.3.1. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

1.2.3.2. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable

1.2.3.3. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel

1.2.3.4. Description of the Contractor's environmental protection personnel training program

1.2.3.5. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. Include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.

1.2.3.6. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site

1.2.3.7. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.

1.2.3.8. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

1.2.3.9. Drawing showing the location of on-installation borrow areas.

1.2.3.10. A spill control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The spill control plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

(a) The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Government and the local Fire Department in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

(b) The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup

(c) Training requirements for Contractor's personnel and methods of accomplishing the training

(d) A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

(e) The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency

(f) The methods and procedures to be used for expeditious contaminant cleanup

1.2.3.11. A solid waste management plan identifying waste minimization, collection, and disposals methods, waste streams (type and quantity), and locations for solid waste diversion/disposal including clearing debris and C&D waste that is diverted (salvaged, reused, or recycled). Detail the contractor's actions to comply with, and to participate in, Federal, state, regional, local government, and installation sponsored recycling programs to reduce the volume of solid waste at the source. Identify any subcontractors responsible for the transportation, salvage and disposal of solid waste. Submit licenses or permits for solid waste disposal sites that are not a commercial operating facility. Attach evidence of the facility's ability to accept the solid waste to this plan. A construction and demolition waste management plan, similar to the plan specified in the UFGS 01 74 19 (formerly 01572) may be used as the non-hazardous solid waste management plan. Provide a Non-Hazardous Solid Waste Diversion Report. Submit the report on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and each quarter thereafter (e.g. the first working day of January, April, July, and October) until the end of the project. Additionally, a summary report, with all data fields, is required at the end of the project. The report shall indicate the total type and amount of waste generated, total type and amount of waste diverted, type and amount of waste sent to waste-to-energy facility and alternative daily cover, in tons along with the percent that was diverted. Maintain, track and report construction and demolition waste data in a manner such that the installation can enter the data into the Army SWAR database, which separates data by type of material. A cumulative report in LEED Letter Template format may be used but must be modified to include the date disposed of/diverted and include

the above stated diversion data. NOTE: The Solid Waste Diversion Reports are separate documentation than the LEED documentation.

1.2.3.12. DELETED.

1.2.3.13. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.

1.2.3.14. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, include a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time in the contaminant prevention plan. Update the plan as new hazardous materials are brought on site or removed from the site. Reference this plan in the storm water pollution prevention plan, as applicable.

1.2.3.15. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented and any required permits. If surface discharge will be the method of disposal, include a copy of the permit and associated documents as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, include documentation that the waste water treatment plant Operator has approved the flow rate, volume, and type of discharge.

1.2.3.16. A historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. Include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Government.

1.2.3.17. A pesticide treatment plan, updated, as information becomes available. Include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements as well as any additional Installation specific requirements. Follow AR 200-1, Chapter 5, Pest Management, Section 5-4, “Program Requirements” for data required to be reported to the Installation.

1.3. PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Government shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. Both the Contractor and the Government will

sign this survey, upon mutual agreement as to its accuracy and completeness. The Contractor develop a plan that depicts how it will protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.4. ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Government and may require an extended review, processing, and approval time. The Government reserves the right to disapprove alternate methods, even if they are more cost effective, if the Government determines that the proposed alternate method will have an adverse environmental impact.

1.5. NOTIFICATION

The Government will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Government of the proposed corrective action and take such action when approved by the Government. The Government may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Government may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION

3.1. LAND RESOURCES

Confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. Do not attach or fasten any ropes, cables, or guys to any trees for anchorage unless specifically authorized. Provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Remove all stone, soil, or other materials displaced into uncleared areas..

3.1.1. Work Area Limits

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

3.1.2. Landscape

Clearly identify trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved by marking, fencing, or wrapping with boards, or any other approved techniques. Restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.1.3. Erosion and Sediment Controls

Provide erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. Coordinate with approving authorities (federal, state, etc.) for specific requirements to be included in the plan. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. Keep the area of bare soil exposed at any one time by construction operations to a minimum necessary. Construct or install temporary and permanent erosion and sediment control best management practices (BMPs). BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. Remove any temporary measures after the area has been stabilized.

3.1.4. Contractor Facilities and Work Areas

Place field offices, staging areas, stockpile storage, and temporary buildings in areas designated on the drawings or as directed by the Government. Make only approved temporary movement or relocation of Contractor facilities. Provide erosion and sediment controls for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Control temporary excavation and embankments for plant and/or work areas to protect adjacent areas.

3.2. WATER RESOURCES

Monitor construction activities to prevent pollution of surface and ground waters. Do not apply toxic or hazardous chemicals to soil or vegetation unless otherwise indicated. Monitor all water areas affected by construction activities. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by state or federally issued Clean Water Act permits.

3.2.1. Stream Crossings

Stream crossings shall allow movement of materials or equipment without violating water pollution control standards of the Federal, State, and local governments or impede state-designated flows.

3.2.2. Wetlands

Do not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

3.3. AIR RESOURCES

Comply with all Federal and State air emission and performance laws and standards for equipment operation, activities, or processes.

3.3.1. Particulates

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

3.3.2. Odors

Control odors from construction activities at all times. Odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.3.3. Sound Intrusions

Keep construction activities under surveillance and control to minimize environment damage by noise. Comply with the provisions of the state and Installation rules.

3.3.4. Burning

Burning is not allowed on the project site unless specified in other sections of the specifications or by written authorization. Specific times, locations, and manners of burning shall be subject to approval.

3.4. CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.4.1. Solid Wastes

Place solid wastes (excluding clearing debris) in containers which are emptied on a regular schedule. Conduct handling, storage, and disposal to prevent contamination. Employ segregation measures so that no hazardous or toxic waste will become co-mingled with solid waste. Transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. The minimum acceptable off-site solid waste disposal option is a Subtitle D RCRA permitted landfill. Verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. Comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

3.4.2. Chemicals and Chemical Wastes

Dispense chemicals, ensuring no spillage to the ground or water. Perform and document periodic inspections of dispensing areas to identify leakage and initiate corrective action. The Government may periodically review this documentation. Collect chemical waste in corrosion resistant, compatible containers. Monitor and remove collection drums to a staging or storage area when contents are within 6 inches of the top. Classify, manage, store, and dispose of wastes in accordance with Federal, State, and local laws and regulations.

3.4.3. Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable state and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. At a minimum, manage and store hazardous waste in compliance with 40 CFR 262. Take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. Segregate hazardous waste from other materials and wastes; protect it from the weather by placing it in a safe covered location and take precautionary measures, such as berming or other appropriate measures, against accidental spillage. Store, describe, package, label, mark, and placard hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, state, and local laws and regulations. Transport Contractor generated hazardous waste off Government property in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. Dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Immediately report spills of hazardous or toxic materials to the Government and the Facility Environmental Office. Contractor will be responsible for cleanup and cleanup costs due to spills.

Contractor is responsible for the disposition of Contractor generated hazardous waste and excess hazardous materials.

3.4.4. Fuel and Lubricants

Conduct storage, fueling and lubrication of equipment and motor vehicles in a manner that affords the maximum protection against spill and evaporation. Manage and store fuel, lubricants and oil in accordance with all Federal, State, Regional, and local laws and regulations.

3.5. RECYCLING AND WASTE MINIMIZATION

Participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project. Line and berm fueling areas and establish storm water control structures at discharge points for site run-off. Keep a liquid containment clean-up kit available at the fueling area.

3.6. HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Existing historical, archaeological, and cultural resources within the Contractor's work area are shown on the drawings. Protect and preserve these resources during the life of the Contract. Temporarily suspend all activities that may damage or alter such resources, if any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found during excavation or other construction activities. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, notify the Government so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. Cease all activities that may result in impact to or the destruction of these resources. Secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.7. BIOLOGICAL RESOURCES

Minimize interference with, disturbance to, and damage to fish, wildlife, and plants, including their habitat. Protect threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.8. INTEGRATED PEST MANAGEMENT

Coordinate, through the Government, with the Installation Pest Management Coordinator (IPMC) at the earliest possible time prior to pesticide application, in order to minimize impacts to existing fauna and flora. Discuss integrated pest management strategies with the IPMC and receive concurrence from the IPMC, through the COR, prior to the application of any pesticide associated with these specifications. Give IMPC personnel the opportunity to be present at all meetings concerning treatment measures for pest or disease control and during application of the pesticide. The use and management of pesticides are regulated under 40 CFR 152 - 186.

3.8.1. Pesticide Delivery and Storage

Deliver pesticides, approved for use on the Installation, to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses.

3.8.2. Qualifications

Use the services of a subcontractor for pesticide application whose principal business is pest control. The subcontractor shall be licensed and certified in the state where the work is to be performed.

3.8.3. Pesticide Handling Requirements

Formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions.

3.8.4. Application

A state certified pesticide applicator shall apply pesticides in accordance with EPA label restrictions and recommendations.

3.9. PREVIOUSLY USED EQUIPMENT

Clean all previously used construction equipment prior to bringing it onto the project site. Ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. Consult with the USDA jurisdictional office for additional cleaning requirements.

3.10. MILITARY MUNITIONS

Immediately stop work in that area and immediately inform the Government, in the event military munitions, as defined in 40 CFR 260, are discovered or uncovered.

3.11. TRAINING OF CONTRACTOR PERSONNEL

Train personnel in all phases of environmental protection and pollution control. Conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Conduct additional meetings for new personnel and when site conditions change. The training and meeting agenda shall include methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.12. POST CONSTRUCTION CLEANUP

Clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". Unless otherwise instructed in writing , obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. Grade, fill and seed the entire disturbed area, unless otherwise indicated.

SECTION 01 62 35
RECYCLED/RECOVERED MATERIAL

1.0 GENERAL

1.1. REFERENCES

1.2. OBJECTIVES

1.3. EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

1.4. EPA PROPOSED ITEMS INCORPORATED IN THE WORK

1.5. EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

1.0 GENERAL

1.1. REFERENCES

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

- U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
- 40 CFR 247 Comprehensive Procurement Guideline for Products Containing Recovered Materials

1.2. OBJECTIVES

Government procurement policy is to acquire, in a cost effective manner, items containing the highest percentage of recycled and recovered materials practicable consistent with maintaining a satisfactory level of competition without adversely affecting performance requirements or exposing suppliers' employees to undue hazards from the recovered materials. The Environmental Protection Agency (EPA) has designated certain items which must contain a specified percent range of recovered or recycled materials. The Contractor shall make all reasonable efforts to use recycled and recovered materials in providing the EPA designated products and in otherwise utilizing recycled and recovered materials in the execution of the work.

1.3. EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

Materials that have been designated by EPA as being products which are or can be made with recovered or recycled materials, when incorporated into the work under this contract, shall contain at least the minimum percentage of recycled or recovered materials indicated by EPA unless adequate justification (non-availability) for non-use is provided. When a designated item is specified as an option to a non-designated item, the designated item requirements apply only if the designated item is used in the work.

1.4. EPA PROPOSED ITEMS INCORPORATED IN THE WORK

Products other than those designated by EPA are still being researched and are being considered for future Comprehensive Procurement Guideline (CPG) designation. It is recommended that these items, when incorporated in the work under this contract, contain the highest practicable percentage of recycled or recovered materials, provided specified requirements are also met.

1.5. EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

There are many products listed in 40 CFR 247 which have been designated or proposed by EPA to include recycled or recovered materials that may be use by the Contractor in performing the work but will not be incorporated into the work. These products include office products, temporary traffic control products, and pallets. It is recommended that these non-construction products, when used in the conduct of the work, contain the highest practicable percentage of recycled or recovered materials and that these products be recycled when no longer needed.

End of Section 01 62 35

SECTION 01 78 02.00 10
CLOSEOUT SUBMITTALS

1.0 OVERVIEW

1.1. SUBMITTALS

1.2. PROJECT RECORD DOCUMENTS

1.3. EQUIPMENT DATA

1.4. CONSTRUCTION WARRANTY MANAGEMENT

1.5. MECHANICAL TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

1.6. OPERATION AND MAINTENANCE MANUALS

1.7. FIELD TRAINING

1.8. PRICING OF CONTRACTOR-FURNISHED AND INSTALLED PROPERTY AND GOVERNMENT-FURNISHED CONTRACTOR-INSTALLED PROPERTY

1.9. LEED REVIEW MEETINGS

1.10. RED ZONE MEETING

1.11. FINAL CLEANING

1.12. INTERIM FORM DD1354 "TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

EXHIBIT 1 SAMPLE RED ZONE MEETING CHECKLIST

1.0 OVERVIEW

1.1. SUBMITTALS

Government approval is required for any submittals with a "G" designation; submittals not having a "G" designation are for Designer of Record approval or for information only. Submit the following in accordance with Section 01 33 00 submittals*:*

SD-02 Shop Drawings

– As-Built Drawings - G

▪ Drawings showing final as-built conditions of the project. Provide electronic drawing files as specified in Section 01 33 16, 3 sets of blue-line prints and one set of the approved working as-built drawings.

SD-03 Product Data

– As-Built Record of Equipment and Materials

▪ Two copies of the record listing the as-built materials and equipment incorporated into the construction of the project.

– Construction Warranty Management Plan

▪ Three sets of the construction warranty management plan containing information relevant to the warranty of materials and equipment incorporated into the construction project, including the starting date of warranty of construction. Furnish with each warranty the name, address, and telephone number of each of the guarantor's representatives nearest to the project location.

– Warranty Tags

▪ Two record copies of the warranty tags showing the layout and design.

– Final Cleaning

▪ Two copies of the listing of completed final clean-up items.

1.2. PROJECT RECORD DOCUMENTS

1.2.1. As-Built Drawings – G

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, but that of professionally prepared drawings as if they were the "as designed" drawings.

1.2.2. Maintenance of As-Built Drawings

1.2.2.1. The Configuration Management Plan shall describe how the Contractor will maintain up-to-date drawings, how it will control and designate revisions to the drawings and specifications (In accordance with Special Contract Requirement: ***Deviating from the Accepted Design*** and Section 01 33 16: ***Design after Award***, the Designer of Record's approval is necessary for any revisions to the accepted design).

1.2.2.2. Make timely updates, carefully maintaining a record set of working as-built drawings at the job site, marked in red, of all changes and corrections from the construction drawings. Enter changes and corrections on drawings promptly to reflect "Current Construction". Perform this update no less frequently

than weekly for the blue line drawings and update no less frequently than quarterly for the CADD/CAD and BIM files, which were prepared previously in accordance with Section 01 33 16. Include a confirmation that the as-builts are up to date with the submission of the monthly project schedule.

1.2.2.3. If the DB Contractor fails to maintain the as-built drawings as required herein, the Government will retain from the monthly progress payment, an amount representing the estimated monthly cost of maintaining the as-built drawings. Final payment with respect to separately priced facilities or the contract as a whole will be withheld until the Contractor submits acceptable as-built drawings and the Government approves them.

1.2.2.4. 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.

1.2.2.5. Typically, room numbers shown on the drawings are selected for design convenience and do not represent the actual numbers intended for use by the end user. Final as-built drawings shall reflect actual room numbers adopted by the end user.

1.2.2.6. If there is no separate contract line item (CLIN) for as-built drawings, the Government will withhold the amount of $35,000, or 1% of the present construction value, whichever is the greater, until the final as-built drawing submittal has been approved by the Government.

1.2.3. Underground Utilities

The drawings shall indicate, in addition to all changes and corrections, the actual location, kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, the as-built drawings shall show, by offset dimensions to two permanently fixed surface features, the end of each run including each change in direction. Locate Valves, splice boxes and similar appurtenances by dimensioning along the utility run from a reference point. Record average elevation of the top of each run or underground structure..

1.2.4. Partial Occupancy

For projects where portions of construction are to be occupied or activated before overall project completion, including portions of utility systems, supply as-built drawings for those portions of the facility being occupied or activated at the time the facility is occupied or activated. Show this same as-built information previously furnished on the final set of as-built drawings.

1.2.5. As-Built Conditions That are Different From the construction Drawings

Accurately reflect all as-built conditions that are different, such as dimensions, road alignments and grades, and drainage and elevations, from the construction drawings on each drawing. If the as-built condition is accurately reflected on a shop drawing, then furnish that shop drawing in CADD format. Reference the final as-built construction drawing the shop drawing file that includes the as-built information. In turn, the shop drawing shall reference the applicable construction as-built drawing. Delete any options shown on drawings and not selected clearly reflect options selected on final as-built drawings.

1.2.6. Additional As-Built Information that Exceeds the Detail Shown on the construction Drawings:

These as-built conditions 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 construction drawings, piping, and equipment drawings. Include locations of all explorations, logs of all explorations, and results of all laboratory testing, including those provided by the Government. Furnish all such shop drawings in CADD /CADformat. Include fire protection details, such as wiring, performed for the design of the project.

1.2.7. Final As-Built Drawings

Submit final as-built CADD/CAD and BIM Model(s) and Facility Data files at the time of Beneficial Occupancy of the project or at a designated phase of the project. In the event the Contractor accomplishes additional work after this submittal, which changes the as-built conditions, submit a new DVD with all drawing sheets and three blue-line copies of affected sheets which depict additional changes.

1.2.8. Title Blocks

In accordance with the configuration management plan, clearly mark title blocks to indicate final as-built drawings.

1.2.9. Other As-Built Documents

Provide scans of all other documents such as design analysis, catalog cuts, certification documents that are not available in native electronic format in an organized manner in Adobe.pdf format.

1.2.9.1. LEED Documentation

Update LEED documentation on at least a monthly basis and have it available for review by the Government on the jobsite at all times during construction. Submit the final LEED Project Checklist(s), final LEED submittals checklist and complete project documentation, verifying the final LEED score and establishing the final rating. Provide full support to the validation review process, including credit audits. See also the LEED documentation requirements in Section 01 33 16, DESIGN AFTER AWARD.

1.2.9.2. GIS Documentation

Provide final geo-referenced GIS database of the new building footprint along with any changes made to exterior of the building. The intent of capturing the final building footprint and exterior modifications in a GIS database is to provide the installation with a data set of the comprehensive changes made to the landscape as a result of the construction project. The Government will incorporate this data set into the installations existing GIS MasterPlan or Enterprise GIS system. The GIS database deliverable shall follow a standard template provided to the Contractor by the Government, adhere to detailed specifications outlined in ECB No 2006-15, and be documented using the Federal Geographic Data Committee (FGDC) metadata standard.

1.3. EQUIPMENT DATA

1.3.1. Real Property Equipment

Provide an Equipment-in-Place list of all installed equipment furnished under this contract. Include all information usually listed on manufacturer's name plate. Include the cost of each piece of installed property F.O.B. construction site. For each of the items which is specified herein to be guaranteed for a specified period from the date of acceptance thereof, provide the following information: The name, serial and model number address of equipment supplier, or manufacturer originating the guaranteed item. The Contractor's guarantee to the Government of these items will not be limited by the terms of any manufacturer's guarantee to the Contractor. Furnish the list as one (1) reproducible and three (3) copies

thirty (30) calendar days before completion of any segment of the contract work which has an incremental completion date.

1.3.2. Maintenance and Parts Data

Furnish a brochure, catalog cut, parts list, manufacturer's data sheet or other publication showing detailed parts data on all other equipment subject to repair and maintenance procedures not otherwise required in Operations and Maintenance Manuals specified elsewhere in this contract. Distribution of directives shall follow the same requirements as listed in paragraph above.

1.3.3. Construction Specifications

Furnish permanent electronic files of final as-built construction specifications, including modifications thereto, with the as-built drawings.

1.4. CONSTRUCTION WARRANTY MANAGEMENT

1.4.1. Prior to the end of the one year warranty, the Government may conduct an infrared roof survey on any project involving a membrane roofing system. This survey will be conducted in accordance with ASTM C1153-90, "Standard Practice for Location of Wet Insulation in Roofing Systems Using Infrared Imaging". The Contractor shall replace all damaged materials and locate and repair sources of moisture penetration.

1.4.2. Management

1.4.2.1. Warranty Management Plan

Develop a warranty management plan containing information relevant to the clause ***Warranty of Construction*** in FAR 52.246-21. Submit the warranty management plan for Government approval at least 30 days before the planned pre-warranty conference. In the event of phased turn-over of the contract, update the Warranty Management Plan as necessary to include latest information required. Include all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan shall be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below shall include due date and whether item has been submitted or was accomplished. Submit warranty information made available during the construction phase prior to each monthly pay estimate. Assemble information in a binder and turn over to the Government upon acceptance of the work. The construction warranty period shall begin on the date of project acceptance and shall continue for the full product warranty period. The Contractor, Government, including the Customer Representative shall jointly conduct warranty inspections, 4 months and 9 months, after acceptance. The warranty management plan shall include, but shall not be limited to, the following information:

(1) Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the contractors, subcontractors, manufacturers or suppliers involved.

(2) Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.

(3) A list for each warranted equipment, item, feature of construction or system indicating:

(i) Name of item.

(ii) Model and serial numbers.

(iii) Location where installed.

(iv) Name and phone numbers of manufacturers or suppliers.

(v) Names, addresses and telephone numbers of sources of spare parts.

(vi) Warranties and terms of warranty. Include one-year overall warranty of construction. Indicate those items, which have extended warranties with separate warranty expiration dates.

(vii) Cross-reference to warranty certificates as applicable.

(viii) Starting point and duration of warranty period.

(ix) Summary of maintenance procedures required to continue the warranty in force.

(x) Cross-reference to specific pertinent Operation and Maintenance manuals.

(xi) Organization, names and phone numbers of persons to call for warranty service.

(xii) Typical response time and repair time expected for various warranted equipment.

(4) The Contractor's plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.

(5) Procedure and status of tagging of all equipment covered by extended warranties.

(6) Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

1.4.3. Performance Bond

1.4.3.1. The Contractor's Performance Bond will remain effective throughout the construction warranty period.

1.4.3.2. In the event the Contractor or his designated representative(s) fails to commence and diligently pursue any work required under this clause, and in a manner pursuant to the requirements thereof, the Government shall have a right to demand that said work be performed under the Performance Bond by making written notice on the surety. If the surety fails or refuses to perform the obligation it assumed under the Performance Bond, the Government shall have the work performed by others, and after completion of the work, may make demand for reimbursement of any or all expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.

1.4.3.3. In the event sufficient funds are not available to cover the construction warranty work performed by the Government at the Contractor's expense, the Government will have the right to recoup expenses from the bonding company.

1.4.3.4. Following oral or written notification of required warranty repair work, the Contractor will respond as dictated by para. 1.4.5. Written verification will follow oral instructions. Failure of the Contractor to respond will be cause for the Government to proceed against the Contractor as outlined in the paragraph 1.4.5.5 and/or above.

1.4.4. Pre-Warranty Conference

Prior to contract completion, or completion of any phase or portion of contract to be turned over, and at a time designated by the Contracting Officer, the Contractor shall meet with the Government to develop a mutual understanding with respect to the requirements of this clause. Communication procedures for Contractor notification of warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Government for the execution of the construction warranty shall be established/reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, the Contractor will furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warrantied construction, will be continuously

available, and will be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of his responsibilities in connection with other portions of this provision.

1.4.5. Contractor's Response to Warranty Service Requirements.

Following Government oral or written notification, which may include authorized installation maintenance personnel, the Contractor shall respond to warranty service requirements in accordance with the "Warranty Service Priority List" and the three categories of priorities listed below. Submit a report on any warranty item that has been repaired during the warranty period. The report shall include the cause of the problem, date reported, corrective action taken, and when the repair was completed. If the Contractor does not perform the construction warranty within the timeframe specified, the Government will perform the work and backcharge the construction warranty payment item established.

1.4.5.1. First Priority Code 1 Perform onsite inspection to evaluate situation, and determine course of action within 4 hours, initiate work within 6 hours and work continuously to completion or relief.

1.4.5.2. Second Priority Code 2 Perform onsite inspection to evaluate situation, and determine course of action within 8 hours, initiate work within 24 hours and work continuously to completion or relief.

1.4.5.3. Third Priority Code 3 All other work to be initiated within 3 work days and work continuously to completion or relief.

1.4.5.4. The "Warranty Service Priority List" is as follows:

- Code 1 - Air Conditioning System

(a) Buildings with computer equipment.

(b) Barracks, mess halls (entire building down).

- Code 2 - Air Conditioning Systems

(a) Recreational support.

(b) Air conditioning leak in part of building, if causing damage.

(c) Air conditioning system not cooling properly

(d) Admin buildings with Automated Data Processing (ADP) equipment not on priority list.

- Code 1 - Doors

(a) Overhead doors not operational.

- Code 1 - Electrical

(a) Power failure (entire area or any building operational after 1600 hours).

(b) Traffic control devices.

(c) Security lights.

(d) Smoke detectors and fire alarm systems

(e) Power or lighting failure to an area, facility, portion of a facility, which may adversely impact health, safety, security, or the installation's mission requirement, or which may result in damage to property.

- Code 2 - Electrical

(a) Power failure (no power) for unoccupied buildings or portions thereof or branch circuits within occupied buildings, not listed as Code 1.

(a) Receptacle and lights, not listed as code 1.

- Code 3 - Electrical

(a) Street, parking area lights

- Code 1 - Gas

(a) Leaks and breaks.

(b) No gas to cantonment area.

- Code 1 - Heat

(a) Area power failure affecting heat.

(b) Heater in unit not working.

- Code 2 Heat

(a) All heating system failures not listed as Code 1.

- Code 3 - Interior

(a) Floor damage

(b) Paint chipping or peeling

- Code 1 - Intrusion Detection Systems - N/A.
- Code 2 - Intrusion Detection Systems other than those listed under Code 1
- Code 1 - Kitchen Equipment

(a) Dishwasher.

(b) All other equipment hampering preparation of a meal.

- Code 2 - Kitchen Equipment

(a) All other equipment not listed under Code 1.

- Code 2 - Plumbing

(a) Flush valves not operating properly

(b) Fixture drain, supply line commode, or water pipe leaking.

(c) Commode leaking at base.

- Code 3 - Plumbing

(a) Leaking faucets

- Code 1 - Refrigeration

(a) Mess Hall.

(b) Medical storage.

- Code 2 - Refrigeration

(a) Mess hall - other than walk-in refrigerators and freezers.

- Code 1 - Roof Leaks

(a) Temporary repairs will be made where major damage to property is occurring.

- Code 2 - Roof Leaks

(a) Where major damage to property is not occurring, check for location of leak during rain and complete repairs on a Code 2 basis.

- Code 1 - Sprinkler System

(a) All sprinkler systems, valves, manholes, deluge systems, and air systems to sprinklers.

- Code 1 - Tank Wash Racks (Bird Baths)

(a) All systems which prevent tank wash.

- Code 1 - Water (Exterior)

(a) Normal operation of water pump station.

- Code 2 - Water (Exterior)

(a) No water to facility.

- Code 1 - Water, Hot (and Steam)

(a) Barracks (entire building).

- Code 2 - Water, Hot

(a) No hot water in portion of building listed under Code 1

1.4.5.5. Should parts be required to complete the work and the parts are not immediately available, the Contractor shall have a maximum of 12 hours after arrival at the job site to provide the Government, with firm written proposals for emergency alternatives and temporary repairs for Government participation with the Contractor to provide emergency relief until the required parts are available on site for the Contractor to perform permanent warranty repair. The Contractors proposals shall include a firm date and time that the required parts shall be available on site to complete the permanent warranty repair. The Government will evaluate the proposed alternatives and negotiate the alternative considered to be in the best interest of the Government to reduce the impact of the emergency condition. Alternatives considered by the Government will include the alternative for the Contractor to "Do Nothing" while waiting until the required parts are available to perform permanent warranty repair. Negotiating a proposal which will require Government participation and the expenditure of Government funds shall constitute a separate procurement action by the using service.

1.4.6. Equipment Warranty Identification Tags

1.4.6.1. Provide warranty identification tags at the time of installation and prior to substantial completion shall provide warranty identification tags on all Contractor and Government furnished equipment which the Contractor has installed.

(a) The tags shall be suitable for interior and exterior locations, resistant to solvents, abrasion, and to fading caused by sunlight, precipitation, etc. These tags shall have a permanent pressure-sensitive adhesive back, and they shall be installed in a position that is easily (or most easily) noticeable. Tag each component of contractor furnished equipment that has differing warranties on its components.

(b) Submit sample tags, representing how the other tags will look, for Government review and approval.

(c) Tags for Warrantied Equipment: The tag for this equipment shall be similar to the following: Exact format and size will be as approved.

EQUIPMENT WARRANTY - CONTRACTOR FURNISHED EQUIPMENT

MFG NAME MODEL NO.

SERIAL NO.

CONTRACT NO.

CONTRACTOR NAME

CONTRACTOR WARRANTY EXPIRES

MFG WARRANTY(IES) EXPIRE

EQUIPMENT WARRANTY - GOVERNMENT FURNISHED EQUIPMENT

MFG NAME MODEL NO.

SERIAL NO.

CONTRACT NO.

DATE EQUIP PLACED IN SERVICE

MFG WARRANTY(IES) EXPIRE

(d) If the manufacturer's name (MFG), model number and serial number are on the manufacturer's equipment data plate and this data plate is easily found and fully legible, this information need not be duplicated on the equipment warranty tag

1.4.6.2. Execution: Complete the required information on each tag and install these tags on the equipment by the time of and as a condition of final acceptance of the equipment.

1.5. MECHANICAL TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

Submit; all reports, statements, certificates, and completed checklists for testing, adjusting, balancing, and commissioning of mechanical systems prior to final inspection and transfer of the completed facility for approval, as specified in applicable technical specification sections.

1.6. OPERATION AND MAINTENANCE MANUALS

1.6.1. General Requirements

1.6.1.1. Inasmuch as the operations and maintenance manuals are required to operate and maintain the facility, the operations and maintenance (O&M) manuals will be considered a requirement prior to substantial completion of any facility to be turned over to the Government. Beneficial occupancy of all or portions of a facility prior to substantial completion will not relieve the Contractor of liquidated damages, if substantial completion exceeds the required completion date.

1.6.1.2. Provide one permanent electronic copy on CD-ROM and 2 hard copies of the Equipment Operating, Maintenance, and Repair Manuals. Provide separate manuals for each utility system as defined hereinafter. Submit Operations and Maintenance manuals for approval before field training or 90 days before substantial completion (whichever occurs earlier). If there is no separate CLIN for O&M Manuals, the Government will withhold an amount representing $20,000, as non-progressed work, until submittal and approval of all O&M manuals are complete.

1.6.2. Definitions

1.6.2.1. Equipment

A single piece of equipment operating alone or in conjunction with other equipment to accomplish a system function.

1.6.2.2. System

A combination of one or more pieces of equipment which function together to accomplish an intended purpose (i.e. HVAC system is composed of many individual pieces of equipment such as fans, motors, compressors, valves, sensors, relays, etc.)

1.6.3. Hard Cover Binders

The manuals shall be hard cover with posts, or 3-ring binders, so sheets may be easily substituted. Print the following identification on the cover: the words "EQUIPMENT OPERATING, MAINTENANCE, AND REPAIR MANUALS," the project name, building number, and an indication of utility or systems covered, the name of the Contractor, and the Contract number. Manuals shall be approximately 8-1/2 by 11-inches with large sheets folded in and capable of being easily pulled out for reference. All manuals for the project must be similar in appearance, and be of professional quality.

1.6.4. Warning Page

Provide a warning page to warn of potential dangers (if they exist, such as high voltage, toxic chemicals, flammable liquids, explosive materials, carcinogens, high pressures, etc.). Place the warning page inside the front cover and in front of the title page. Include any necessary Material Safety Data Sheets (MDSD) here.

1.6.5. Title Page

The title page shall include the same information shown on the cover and show the name of the preparing firm and the date of publication.

1.6.6. Table of Contents

Each volume of the set of manuals for this project shall include a table of contents, for the entire set, broken down by volume.

1.6.7. GENERAL

Organize manuals according to the following format, and include information for each item of equipment Submit a draft outline and table of contents for approval at 50% contract completion.

TABLE OF CONTENTS

PART I: Introduction

- Equipment Description
- Functional Description
- Installation Description

PART II: Operating Principles

PART III: Safety

PART IV: Preventive Maintenance

- Preventive Maintenance Checklist, Lubrication
- Charts and Diagrams

PART V: Spare Parts Lists

- Troubleshooting Guide
- Adjustments
- Common Repairs and Parts Replacement

PART VI: Illustrations

1.6.7.1. Part I-Introduction

Part I shall provide an introduction, equipment or system description, functional description and theory of operation, and installation instructions for each piece of equipment. Include complete instructions for uncrating, assembly, connection to the power source and pre-operating lubrication in the installation instructions as applicable. Illustrations, including wiring and cabling diagrams, are required as appropriate in this section. Include halftone pictures of the equipment in the introduction and equipment description, as well as system layout drawings with each item of equipment located and marked. Do not use copies of previously submitted shop drawings in these manuals.

1.6.7.2. Part II-Operating Principles

Part II shall provide complete instructions for operating the system, and each piece of equipment. Illustrations, halftone pictures, tables, charts, procedures, and diagrams are required when applicable. This will include step-by-step procedures for start-up and shutdown of both the system and each component piece of equipments, as well as adjustments required to obtain optimum equipment performance, and corrective actions for malfunctions. Show performance sheets and graphs showing capacity data, efficiencies, electrical characteristics, pressure drops, and flow rates here, also. Marked-up catalogs or catalog pages do not satisfy this requirement. Present performance information as concisely as possible with only data pertaining to equipment actually installed. Include actual test data collected for Contractor performance here.

1.6.7.3. Part III-Safety

Part III shall contain the general and specific safety requirements peculiar to each item of equipment. Repeat safety information as notes cautions and warnings in other sections where appropriate to operations described.

1.6.7.4. Part IV-Preventive Maintenance

Part IV shall contain a troubleshooting guide, including detailed instructions for all common adjustments and alignment procedures, including a detailed maintenance schedule. Also include a diagnostic chart showing symptoms and solutions to problems. Include test hookups to determine the cause, special tools and test equipment, and methods for returning the equipment to operating conditions. Information may be in chart form or in tabular format with appropriate headings. Include instructions for the removal, disassembly, repair, reassembly, and replacement of parts and assemblies where applicable and the task is not obvious.

1.6.7.5. Part V-Spare Parts List

Part V shall contain a tabulation of description data and parts location illustrations for all mechanical and electrical parts. The heading of the parts list shall clearly identify the supplier, purchase order number, and equipment. Include the unit price for each part. List parts by major assemblies, and arrange the listing in columnar form. Include names and addresses of the nearest manufacturer's representatives, as well as any special warranty information. Provide a list of spare parts that are recommended to be kept in stock by the Government installation.

1.6.7.6. Part VI-Illustrations

Part VI shall contain assembly drawings for the complete equipment or system and for all major components. Include complete wiring diagrams and schematics. Other illustrations, such as exploded views, block diagrams, and cutaway drawings, are required as appropriate.

1.6.8. Framed Instructions

Post framed instructions are required for substantial completion. Post framed instructions under glass or in laminated plastic, including wiring and control diagrams showing the complete layout of the entire system, including equipment, ductwork, piping valves, dampers, and control sequence at a location near the equipment described. Prepare condensed operating instructions explaining preventive maintenance procedures methods of checking the system for normal safe operation, valve schedule and procedures for safely starting and stopping the system in type form, framed as specified above for the wiring and control diagrams and posted beside the diagrams. Submit proposed diagrams, instructions, and other sheets prior to posting. Post the framed instructions before field training.

1.6.9. (Reserved. See 1.7 for Field Training)

1.6.10. System/Equipment Requirements

1.6.10.1. Facility Heating System

Provide information on the following equipment: boilers, water treatment, chemical feed pumps and tanks, converters, heat exchangers, pumps, unit heaters, fin-tube radiation, air handling units (both heating only and heating and cooling), and valves (associated with heating systems).

1.6.10.2. Air-Conditioning Systems

Provide information in chillers, packaged air-conditioning equipment, towers, water treatment, chemical feed pumps and tanks, air-cooled condensers, pumps, compressors, air handling units, and valves (associated with air-conditioning systems).

1.6.10.3. Temperature Control and HVAC Distribution Systems

Provide all information described for the following equipment: valves, fans, air handling units, pumps, boilers, converters and heat exchangers, chillers, water cooled condensers, cooling towers, and fin-tube radiation, control air compressors, control components (sensors, controllers, adapters and actuators), and flow measuring equipment.

1.6.10.4. Central Heating Plants

Provide the information described for the following equipment: boilers, converters, heat exchangers, pumps, fans, steam traps, pollution control equipment, chemical feed equipment, control systems, fuel handling equipment, de-aerators, tanks (flash, expansion, return waters, etc.), water softeners, and valves.

1.6.10.5. Heating Distribution Systems

Provide the information described for the following equipment: valves, fans, pumps, converters and heat exchangers, steam traps, tanks (expansion, flash, etc.), and piping systems.

1.6.10.6. Exterior Electrical Systems

Provide information on the following equipment: power transformers, relays, reclosers, breakers, and capacitor bank controls.

1.6.10.7. Interior Electrical Systems

Provide information on the following equipment: relays, motor control centers, switchgear, solid state circuit breakers, motor controller, EPS lighting systems, wiring diagrams and troubleshooting flow chart on control systems, and special grounding systems.

1.6.10.8. Energy Monitoring and Control Systems

The maintenance manual shall include descriptions of maintenance for all equipment, including inspection, periodic preventative maintenance, fault diagnosis, and repair or replacement of defective components.

1.6.10.9. Domestic Water Systems

Provide the identified information on the following equipment: tanks, unit process equipment, pumps, motors, control and monitoring instrumentation, laboratory test equipment, chemical feeders, valves, switching gear, and automatic controls.

1.6.10.10. Wastewater Treatment Systems

Provide the identified information on the following equipment: tanks, unit process equipment, pumps, motors, control and monitoring instrumentations, laboratory test equipment chemical feeders, valves, scrapers, skimmers, comminutors, blowers, switching gear, and automatic controls.

1.6.10.11. Fire Protection Systems

Provide information on the following equipment: alarm valves, manual valves, regulators, foam and gas storage tanks, piping materials, sprinkler heads, nozzles, pumps, and pump drivers.

1.6.10.12. Fire Alarm and Detection Systems

(1) The maintenance manual shall include description of maintenance for all equipment, including inspection, periodic preventive maintenance, fault diagnosis, and repair or replacement of defective components.

(2) Provide all software; database with complete identification of programmable portions of system equipment and devices, and all other system programming data on all modes of the system; connecting cables; and proprietary equipment necessary for the operation, maintenance, testing, repair and programming, etc. of the system and that may be required for implementation of future changes to the fire system (additional and/or relocated initiating devices, notification devices, etc.

(3) Provide all system and equipment technical data and computer software with the requisite rights to Government use, in accordance with the applicable contract clauses.

(4) Training shall include software and programming required for the effective operation, maintenance, testing, diagnostics and expansion of the system.

1.6.10.13. Plumbing Systems

Provide information on the following equipment: water heaters, valves, pressure regulators backflow preventors, piping materials, and plumbing fixtures.

1.6.10.14. Liquid Fuels Systems

Provide information on the following equipment: tanks, automatic valves manual valves, filter separators, pumps, mechanical loading arms, nozzles, meters, electronic controls, electrical switch gear, and fluidic controls.

1.6.10.15. Cathodic Protection Systems

Provide information on the following material and equipment: rectifiers, meters, anodes, anode backfill, anode lead wire, insulation material and wire size, automatic controls (if any), rheostats, switches, fuses and circuit breakers, type and size of rectifying elements, type of oil in oil-immersed rectifiers, and rating of shunts.

1.6.10.16. Generator Installations

Provide information on the following equipment: generator sets, automatic transfer panels, governors, exciters, regulators starting systems, switchgear, and protective devices.

1.6.10.17. Miscellaneous Systems

Provide information on the following: communication and ADP systems, security and intrusion alarm, elevators, material handling, active solar, photovoltaic, nurse call, paging, intercom, closed circuit TV, irrigation, sound and material delivery systems, kitchen, refrigeration, disposal, ice making equipment, and other similar type special systems not otherwise specified.

1.6.10.18. Laboratory, Environmental and Pollution Control Systems

Provide information on the following equipment: wet scrubbers, quench chambers, scrub tanks, liquid oil separators, and fume hoods.

1.7. FIELD TRAINING

Field Training is a requirement for substantial completion. Conduct a training course for the operating staff for each particular system. Conduct the training is to be conducted during hours of normal working time after the system is functionally complete. The field instructions shall cover all of the items contained in the Equipment Operating, Maintenance and Repair Manuals. The training will include both classroom and "hands-on" training. Submit a lesson plan outlining the information to be discussed during training periods. Submit this lesson plan for approval 90 days before contract completion before the field training occurs. Record training on DVD and furnish to the Government within ten (10) days following training. Document all training and furnish a list of all attendees.

1.8. PRICING OF CONTRACTOR-FURNISHED AND INSTALLED PROPERTY AND GOVERNMENT-FURNISHED CONTRACTOR-INSTALLED PROPERTY

Promptly furnish and require any sub-contractor or supplier to furnish, in like manner, unit prices and descriptive data required by the Government for Property Record purposes of fixtures and equipment furnished and/or installed by the Contractor or sub-contractor, except prices do not need to be provided for Government-Furnished Property.

1.9. LEED REVIEW MEETINGS

1.9.1. Pre-Closeout Meeting. Approximately 30 days before submittal of LEED closeout documentation, the Contractor and the Government's project delivery team (including Installation representative) will meet to review the documentation, determine which, if any, credits will be audited and identify any corrections/missing items prior to the closeout LEED documentation submittal.

1.9.2. Approximately 14 days after submittal of LEED closeout documentation, the Contractor and the Government's project delivery team (including Installation representative) will meet to review the LEED closeout documentation. The review conference will include discussion of and resolution of all review comments to ensure consensus on achievement of credits and satisfactory documentation. At the review conference a final score will be determined and endorsed in writing by all parties.

1.10. RED ZONE MEETING

At approximately 80% of contract completion or 60 days before the anticipated Beneficial Occupancy Date (BOD), whichever occurs first, the Contractor and the Government's project delivery team will conduct what is known as the Red Zone Meeting to discuss the close-out process, to schedule the events and review responsibilities for actions necessary to produce a timely physical, as well as fiscal, project close-out. The Red Zone meeting derives its name from the football term used to describe the team effort to move the ball the last 20 yards into the end zone. The close-out of a construction project sometimes can be equally as hard and most definitely requires the whole team’s efforts. The ACO will chair the meeting. If not already provided, shortly before the meeting, the Contractor shall provide an electronic copy or access to the CADD as-built drawings, completed commensurate with the amount of work completed at the time of the Red Zone Meeting, as an indicator of the Contractors’ understanding of and ability to meet the USACE CADD Standards and to ensure that the Contractor is making progress with CADD As-Built requirements. EXHIBIT 1 is a generic meeting checklist.

1.11. 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. Vacuum carpet and soft surfaces. Clean equipment and fixtures to a sanitary condition. Clean or replace filters of operating equipment if cleaning isn't possible or practicable. Remove debris from roofs, drainage systems, gutters, and downspouts. Sweep paved areas and rake clean landscaped areas. Remove waste, surplus materials, and rubbish from the site. Remove all temporary structures, barricades, project signs, fences and construction facilities. Submit a list of completed clean-up items on the day of final inspection.

1.12. INTERIM FORM DD1354 "TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

Near the completion of Project, but a minimum of 60 days prior to final acceptance of the work, complete, update draft provided with the final design package(s) (see Section 01 33 16, paragraph 3.7.5) and submit an accounting of all installed property on Interim Form DD1354 "Transfer and Acceptance of Military Real Property." Include any additional assets/improvements/alterations and cost updates from the Draft DD Form 1354. Contact the COR for any project specific information necessary to complete the DD Form 1354. This form will be a topic for the Red Zone Meeting discussed above. For information purposes, a blank DD Form 1354 (fill-able) in ADOBE (PDF) may be obtained at the following web site: http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd1354.pdf Submit the completed Checklist for Form DD1354 of Government-Furnished and Contractor-Furnished/Contractor Installed items. Attach this list to the updated DD Form 1354. Instructions for completing the form may be obtained through the US Army Corps of Engineers TECHINFO Website at http://www.hnd.usace.army.mil/techinfo/ under publications, in Unified Facilities Criteria UFC 1-300-08.

EXHIBIT 1

SAMPLE

Red Zone Meeting Checklist

Date:_____

Contract No.	
Description / Location	
Contractor	
Contracting Officer	

Action	**Completion Milestone**	√
Inspections		
Fire		
Safety		
Pre-final		
Mechanical Test & Balance		
Commissioning		
Landscaping Complete		
Erosion Control		
Beneficial Occupancy Date (BOD)		
Furniture Installation		
Comm Installation		
As-Built Drawings		
Provide all O&M manuals, tools, shop drawings, spare parts, etc. to customer		
Training of O&M Personnel		
Provide Warranty documents to Customer		
Contract completion		
Final Inspection		

User move-in		
DD Form 1354, Transfer of Real Property completed & signed		
Ribbon cutting		
Payroll Clearances		
DD Form 2626 - Construction Contractor Performance Evaluation		
DD Form 2631 – A-E Performance Rated after Construction		
Status of Pending Mods and REA's/Claims		
Final Payment Completed		
Release of Claims		
Return of Unobligated Funds		
Move Project from CIP to General Ledger		
Financial completion		

End of Section 01 78 02.00 10

APPENDIX A
Geotechnical Information

Not Used

APPENDIX B
List of Drawings

Not Used

APPENDIX C
Utility Connections

Not Used

APPENDIX D
Results of Fire Flow Tests

Not Used

APPENDIX E
Environmental Information

Not Used

APPENDIX F
Conceptual Aesthetic Considerations

Not Used

APPENDIX G
GIS Data

Not Used

APPENDIX H
Exterior Signage

Not Used

APPENDIX I
Acceptable Plants List

Not Used

MAY 2010 NYD BORDER

SUBMITTED BY: USERNAME PLOT DATE: DD-MMM-YYYY HH:MM FILE NAME

REMOVE AND REPLACE EXISTING FENCE LINE AS SHOWN AND PROVIDE NEW FENCE 100' FROM NEW ADMIN. BUILDING PERIMETER. INSTALL NEW FENCE LINE PRIOR TO DEMOLITION OF EXISTING FENCE

NEW 1,000 GALLON SEPTIC TANK

8' WIDE MECHANICAL ROOM ACCESS WALKWAY

NEW DISTRIBUTION BOX AND 400 LF OF LEACH FIELD

CONSTRUCTION JOINT

EXISTING WELL CAP TO BE RAISED 18 INCHES ABOVE FINAL FINISHED GRADE AND PROTECTED BY FOUR BOLLARDS

DEMOLISH EXISTING BUILDING AFTER ACCEPTANCE OF NEW STRUCTURE

EXISTING PAVEMENT TO REMAIN AND BE RE-STRIPED AS SHOWN. ANY DAMAGE TO EXISTING PAVEMENT DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE GOVERNMENT

CONSTRUCTION JOINT

10' X 12' DUMPSTER PAD

RELOCATE EXISTING RADIO ANTENNA TO THIS LOCATION

CONSTRUCTION LIMIT LINE

STORMWATER TREATMENT AREA

EXISTING RADIO ANTENNA TO BE RELOCATED

FIRE DEPARTMENT ACCESS ROAD WITH TWO REMOVABLE BOLLARDS AT EACH ENTRANCE

SHEET REF # C-102

EXISTING FENCE

TEMPORARY CONTRACTOR POV PARKING AREA

REMOVE AND REPLACE EXISTING ROLL GATE IN THIS LOCATION WITH NEW SLIDING MOTORIZED GATE. INSTALL NEW SLIDING MOTORIZED GATE BEFORE ANY CONSTRUCTION ACTIVITY BEGINS IN THE ECM AREA

EXISTING MAN-GATE TO BE MANNED BY CONTRACTOR EMPLOYEE AT ALL TIMES ENTRY IS NEEDED

EXISTING FENCE

SHEET REF # C-103

SHEET REF # C-104

CONSTRUCTION LIMIT LINE

CONSTRUCTION JOINT

4 NEW AMMUNITION MAGAZINES WITH INTERIOR DIMENSIONS MEASURING 25' x 90'

SHEET REF # C-105

N
W E
S

100 0 100 200 300 400
(IN U.S. SURVEY FEET)
SCALE: 1" = 300'

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US Army Corps of Engineers
New York District

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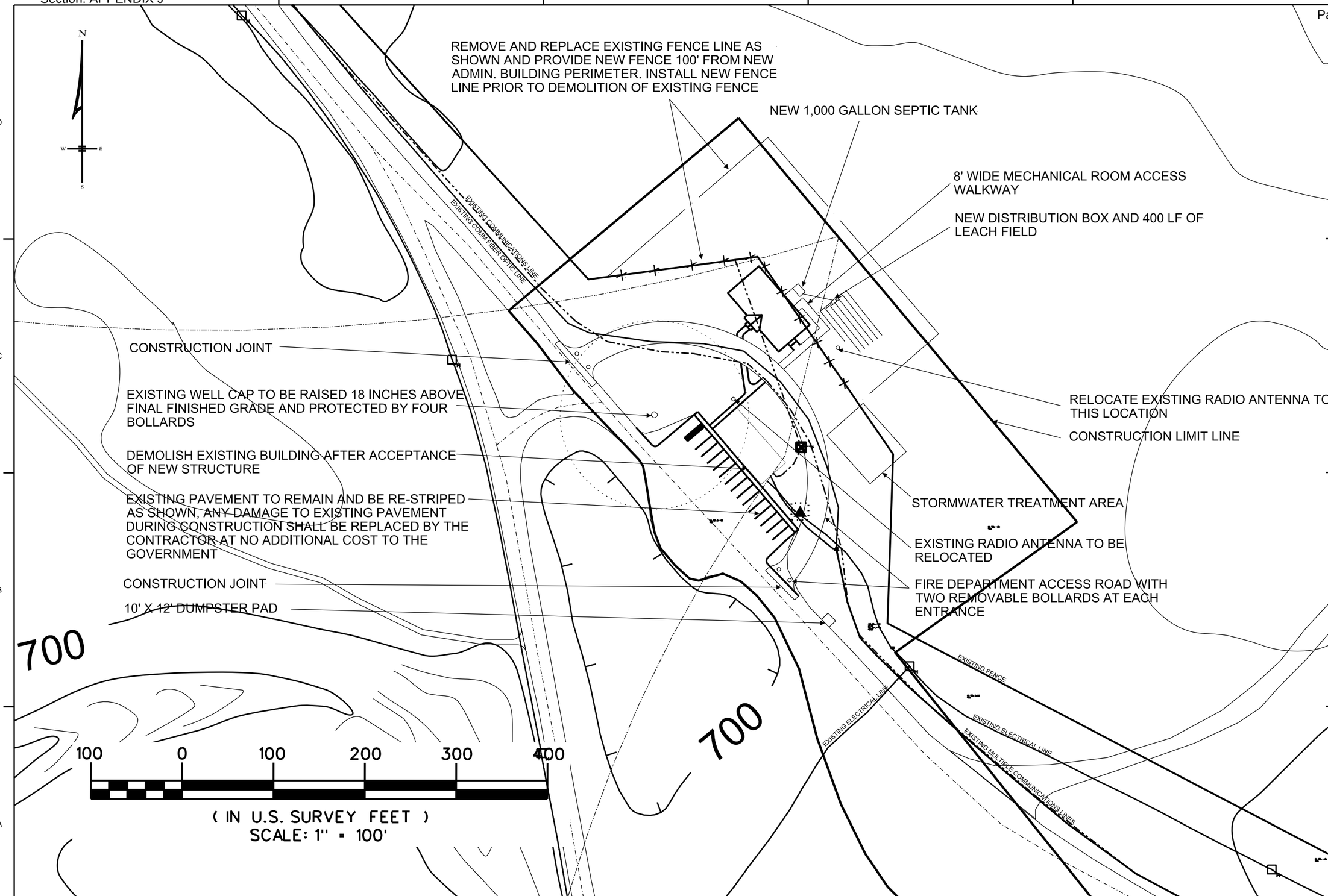
DWN BY: X.X.X. CKD BY: X.X.X. SOLICITATION NO.:
SUBMITTED BY: X.X.X. CONTRACT NO.:
FILE NAME: SP_SHORT_DESIGNS
SIZE: 30"X42" PLOTTED BY: $USERNAME$ PLOT DATE: $STIME$

U. S. ARMY ENGINEER DISTRICT
NEW YORK
http://www.nan.usace.army.mil

AMMUNITION SUPPLY POINT UPGRADES
FORT DRUM, NY
PRE-FINAL
OVERALL SITE & SHEET LOCATIONS

SHEET REFERENCE NUMBER
C-101



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U. S. ARMY ENGINEER DISTRICT
NEW YORK
http://www.nan.usace.army.mil

AMMUNITION SUPPLY POINT UPGRADES
FORT DRUM, NY

PRE-FINAL
ADMINISTRATION BUILDING
SITE PLAN

SHEET REFERENCE NUMBER
C-102

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PLOT DATE: DD-MMM-YYYY HH:MM
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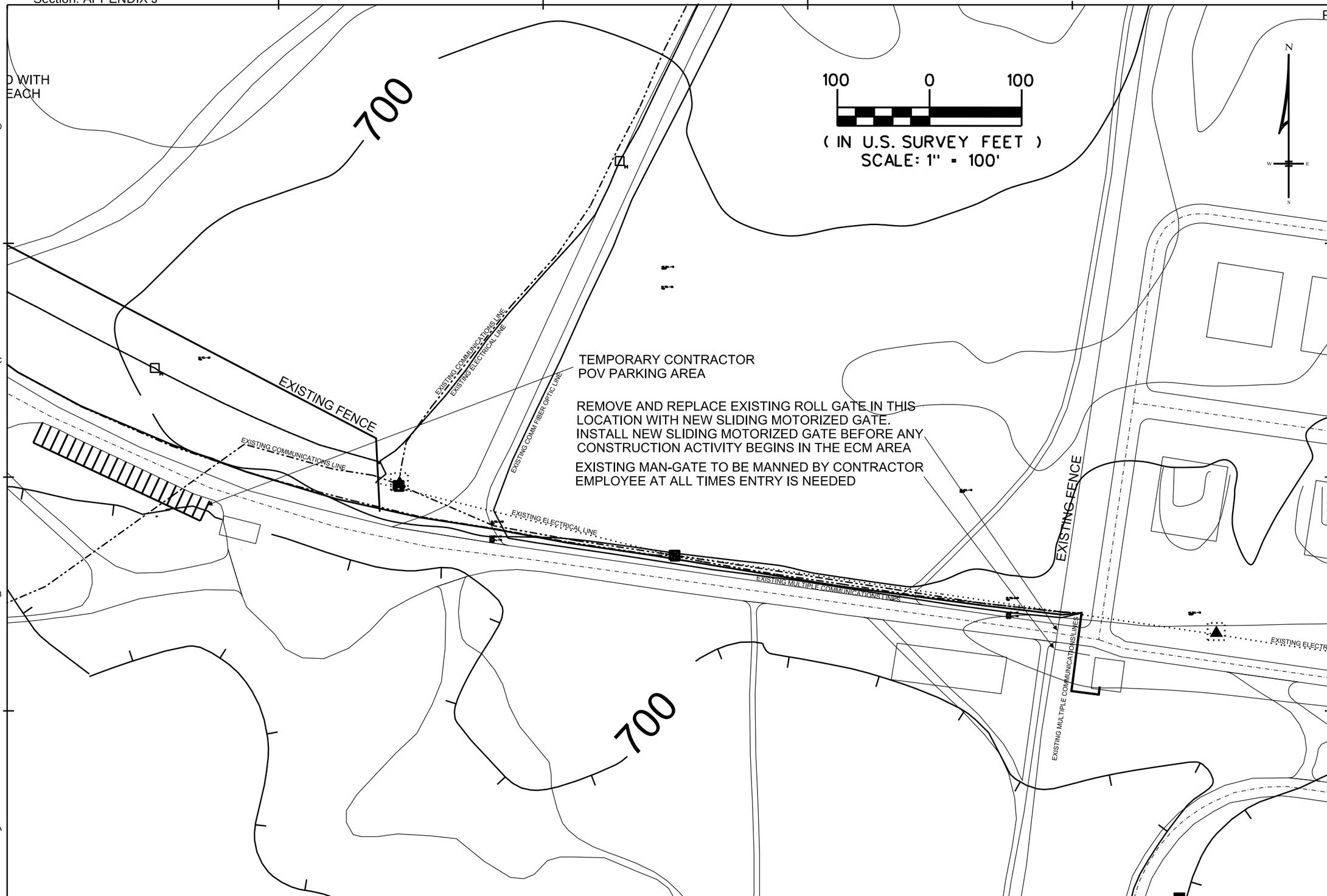

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U. S. ARMY ENGINEER DISTRICT
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AMMUNITION SUPPLY POINT UPGRADES
FORT DRUM, NY
PRE-FINAL
TEMPORARY POV PARKING &
ECM ACCESS CONTROL POINT
SITE PLAN

SHEET
REFERENCE
NUMBER
C-103

MAY 2010 NYD BORDER

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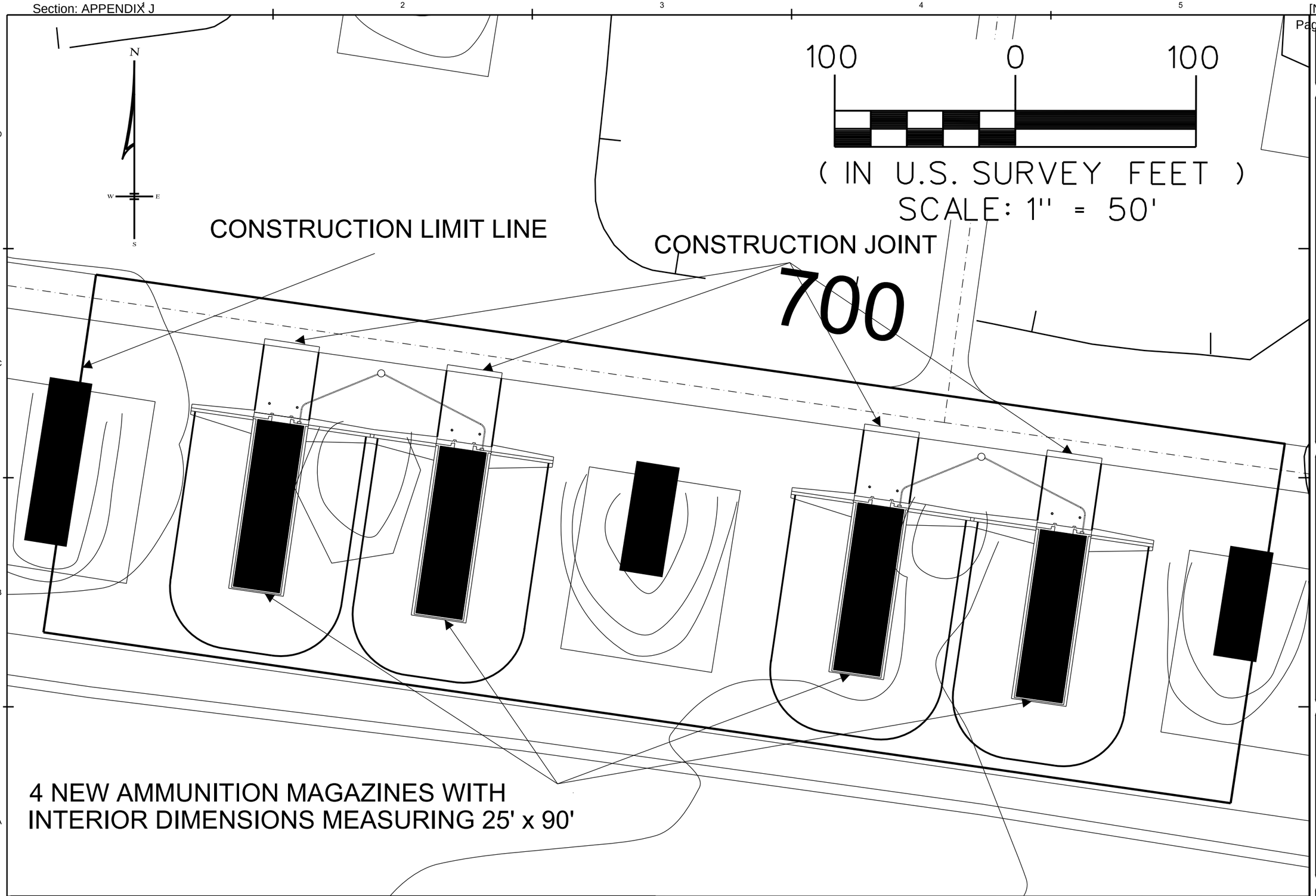

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New York District

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U. S. ARMY ENGINEER DISTRICT
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AMMUNITION SUPPLY POINT UPGRADES
FORT DRUM, NY
PRE-FINAL
ECM SITE PLAN
(50 SCALE)

SHEET REFERENCE NUMBER
C-104

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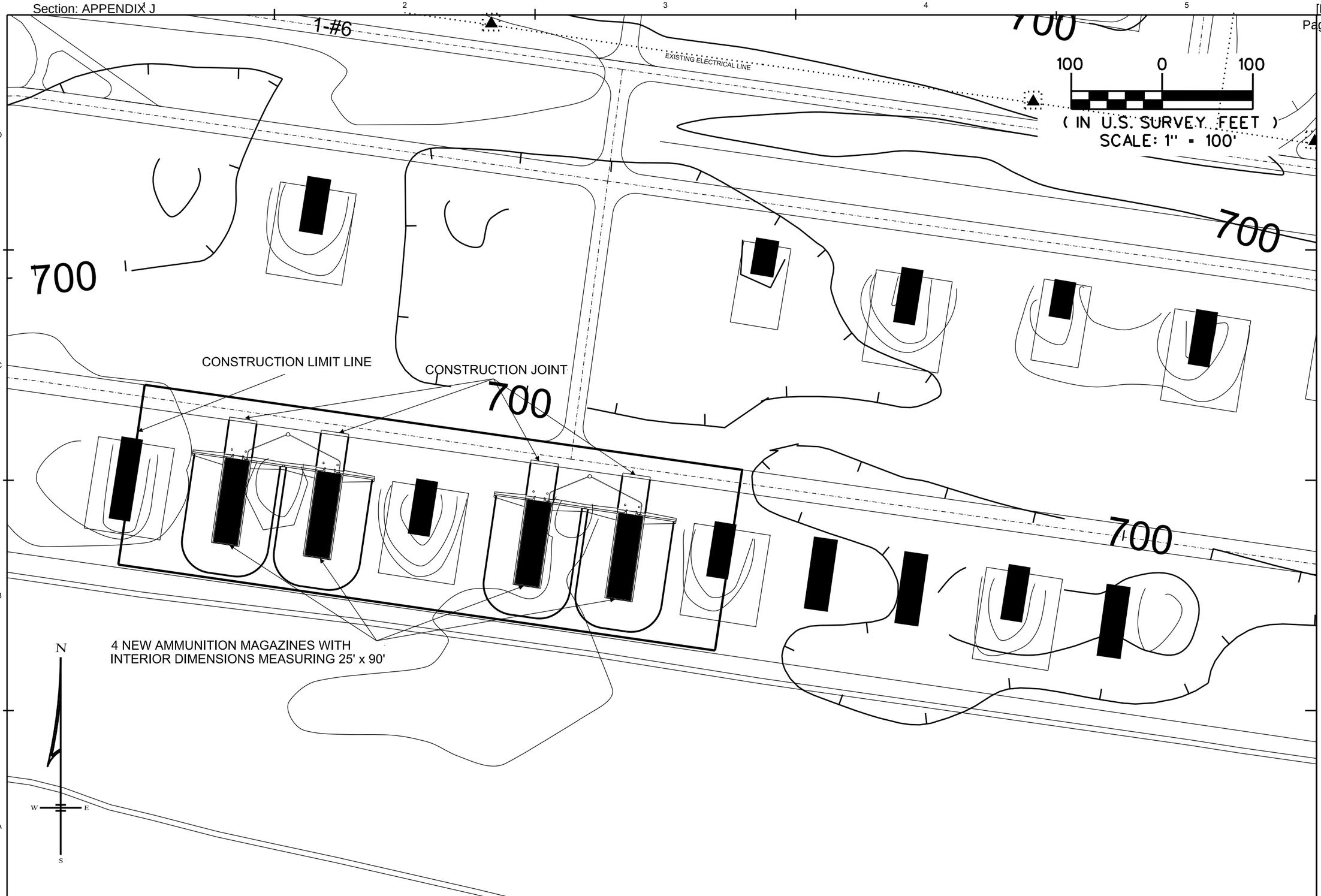

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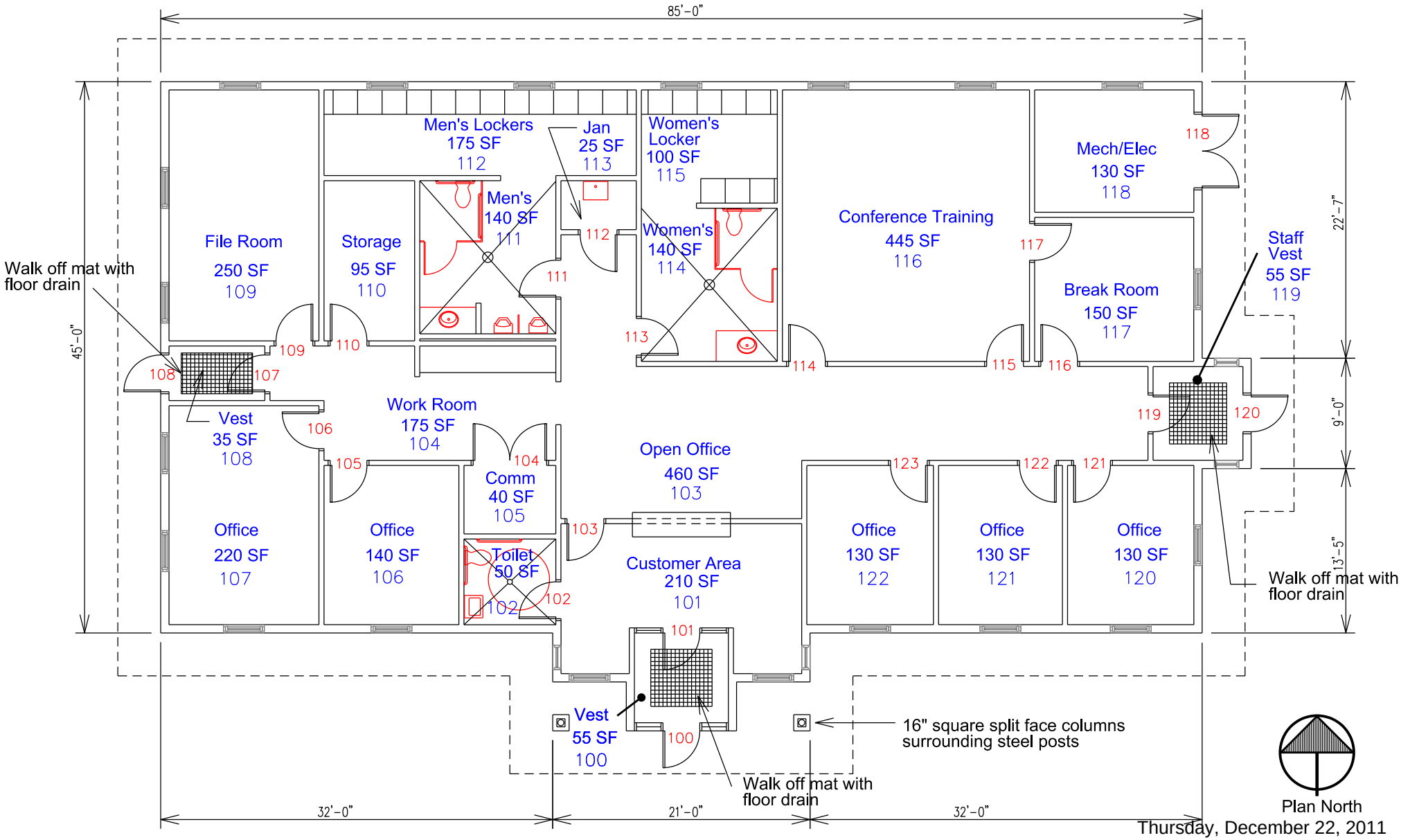
AMMUNITION SUPPLY POINT UPGRADES
FORT DRUM, NY
PRE-FINAL
ECM SITE PLAN
(100 SCALE)

SHEET REFERENCE NUMBER
C-105

MAY 2010 NYD BORDER

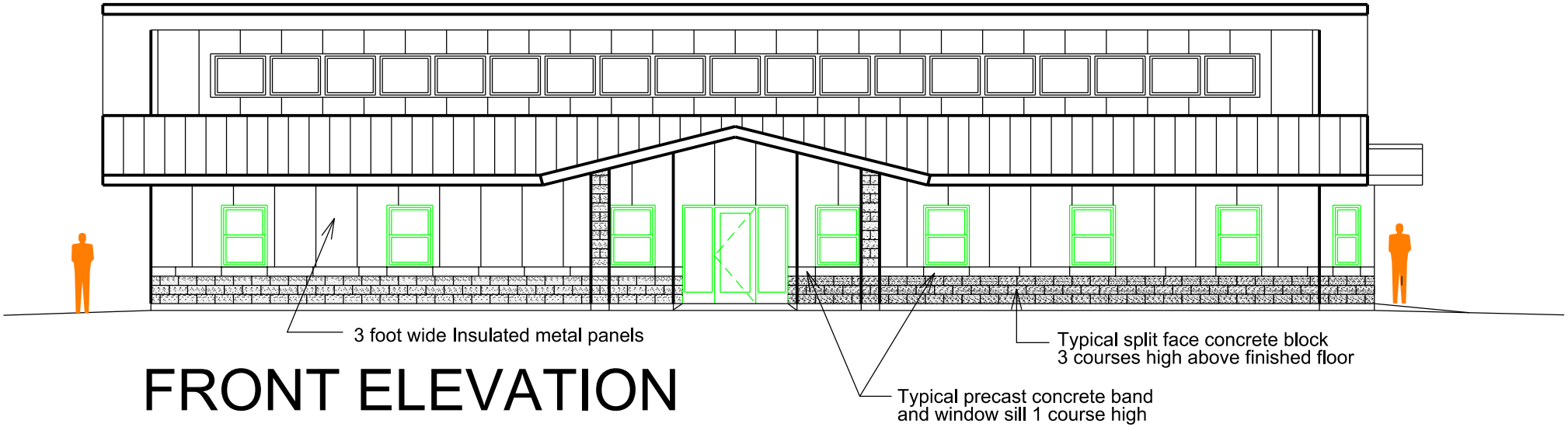
SUBMITTED BY: USERNAME PLOT DATE: DD-MMM-YYYY HH:MM FILE NAME



Thursday, December 22, 2011

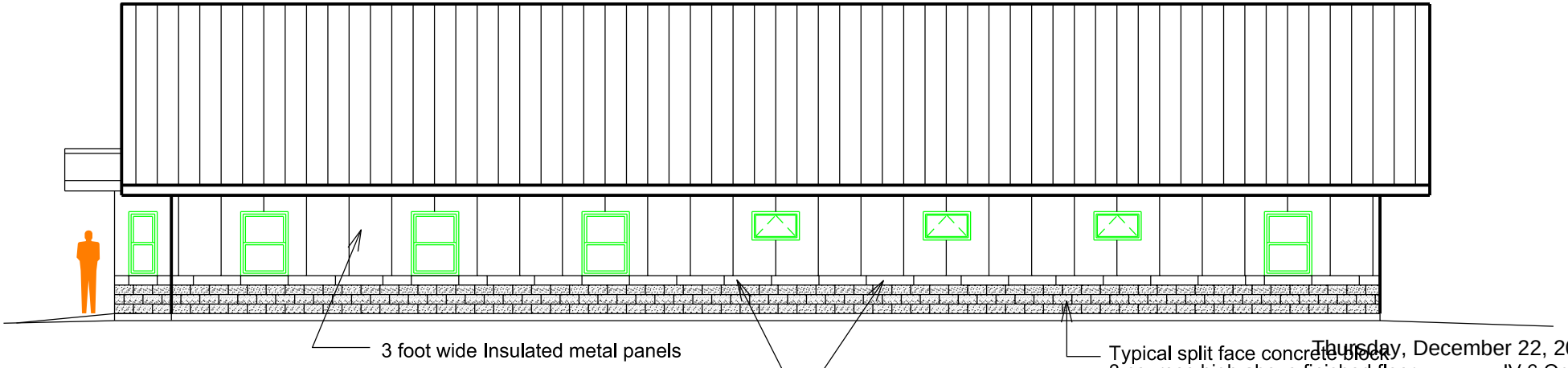
ASP FLOOR PLAN

JV 6 Oct 11
REV 17 Oct 11
REV 15 Nov 11



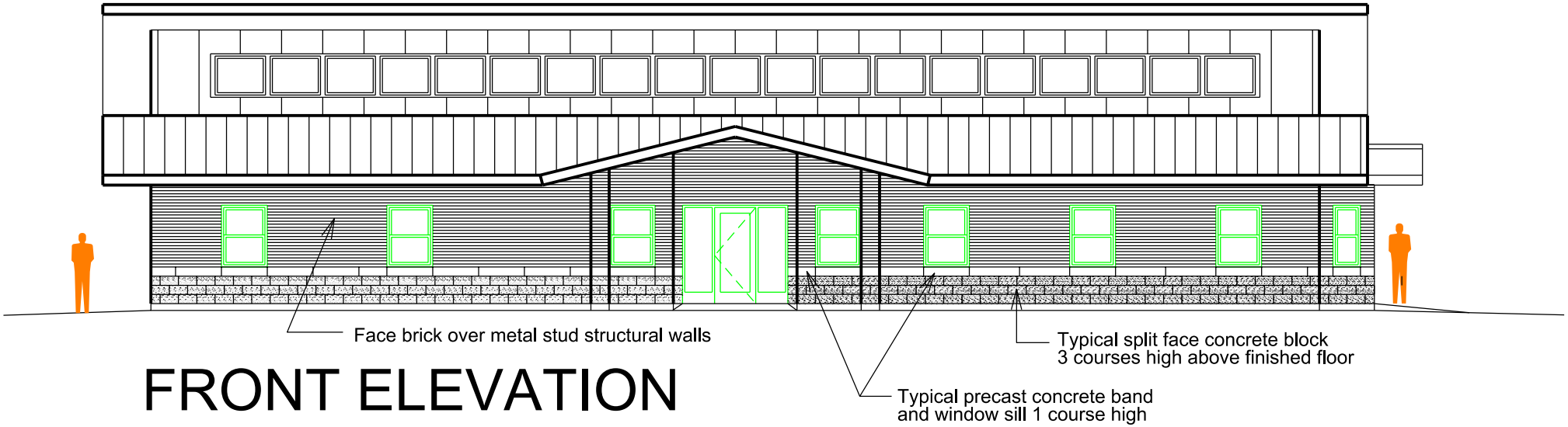
FRONT ELEVATION

WATER TABLE AND INSULATED METAL WALL PANELS



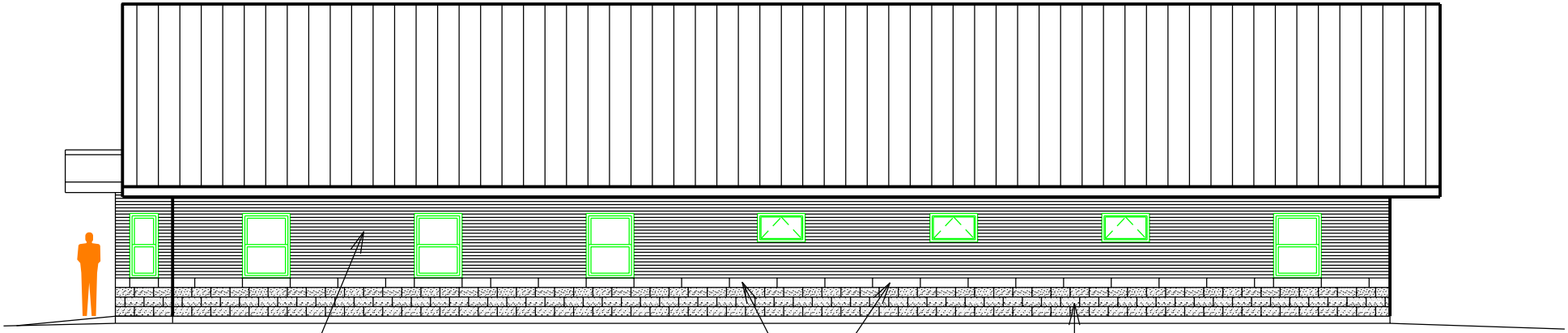
REAR ELEVATION

Thursday, December 22, 2011
JV 6 Oct 11
REV 17 Oct 11
REV 15 Nov 11



FRONT ELEVATION

WATER TABLE AND BRICK FACADE



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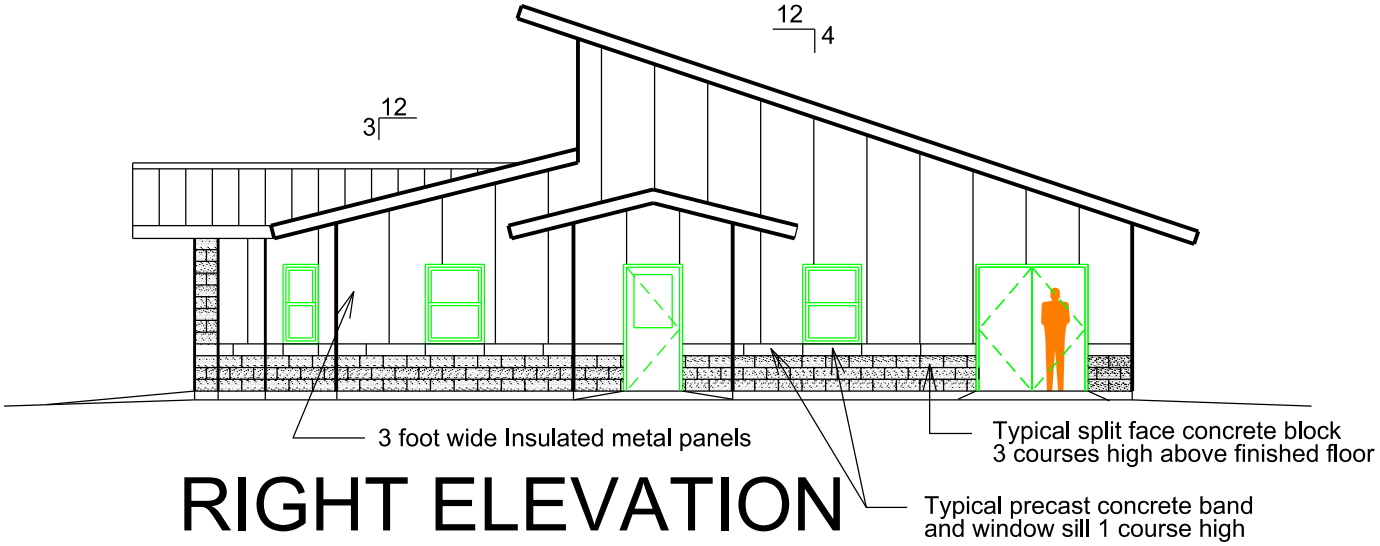
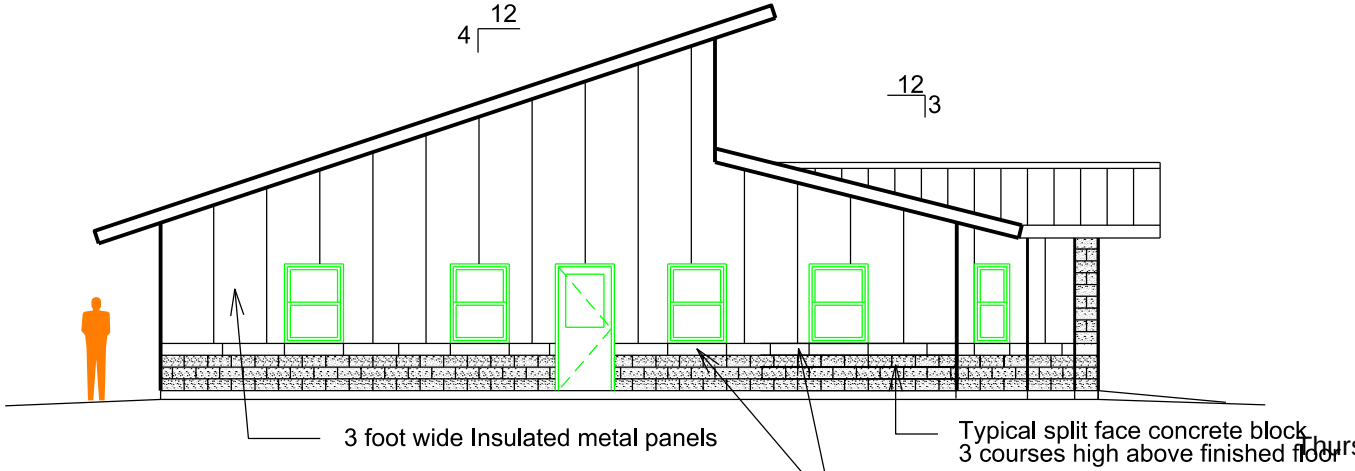


RIGHT ELEVATION

WATER TABLE AND INSULATED METAL WALL PANELS



LEFT ELEVATION

Thursday, December 22, 2011
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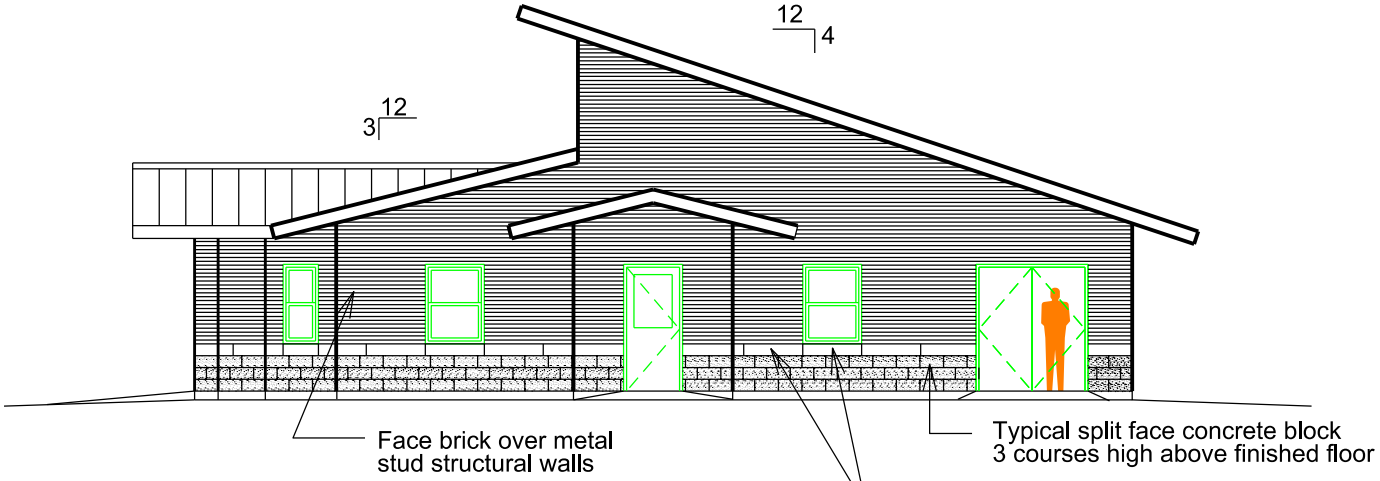
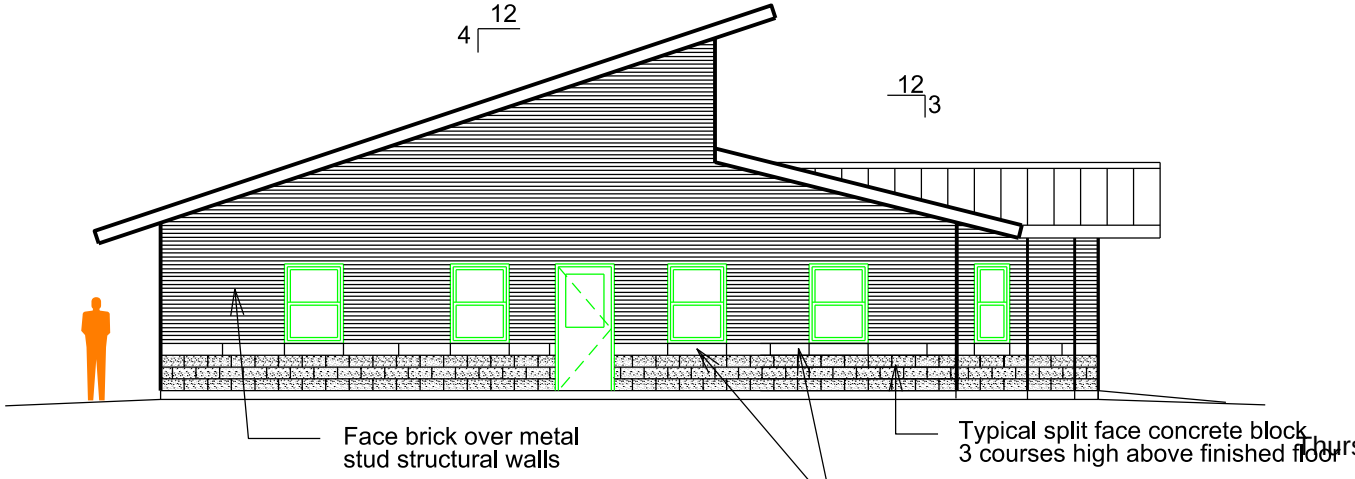
REV 15 Nov 11



RIGHT ELEVATION

WATER TABLE AND BRICK FACADE



LEFT ELEVATION

Thursday, December 22, 2011
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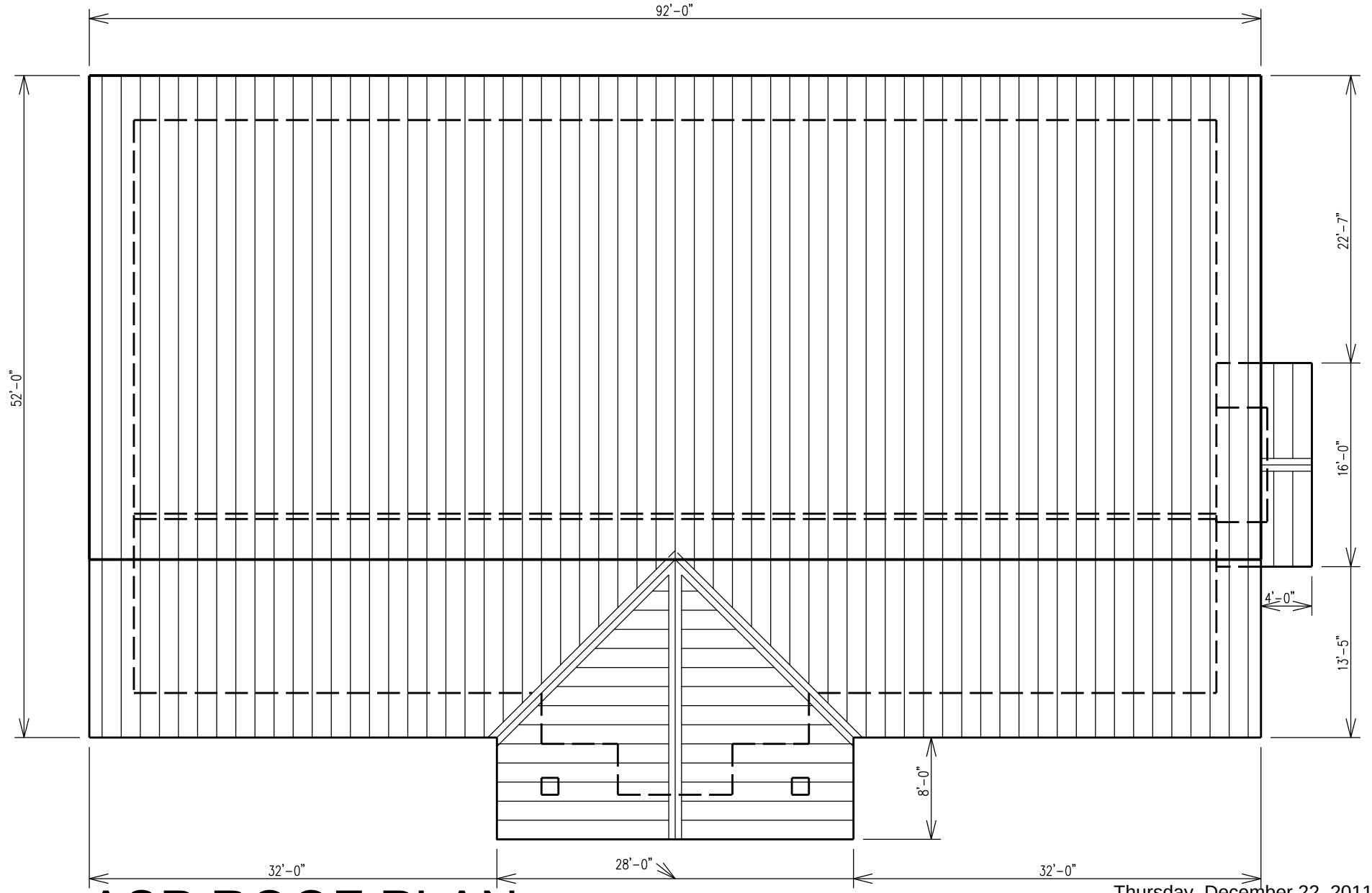
REV 15 Nov 11



ASP ROOF PLAN

Thursday, December 22, 2011

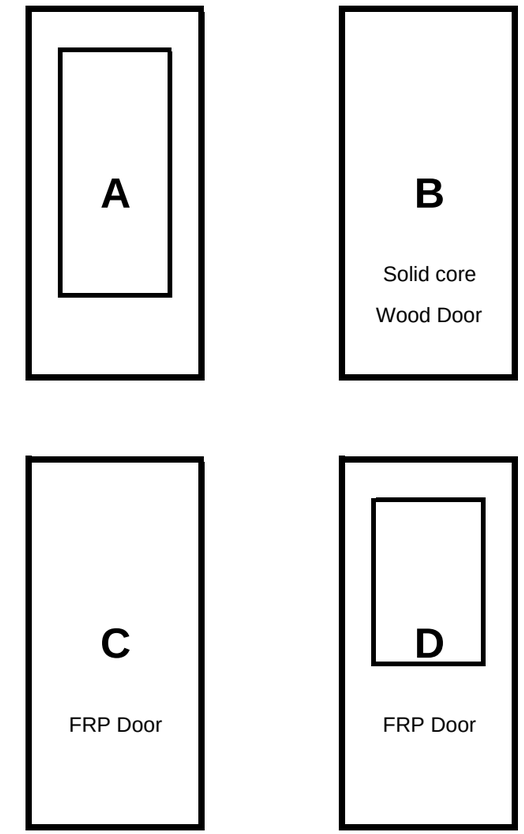
JV 6 Oct 11
REV 17 Oct 11
REV 15 Nov 11

DOOR FINISH SCHEDULE FOR ASP ADMINISTRATION FACILITY

Door Number	# of Doors	Door Width	Door Height	Door Thickness	Door Material	Door Type	Frame Material	Remarks
100	1	3'-0"	7'-0"	1 3/4"	FRP	A	AL	
101	1	3'-0"	7'-0"	1 3/4"	FRP	A	AL	
102	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
103	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
104	2	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
105	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
106	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
107	1	3'-0"	7'-0"	1 3/4"	WOOD	D	HM	
108	1	3'-0"	7'-0"	1 3/4"	WOOD	D	HM	
109	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
110	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
111	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
112	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
113	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
114	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
115	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
116	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
117	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
118	1	3'-0"	7'-0"	1 3/4"	FRP	C	HM	
119	1	3'-0"	7'-0"	1 3/4"	FRP	D	AL	
120	1	3'-0"	7'-0"	1 3/4"	FRP	D	AL	
121	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
122	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	
123	1	3'-0"	7'-0"	1 3/4"	WOOD	B	HM	

NOTES

Door Types



ROOM FINISH SCHEDULE FOR ASP ADMINISTRATION FACILTY

Room Name	Dwg Rm #	Floor	Base	Walls				Ceiling	Remarks
				North	East	South	West		
Vestibule	100	C.T.	C.T	Storefront	G.B. Painted	Storefront	G.B. Painted	ACT	Walk off mat with in floor drain
Customer Area	101	VCT	4" Vinyl	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	ACT	
Toilet	102	C.T.	C.T	C.T	C.T	C.T	C.T	G.B. Painted	Cement board backer behind ceramic tile walls
Open Office	103	VCT	4" Vinyl	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	Clerestory to provide light into this area
Work Room	104	VCT	4" Vinyl	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	Clerestory to provide light into this area
Communication Room	105	VCT	4" Vinyl	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	ACT	
Office	106	Carpet	4" Vinyl	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	ACT	
Office	107	Carpet	4" Vinyl	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	ACT	
Vestibule	108	C.T.	C.T	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	ACT	Walk off mat with in floor drain
File Storage	109	VCT	4" Vinyl	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	ACT	
Storage	110	VCT	4" Vinyl	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	ACT	
Men's Toilet	111	C.T.	C.T	C.T	C.T	C.T	C.T	G.B. Painted	Cement board backer behind ceramic tile walls
Men's Lockers	112	C.T.	C.T	C.T	C.T	C.T	C.T	G.B. Painted	Cement board backer behind ceramic tile walls
Janitor	113	C.T.	C.T	C.T	C.T	C.T	C.T	G.B. Painted	Cement board backer behind ceramic tile walls
Women's Toilet	114	C.T.	C.T	C.T	C.T	C.T	C.T	G.B. Painted	Cement board backer behind ceramic tile walls
Women's Lockers	115	C.T.	C.T	C.T	C.T	C.T	C.T	G.B. Painted	Cement board backer behind ceramic tile walls
Conference/Training	116	Carpet	4" Vinyl	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	ACT	
Break Room	117	Carpet	4" Vinyl	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	ACT	
Mech / Elec Room	118	Conc	4" Vinyl	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	
Staff Vest	119	C.T.	C.T	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	ACT	Walk off mat with in floor drain
Office	120	Carpet	4" Vinyl	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	ACT	
Office	121	Carpet	4" Vinyl	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	ACT	
Office	122	Carpet	4" Vinyl	G.B. Painted	G.B. Painted	G.B. Painted	G.B. Painted	ACT	

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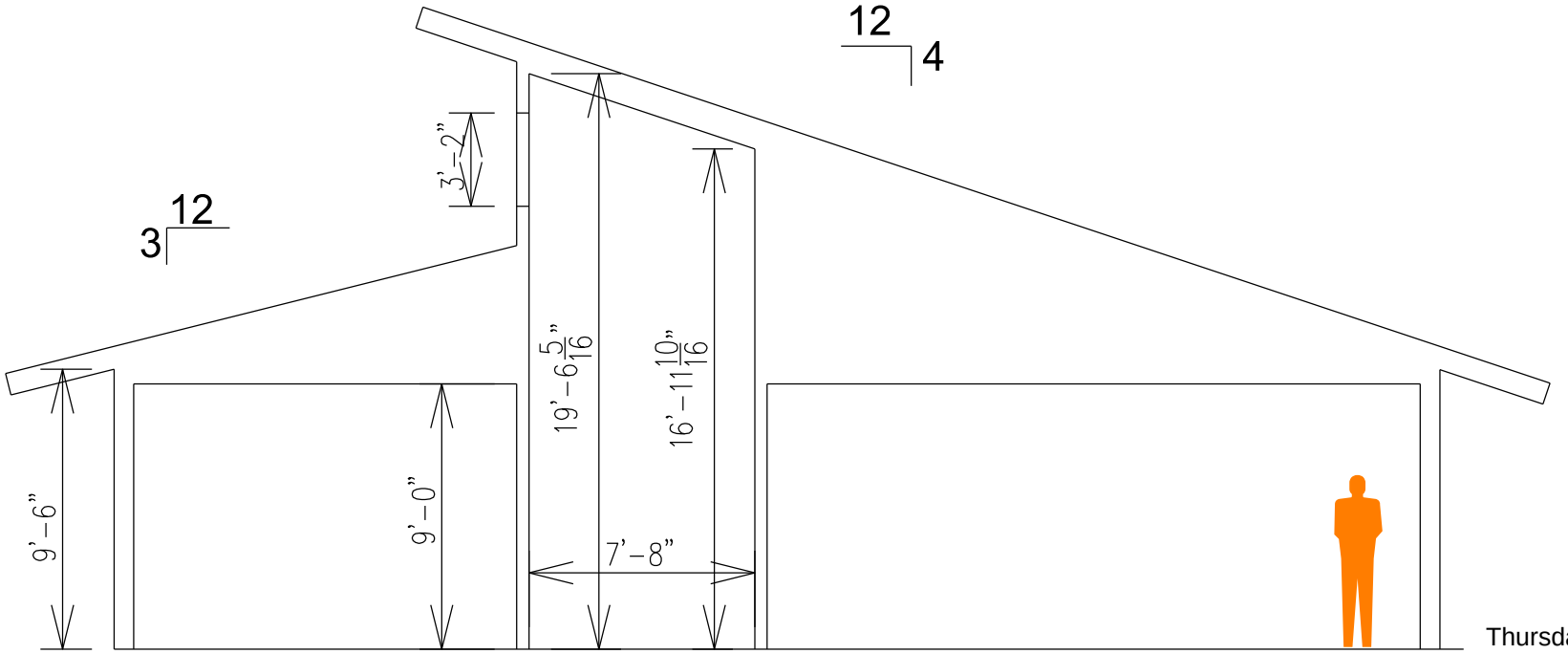


Thursday, December 22

JV 6 Oct 11

APPENDIX K
Fuel Cost Information

The following utility rates for this installation are provided for design

Electrical:
Demand Charge - $xx.xx per kilowatt

Energy Charge - $ x.xx per kilowatt-hour Blended Rate - $ x.xx per kilowatt-hour (blended annual energy and demand cost)

Natural Gas:
Commodity Charge Rate - $ x.xx per thousand cubic feet

Water:
Commodity Charge Rate - $x.xx per [volume]

Sewer:
Commodity Charge Rate - $x.xx per [volume]

Purchased/Central Steam:
Commodity Charge Rate - $x.xx per [unit of measure]

Purchased High Temperature Water:
Commodity Charge Rate - $x.xx per [unit of measure]

Purchased Chilled Water:
Commodity Charge Rate - $x.xx per [unit of measure]

APPENDIX L

LEED Project Credit Guidance (DEC 10)

This spreadsheet indicates Army required credits, Army preferred credits, project-specific ranking of individual point preferences, assumptions guidance for individual credits, and references to related language in the RFP for individual credits.

LEED Credit Paragraph	LEED Project Credit Guidance	**Army Guidance:** Required - Preferred - Avoid	**Project Preference Ranking**: (1=most preferred, blank=no preference, X=preference not applicable to this credit, Rqd=required)	
PAR	**FEATURE**			**REMARKS**
SUSTAINABLE SITES				
SSPR1	Construction Activity Pollution Prevention (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
SS1	Site Selection		X	See paragraph LEED CREDITS COORDINATION.

SS2	Development Density & Community Connectivity - OPTION 1 DENSITY		X	See paragraph LEED CREDITS COORDINATION.
	Development Density & Community Connectivity - OPTION 2 CONNECTIVITY		X	See paragraph LEED CREDITS COORDINATION.
SS3	Brownfield Redevelopment		X	See paragraph LEED CREDITS COORDINATION.
SS4.1	Alternative Transportation: Public Transportation Access		X	See paragraph LEED CREDITS COORDINATION.
SS4.2	Alternative Transportation: Bicycle Storage & Changing Rooms	Pref		Assume that non-transient building occupants are NOT housed on Post unless indicated otherwise.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 1			Requires provision of vehicles, which cannot be purchased with construction funds. Assume Government will not provide vehicles unless indicated otherwise. Assume that 50% of GOV fleet is NOT alternative fuel vehicles unless indicated otherwise.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 2	Pref		
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 3			Requires provision of vehicle refueling stations. Installation must support type of fuel and commit to maintaining/supporting refueling stations.
SS4.4	Alternative Transportation: Parking Capacity	Pref		

SS5.1	Site Development: Protect or Restore Habitat			
SS5.2	Site Development: Maximize Open Space	Pref		Assume AGMBC option for aggregated open space at another location on the installation is not available to the project unless indicated otherwise.
SS6.1	Stormwater Design: Quantity Control	Pref		See paragraph STORMWATER MANAGEMENT.
SS6.2	Stormwater Design: Quality Control	Pref		See paragraph STORMWATER MANAGEMENT.
SS7.1	Heat Island Effect: Non-Roof			
SS7.2	Heat Island Effect: Roof	Pref		Coordinate with nearby airfield requirements, which may preclude this credit.
SS8	Light Pollution Reduction	Pref		
WATER EFFICIENCY				
WEPR1	Water Use Reduction (Version 3 only)	Rqd	Rqd	All LEED prerequisites are required to be met.
WE1.1	Water Efficient Landscaping: Reduce by 50%	Pref		See paragraph IRRIGATION. Project must include landscaping to be eligible for this credit.
WE1.2	Water Efficient Landscaping: No Potable Water Use or No Irrigation	Pref		Project must include landscaping to be eligible for this credit.
WE2	Innovative Wastewater Technologies - OPTION 1			
WE2	Innovative Wastewater Technologies - OPTION 2			
WE3	Water Use Reduction	Pref		See paragraph BUILDING WATER USE REDUCTION.

ENERGY AND ATMOSPHERE				
EAPR1	Fundamental Commissioning of the Building Energy Systems (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EAPR2	Minimum Energy Performance (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EAPR3	Fundamental Refrigerant Management (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EA1	Optimize Energy Performance	Rqd	1	Earning of LEED EA1 points as indicated in paragraph ENERGY CONSERVATION, as a minimum, is required.
EA2.1	On-Site Renewable Energy	Pref		See paragraph ENERGY CONSERVATION.
EA3	Enhanced Commissioning	Rqd		See paragraph COMMISSIONING. The Commissioning Authority may be provided through the Design-Build Contractor only if in accordance with USGBC Credit Interpretation Ruling (CIR) dated 9/15/06. Commissioning Authority activities begin during design phase and continue well beyond beneficial occupancy. Assume Government will not provide CxA post-occupancy activities unless indicated otherwise.
EA4	Enhanced Refrigerant Management			
EA5	Measurement & Verification			Assume Government will not provide post-occupancy activities unless indicated otherwise.
EA6	Green Power		X	See paragraph LEED CREDITS COORDINATION.

MATERIALS AND RESOURCES				
MRPR1	Storage & Collection of Recyclables (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met. Coordinate with Installation during design development on collection service and receptacles.
MR1	Building Reuse			
MR2.1	Construction Waste Management: Divert 50% From Disposal	Pref		See paragraph CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT.
MR2.2	Construction Waste Management: Divert 75% From Disposal	Pref		
MR3	Materials Reuse			
MR4.1	Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	Pref		See paragraph RECYCLED CONTENT.
MR4.2	Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	Pref		
MR5.1	Regional Materials:10% Extracted, Processed & Manufactured Regionally			
MR5.2	Regional Materials:20% Extracted, Processed & Manufactured Regionally			

MR6	Rapidly Renewable Materials	Pref		See paragraph BIOBASED AND ENVIRONMENTALLY PREFERABLE MATERIALS and paragraph FEDERAL BIOBASED PRODUCTS PREFERRED PROCUREMENT PROGRAM.
MR7	Certified Wood	Pref		See paragraph BIOBASED AND ENVIRONMENTALLY PREFERABLE MATERIALS.
INDOOR ENVIRONMENTAL QUALITY				
EQPR1	Minimum IAQ Performance (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EQPR2	Environmental Tobacco Smoke (ETS) Control (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met. Assume all buildings are smoke free unless indicated otherwise (family housing, barracks and other lodging are facility types where smoking may be permitted in some cases). Except where indicated otherwise, provide an outdoor designated smoking area (with signage but no structure) which will be at least 50 feet from common points of ingress/egress, building air intakes and operable windows. Designated smoking area will not be located in an area that is commonly used by nonsmokers.
EQ1	Outdoor Air Delivery Monitoring			
EQ2	Increased Ventilation			
EQ3.1	Construction IAQ Management Plan: During Construction	Pref		See paragraph CONSTRUCTION IAQ MANAGEMENT.
EQ3.2	Construction IAQ Management Plan: Before Occupancy	Pref		See paragraph CONSTRUCTION IAQ MANAGEMENT.

EQ4.1	Low Emitting Materials: Adhesives & Sealants	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ4.2	Low Emitting Materials: Paints & Coatings	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ4.3	Low Emitting Materials: Carpet/Flooring Systems	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ4.4	Low Emitting Materials: Composite Wood & Agrifiber Products	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ5	Indoor Chemical & Pollutant Source Control	Pref		System requiring weekly cleaning to earn this credit is not a permitted option unless indicated otherwise.
EQ6.1	Controllability of Systems: Lighting			
EQ6.2	Controllability of Systems: Thermal Comfort			
EQ7.1	Thermal Comfort: Design	Rqd		See paragraph HEATING, VENTILATING AND AIR CONDITIONING.
EQ7.2	Thermal Comfort: Verification			Project must earn credit EQ7.1 to be eligible for this credit. Assume Government will not provide post-occupancy activities unless indicated otherwise.
EQ8.1	Daylight & Views: Daylight 75% of Spaces	Pref		See paragraph DAYLIGHTING.
EQ8.2	Daylight & Views: Views for 90% of Spaces	Pref		
INNOVATION & DESIGN PROCESS				
IDc1.1	Innovation in Design			See paragraph INNOVATION AND DESIGN CREDITS. Assume Government will not provide any activities associated with ID credits.
IDc1.2	Innovation in Design			
IDc1.3	Innovation in Design			
IDc1.4	Innovation in Design			
IDc2	LEED Accredited Professional	Rqd	Rqd	LEED AP during design

				and construction is required.
REGIONAL PRIORITY CREDITS (Version 3 only)				See paragraph LEED CREDITS COORDINATION.

Appendix M

Owner's Project Requirements Document for LEED Fundamental Commissioning

Project: _____

Approved: _____ _____ _____
Name Owner's Representative Date

_____ _____ _____
Name Design Agent's Representative Date

Overview and Instructions

The purpose of this document is to provide clear and concise documentation of the Owner's goals, expectations and requirements for commissioned systems, and shall be utilized throughout the project delivery and commissioning process to provide an informed baseline and focus for design development and for validating systems' energy and environmental performance.

The Owner's Project Requirements Document is a required document for LEED-NC EA Prerequisite Fundamental Commissioning of the Building Energy Systems. It shall be completed by the Corps District/Design Agent based on coordination with the Installation/User/Proponent and shall be approved by the Installation/User/Proponent representative.

The intent of the Owner's Project Requirements Document is to detail the functional requirements of a project and the expectations of the building's use and operation as it relates to commissioned systems. This template contains the basic recommended components indicated in the LEED Reference Guide. It should be adapted as needed to suit the project, remaining reflective of the LEED intent.

The Owner's Project Requirements Document should ideally be completed before the start of design and furnished to the design team. It must be completed prior to the approval of Contractor submittals of any commissioned equipment or systems to meet LEED requirements.

Updates to the Owner's Project Requirements Document throughout the course of project delivery shall be made by the Corps District/Design Agent based on decisions and agreements coordinated with and agreed to by the Installation/User/Proponent.

The Owner's Project Requirements Document shall be included in the project's LEED documentation file under EA PR1, Fundamental Commissioning of the Building Energy Systems.

Owner's Project Requirements Document for LEED Fundamental Commissioning

Table of Contents

1. Owner and User Requirements
   - Primary Purpose, Program and Use
   - Project History
   - Broad Goals
2. Environmental and Sustainability Goals
   - Energy Efficiency Goals
   - General
   - Siting
   - Building Façade
   - Building Fenestration
   - Building Envelope
   - Roof
   - Other
3. Indoor Environmental Quality Requirements
   - Intended Use
   - Occupancy Schedule
   - Accommodations for After-Hours Use
   - Lighting, Temperature, Humidity, Air Quality, Ventilation, Filtration
   - Acoustics
   - Occupant Ability to Adjust System Controls
   - Types of Lighting
4. Equipment and Systems Expectations
   - Space Heating
   - Ventilation
   - Air Conditioning
   - Refrigeration
   - HVAC Controls
   - Domestic Hot Water
   - Lighting Controls
   - Daylighting Controls
   - Emergency Power
   - Other
5. Building Occupant and O&M Personnel Requirements
   - Facility Operation
   - EMCS
   - Occupant Training and Orientation
   - O&M Staff Training and Orientation

TABLE 1

1. *Owner and User Requirements*

What is the primary purpose, program and use of this project? (example: office building with data center)

Describe pertinent project history. (example: standard design development)

Broad Goals

What are the broad goals relative to program needs?

What are the broad goals relative to future expansion?

What are the broad goals relative to flexibility?

What are the broad goals relative to quality of materials?

What are the broad goals relative to construction costs?

What are the broad goals relative to operational costs?

Other broad goals: *(Insert as applicable)*

2. Environmental and Sustainability Goals

What are the project goals relative to sustainability and environmental issues? (example: LEED Silver rating)

What are the project goals relative to energy efficiency? (example: Meet EPACT)

What are the project goals and requirements for building siting that will impact energy use?

What are the project goals and requirements for building facade that will impact energy use?

What are the project goals and requirements for building fenestration that will impact energy use?

What are the project goals and requirements for building envelope that will impact energy use?

What are the project goals and requirements for building roof that will impact energy use?

Other: *(Insert as applicable)*

3. Indoor Environmental Quality Requirements

What is the intended use for all spaces? For all spaces that have an intended use that is not readily apparent from the space name, provide this information in Table 1.

_____
_____
_____

What is the anticipated occupancy schedule (numbers of occupants and time frames) for all occupied spaces? Indicate the default occupancy schedule below and for all spaces that have an occupancy schedule that differs from the default, provide this information in Table 1.

_____
_____
_____

What accommodations for after-hours use are required? (example: access control, lighting controls, HVAC controls) Indicate general accommodations required below and for all spaces that have special requirements, provide this information in Table 1.

_____
_____
_____

What are the lighting, temperature, humidity, air quality, ventilation and filtration requirements for all spaces? Indicate the default requirements below and for all spaces that have a requirement that differs from the default, provide this information in Table 1.

Lighting: _____
Temperature: _____

Humidity: _____
Air Quality: _____

Ventilation: _____

Filtration: _____

What are the acoustical requirements for all spaces? Indicate the default acoustical requirements below and for all spaces that have a requirement that differs from the default, provide this information in Table 1.

_____
_____
_____

What is the desired level of occupant ability to adjust systems controls? Indicate the default desired levels below and for all spaces that have a desired level that differs from the default, provide this information in Table 1.

Lighting: _____

Temperature: _____
Humidity: _____
Air Quality: _____

Ventilation: _____

What, if any, specific types of lighting are desired? (example: fluorescent in 2x2 grid, accent lighting, particular lamps)

_____
_____
_____

4. Equipment and System Expectations

(Complete for each category as applicable or indicate "none identified" or "N/A". Add desired features information for other anticipated commissioned systems as applicable)

Indicate desired features for the following commissioned system: Space Heating

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility: _____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Ventilation

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility: _____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Air Conditioning

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Refrigeration

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies:

Indicate desired features for the following commissioned system: HVAC Controls

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Domestic Hot Water

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Lighting Controls

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Daylighting Controls

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Emergency Power

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Other - _____

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

5. Building Occupant and O&M Personnel Requirements

How will the facility be operated? Who will operate the facility?

_____
_____
_____

Will the facility be connected to an EMCS? If so, what are the interface requirements? (example: monitoring points, control points, scheduling)

_____
_____
_____

What is the desired level of training and orientation for building occupants to understand and use the building systems?

_____
_____
_____

What is the desired level of training and orientation for O&M staff to understand and maintain the building systems?

_____
_____
_____

Table 1

Space	Use / Activity	Num of Occs	Special Occupancy Schedule	After Hours Use Reqmt.	Special Cooling Reqmt.	Special Heating Reqmt.	Special Humidity Reqmt.	Special Ventil./Filtration Reqmt.	Special Acoustic Reqmt.	Special Lighting Reqmt.	Special Occup Adjustability Reqmt.

APPENDIX N
LEED Requirements for Multiple Contractor Combined Projects

Not Used

APPENDIX O
LEED Strategy Tables

Not Used

APPENDIX P

LEED Registration of Army Projects

15 April 2010

Number of Registrations
Each building must be registered separately, except multiple instances of a standard building on a shared site may be registered as a single project. If a single registration for multiple buildings is chosen, all buildings under the single registration must earn exactly the same points. Do not register buildings that are exempt from a specific LEED achievement requirement.

Typical Registration Procedure
1. Login, complete the online registration form (see guidance below) at the GBCI LEED Online website http://www.gbci.org/DisplayPage.aspx?CMSPageID=174 and submit it online.
2. Pay the registration fee via credit card (USACE staff: credit card PR&C is funded by project design or S&A funds).
3. GBCI will follow up with a final invoice, the LEED-online passwords and template information.
4. The individual who registers the project online is, by default, the Project Administrator.

Completing the Registration Form

BEFORE YOU BEGIN:
Create a personal account with USGBC if you do not have one.
You will need the following information:
Project name as it appears in P2 (obtain from USACE Project Manager)
Building number/physical address of project
Zip code for Installation/project location
Anticipated construction start and end dates
Total gross area all non-exempt buildings in registration
Total construction cost all non-exempt buildings only (see Project Details Section instructions below)

ACCOUNT/LOGIN INFORMATION
1. The person registering the project **must have an account with USGBC** (login and password) to complete the form. Go to http://www.gbci.org/ , click on “register a project” at the drop-down menu for project certification (at the top of the page) and select “register now for LEED 2009” to start the project registration process. If you have an account, login with your email address and password and select “register new project” to proceed. If you do not have an account, you may select “register a new account” and follow the instructions. It is recommended that you create an account separately on the USGBC website before you start the form. IMPORTANT: USACE team members are members of USGBC and are eligible for Member prices. USACE team members registering projects should be sure to include the USACE Corporate Access ID in their personal account profile (if you do not have it contact richard.l.schneider@usace.army.mil or judith.f.milton@usace.army.mil for the number).
2. The Account/Login Information section is filled out by the person registering the project. It may be a Contractor or a USACE staff member.

ELIGIBILITY SECTION
Follow directions (accepting the terms and conditions)
Review your profile information and make corrections if needed

RATING SYSTEM SELECTION SECTION
Select single project registration and I know which rating system.
Select the rating system - currently only LEED-NC and LEED for Homes are approved for Army use without special approval.
LEED Minimum Program Requirements: select YES

RATING SYSTEM RESULTS SECTION

Confirm selected rating system.

PROJECT INFORMATION SECTION

Project Title: Begin the project title with a one-word identifier for the Installation. Do not include the word "Fort". After this match the project name used in P2 (contact the USACE Project Manager for this information) and identify the building being registered. Example: "Stewart 4th IBCT - DFAC".
Project Address 1 and 2: This is the physical location of the project. Provide building number, street address, block number or whatever is known to best describe the location of the project on the Installation.
Project City: Installation Name
State, Country, Zip Code: Self-explanatory
Anticipated Construction Start and End Dates: Self-explanatory – give your best guess if unknown. Note that required data entry format is: 1 or 2 digit month/1 or 2 digit date/4 digit year (example 3/23/2010)
Gross Square Footage: Provide total area all buildings in LEED project. Exclude the area of any buildings that are exempt from the LEED achievement requirement (for example, exclude an unconditioned storage shed to be constructed with a barracks complex).
Is Project Confidential: Indicate NO except, if project has security sensitivity (elements that are FOUO or higher security), indicate YES.
Notification of Local Chapter: Indicate NO unless Government/USACE Project Manager requests you to indicate YES.
Anticipated Project Type: Select the most appropriate option from the drop-down menu.
Anticipated Certification Level: Select the applicable option from the drop-down menu (Silver is the usual level).

PROJECT OWNER INFORMATION SECTION

Project Owner First Name, Last Name, email, phone, address: The Project Owner is the USACE Project Manager. Obtain this info from the USACE Project Manager.
Organization: U.S. Army Corps of Engineers. This field MUST be completed this way because it will be used as a search field by higher HQ to find all USACE registered projects. You may supplement it with district name at the end but DO NOT revise or use an acronym.
May we publish Owner information: Indicate NO
Owner Type: Pick Federal Government from drop-down menu.
Project Owner Assertion: Check the box

PAYMENT INFORMATION

Self-explanatory

APPENDIX Q
REV 2.1 – 30 SEP 2010
AREA COMPUTATIONS

Computation of Areas: Compute the "gross area" and "net area" of facilities (excluding family housing) in accordance with the following subparagraphs:

(1) Enclosed Spaces: The "gross area" is the sum of all floor spaces with an average clear height ≥6'-11" (as measured to the underside of the structural system) and having perimeter walls which are ≥4'-11". The area is calculated by measuring to the exterior dimensions of surfaces and walls.

(2) Half-Scope Spaces: Areas of the following spaces shall count as one-half scope when calculating "gross area":

- Balconies
- Porches
- Covered exterior loading platforms or facilities
- Covered but not enclosed spaces, canopies, training, and assembly areas
- Covered but not enclosed passageways and walks
- Open stairways (both covered and uncovered)
- Covered ramps
- Interior corridors (Unaccompanied Enlisted Personnel Housing Only)

(3) Excluded Spaces: The following spaces shall be excluded from the "gross area" calculation:

- Crawl spaces
- Uncovered exterior loading platforms or facilities
- Exterior insulation applied to existing buildings
- Open courtyards
- Open paved terraces
- Uncovered ramps
- Uncovered stoops
- Utility tunnels and raceways
- Roof overhangs and soffits measuring less than 3'-0" from the exterior face of the building to the fascia

(4) Net Floor Area: Where required, "net area" is calculated by measuring the inside clear dimensions from the finish surfaces of walls. If required, overall "assignable net area" is determined by subtracting the following spaces from the "gross area":

- Basements not suited as office, special mechanical, or storage space
- Elevator shafts and machinery space
- Exterior walls
- Interior partitions
- Mechanical equipment and water supply equipment space
- Permanent corridors and hallways
- Stairs and stair towers
- Janitor closets
- Electrical equipment space
- Electronic/communications equipment space

APPENDIX R

Preliminary Submittal Register

NOTE TO SPECIFIER:

1. Appendix R" will be a Adobe Acrobat pdf version of the Specifier completed "Sample Preliminary Submittal Register." The Sample Register is Excel Spreadsheet format of the RMS Input Form 4288A, which serves two purposes.

2. First, The Register allows the both Government and the Proposers to see and estimate the cost of the Division 00 and Division 01 submittals required by the contract in addition to the Contractor generated submittal register items developed during Design After Award.

3. Secondly, after award, the Government will provide the Contractor the actual Excel Spreadsheet for the Contractor to input the data into RMS to create the Submittal Register used during contract performance. See Section 01 33 00 (Submittal Procedures), paragraph 1.8 (Submittal Register) for the contract requirements.

4. For the contract or task order Solicitation, the Specifier must complete APPENDIX R, found at the following link:
http://mrsi.usace.army.mil/rfp/Shared%20Documents/Sample%20Preliminary%20Submittal%20Register.xls , save it as a PDF file and then upload it into the Wizard as Appendix R.

5. The RMS Input Form initially includes submittals required by the standardized Model RFP Division 00 and Division 01 Sections, except Section 01 10 00, paragraph 3. Examine the Special Contract Requirements, paragraphs 3 and 6 and any other locally developed portions of the RFP for required submittals and add them to the Input Form. Do not duplicate submittals already listed in the standardized RMS Input Form, because the Contractor needs to submit this information only once.

6. After award, the Government provides the Excel spreadsheet to the selected contractor to develop and input the RMS Input form for the submittal register required by paragraph 1.8 of Section 01 33 00, Submittals.

Appendix S

REV 1.1 JUL 2011.

Manufacturing Performance Requirements for Plumbing Fixtures From The Energy Policy Act of 1992 (PL 102-486) (Including Exceptions for Projects Registered for LEED 3.0 or higher)

Note: This information is for use in establishing the Baseline to calculate flow rate reductions from said Baseline, where required by the contract.

Subtitle C--Appliance and Equipment Energy Efficiency Standards

SEC. 123. ENERGY CONSERVATION REQUIREMENTS FOR CERTAIN LAMPS AND PLUMBING PRODUCTS.

… (j) STANDARDS FOR SHOWERHEADS AND FAUCETS- (1) The maximum water use allowed for any showerhead manufactured after January 1, 1994, is 2.5 gallons per minute when measured at a flowing water pressure of 80 pounds per square inch. Any such showerhead shall also meet the requirements of ASME/ANSI A112.18.1M-1989, 7.4.3(a).

`(2) The maximum water use allowed for any of the following faucets manufactured after January 1, 1994, when measured at a flowing water pressure of 80 pounds per square inch, is as follows:

`Lavatory faucets: 2.5 gallons per minute **(BUT SEE BELOW**)**

`Lavatory replacement aerators: 2.5 gallons per minute

`Kitchen faucets : 2.5 gallons per minute

`Kitchen replacement aerators: 2.5 gallons per minute

`Metering faucets: 0.25 gallons per cycle

`(k) STANDARDS FOR WATER CLOSETS AND URINALS- (1)(A) Except as provided in subparagraph (B), the maximum water use allowed in gallons per flush for any of the following water closets manufactured after January 1, 1994, is the following:

`Gravity tank-type toilets --1.6 gpf.

`Flushometer tank toilets --1.6 gpf.

`Electromechanical hydraulic toilets --1.6 gpf.

`Blowout toilets --3.5 gpf.

`(B) The maximum water use allowed for any gravity tank-type white 2-piece toilet which bears an adhesive label conspicuous upon installation consisting of the words `Commercial Use Only' manufactured after January 1, 1994, and before January 1, 1997, is 3.5 gallons per flush.

`(C) The maximum water use allowed for flushometer valve toilets, other than blowout toilets, manufactured after January 1, 1997, is 1.6 gallons per flush.

`(2) The maximum water use allowed for any urinal manufactured after January 1, 1994, is 1.0 gallon per flush.

**** EXCEPTIONS for Projects Registered under LEED 3.0 or higher.**

1. Any exceptions identified in the applicable LEED criteria.

2. Public lavatory faucets shall deliver a maximum flow rate of 0.5 gallons per minute, when tested in accordance with ASME A 112.18/CSA B125. Use that flow rate as the Baseline figure for calculating any required reductions from the Baseline.

APPENDIX T
FUNCTIONAL AREA LIGHTING CONTROL STRATEGY (FALCS)

A. GENERAL LIGHTING CONTROL SYSTEM ENERGY MANAGEMENT STRATEGIES

SUMMARY: This appendix describes various lighting energy management strategies to utilize across functional areas. These strategies are intended to supplement and NOT supersede the requirements of ASHRAE 90.1.

1. Consider LIGHT LEVEL TUNING to maintain the appropriate light level for a given space. Initial light levels are set high to compensate for light depreciation over time. Where dimming ballasts or dimmable LED drivers are used, they shall be digital and addressable in nature (where available) that can provide individual fixture light level tuning and reconfigurability that dims the light level to the target level, saving the energy that otherwise would be used to compensate for future light depreciation. Provide a life-cycle cost-benefit analysis (LCCBA) of light level tuning for all spaces where the general lighting luminaires are equipped with digital addressable dimming ballasts or LED drivers. The LCCBA shall follow the methodology contained in the IESNA Lighting Handbook. Provide light level tuning where the LCCBA shows it to be economical.

2. Use OCCUPANCY/VACANCY SENSORS to automatically turn off lighting a specified time after all occupants leave the space. The off time shall be adjustable settable to 1, 5, 15, or 30 minutes. Select the type (single or dual technology, wired or wireless) based on the use and configuration of the space. Lighting control system shall have the capability to manage both hard-wired and wireless sensors where applicable. Single technology solutions shall incorporate signal processing technology that distinguishes between background noise and actual motion without automatically changing their sensitivity threshold. To maximize energy savings potential, all occupancy sensors shall be either MANUAL ON – AUTOMATIC OFF (vacancy sensor) or AUTOMATIC ON (to a specified light level of 50% or less) – AUTOMATIC OFF to maximize energy savings. Occupancy/Vacancy sensors properly located in the space and set appropriately can offer typical lighting energy savings of 15% or more.

3. Use DAYLIGHT HARVESTING to control lighting in areas within at least two window head heights (head height is the distance from the floor to the top of the glazing) adjacent to exterior view windows. Typical daylight penetrates three times the window head height into the space. To maximize energy savings, daylight dimming strategies need to penetrate beyond the first row of luminaires (first daylight zone). When daylighting installed fluorescent or LED luminaires, accomplish daylight harvesting by digitally addressable dimming ballasts or drivers. As the natural light in the space increases, the artificial light level should dim gradually to maintain a uniform light level and prevent disruption to the occupants. One daylight sensor must be able to control multiple daylighting zones (cross-zoning) without the need of adding more sensors. All controls (daylight sensors, occupancy sensors, wall stations) shall have the capability to connect to the system via hard wire or wireless. Apply the same daylighting strategies to areas where skylights are available (refer to ASHRAE 189.1 daylight zone definitions). Daylighting systems properly tuned and calibrated can offer typical lighting energy savings of 15% or more.

4. Consider AUTOMATED SHADING in spaces utilizing daylight harvesting to maximize the energy savings of the day lighting system. The shades shall be controlled to reduce glare and unwanted heat gain while still allowing natural light to enter the space. When utilizing automated shading consider the following :

   A. For ease of use and space aesthetics, operate the automated shades by common controls, wired or wireless (i.e. same appearance and design) with the lighting control system.
   B. For maximum energy savings the automated shading system shall predictably position the shades based on a combination of time of day, façade direction, and sky conditions.
   C. For maximum design flexibility and ease of installation, shade system should have the capability to address and control each shade individually.
   D. The shading system shall have a manual override that allows the occupant to temporarily adjust the shades to any desired position. The system will revert back to automatic control after a specified period of time.

   Provide a life-cycle cost-benefit analysis (LCCBA) of automated shading for all spaces where daylight harvesting is provided. The LCCBA shall follow the methodology contained in the IESNA Lighting Handbook. Provide automated shading where the LCCBA shows it to be economical.

5. Use SCENE BASED DIMMING in multiple-use areas including auditoriums, conference rooms and classrooms. Also provide scene based dimming in dining rooms and gymnasiums with multiple functions. One button preset touch recall shall allow multiple zones of light within a space to go to the appropriate light levels, known as a scene, for a specific task or use. Scene based control shall allow the integration of AV controls, shading/projection screens and lighting to work seamlessly with one button preset touch (i.e. lights dim, projection screen lowers, and shades go down). If dimming ballasts or LED drivers are used, they shall also be digital and addressable in nature (where available) to take advantage of installation and life-cycle reconfiguration benefits.

6. Provide PERSONAL CONTROL of lighting in spaces to allow the user of the space to vary the general light level based on the task at hand. Personal control can be achieved by wall mounted controls (hard wired or wireless), Infrared or Radio Frequency (RF) wireless devices, or via computer. Digital addressable ballasts and LED drivers allow the control flexibility of personal dimming of installed lighting on the occupant's work area (i.e. dim the luminaire over their cubicle to the appropriate light level).

7. Consider WIRELESS lighting control options for all installations, including retrofit projects (easy installation, lower installed cost, no power packs necessary). Wireless products shall include but not be limited to occupancy / vacancy sensors, daylight sensors, local wall controls, plug in switching and dimming appliance and parasitic load modules. To avoid interference, wireless products should communicate in an FCC frequency band that does not allow continuous transmissions and is free of Wi-Fi devices.

B. FUNCTIONAL TESTING AND MANUFACTURER SUPPORT

SUMMARY: This section describes functional testing to be performed on the lighting control system and the support required from the lighting control manufacturer.

1. Hire an independent agent with no less than three years experience in testing of complex lighting control systems to conduct and certify functional testing of lighting control devices and control systems. The testing agent shall not be directly involved in either the design or construction of the project and shall certify the installed lighting controls meet or exceed all requirements of ASHRAE 90.1 and all documented performance criteria. The lighting control manufacturer's authorized technical representative may serve as the testing agent. Submit qualifications of the testing agent for approval. Submit copies of test results to the Government.

2. LIGHTING CONTROL MANUFACTURER SUPPORT shall include technical phone support located in the United States. The technical phone support shall be available 24 hours a day, 365 days a year.

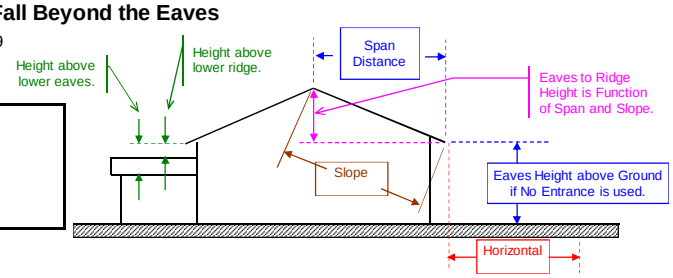
Horizontal Distance That Sliding Snow Can Fall Beyond the Eaves

Created by Alan Greatorex and Jim Buska on 15 October, 1999

Worksheet is protected. Only the input cells below can be changed.

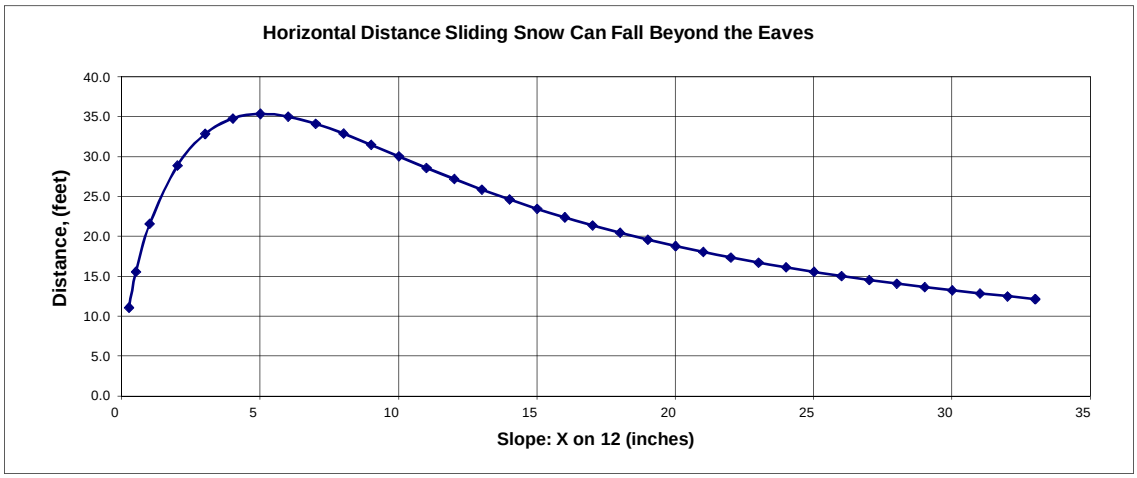
Inputs [1]

Span Distance =	41 ft	0 in.
Height of Eaves Above Ground (or Height of Eaves Above Lower Roof Ridge or Lower Roof Eaves) =	36 ft	3 in.



Acceleration Due to Gravity = -32.16 ft / sec²

Slope X on 12	Slope	Slope length	Acceleration Parallel to Slope [2]	Time Required to Traverse Slope Length	Horizontal Velocity at Eaves	Vertical Velocity at Eaves	Time to Fall from Eaves to Lower Surface	Horizontal Distance [3]	Eaves to Ridge Height
inches	degrees	feet	ft / sec²	seconds	ft / sec	ft / sec	seconds	feet	feet
1/4	1.19	41.0	0.7	11.07	7.4	-0.2	1.50	11.1	0.9
1/2	2.39	41.0	1.3	7.83	10.5	-0.4	1.49	15.6	1.7
1	4.76	41.1	2.7	5.55	14.8	-1.2	1.46	21.6	3.4
2	9.46	41.6	5.3	3.97	20.7	-3.4	1.40	28.9	6.8
3	14.04	42.3	7.8	3.29	24.9	-6.2	1.32	32.9	10.3
4	18.43	43.2	10.2	2.92	28.1	-9.4	1.24	34.8	13.7
5	22.62	44.4	12.4	2.68	30.6	-12.7	1.16	35.4	17.1
6	26.57	45.8	14.4	2.52	32.5	-16.2	1.08	35.0	20.5
7	30.26	47.5	16.2	2.42	33.9	-19.8	1.01	34.1	23.9
8	33.69	49.3	17.8	2.35	34.9	-23.3	0.94	32.9	27.3
9	36.87	51.3	19.3	2.30	35.6	-26.7	0.89	31.5	30.8
10	39.81	53.4	20.6	2.28	36.0	-30.0	0.83	30.1	34.2
11	42.51	55.6	21.7	2.26	36.2	-33.2	0.79	28.6	37.6
12	45.00	58.0	22.7	2.26	36.3	-36.3	0.75	27.2	41.0
13	47.29	60.4	23.6	2.26	36.3	-39.3	0.71	25.9	44.4
14	49.40	63.0	24.4	2.27	36.1	-42.1	0.68	24.6	47.8
15	51.34	65.6	25.1	2.29	35.9	-44.8	0.65	23.5	51.3
16	53.13	68.3	25.7	2.30	35.6	-47.4	0.63	22.4	54.7
17	54.78	71.1	26.3	2.33	35.2	-49.9	0.61	21.4	58.1
18	56.31	73.9	26.8	2.35	34.9	-52.3	0.59	20.5	61.5
19	57.72	76.8	27.2	2.38	34.5	-54.6	0.57	19.6	64.9
20	59.04	79.7	27.6	2.40	34.1	-56.8	0.55	18.8	68.3
21	60.26	82.6	27.9	2.43	33.7	-59.0	0.54	18.1	71.8
22	61.39	85.6	28.2	2.46	33.3	-61.0	0.52	17.4	75.2
23	62.45	88.6	28.5	2.49	32.9	-63.0	0.51	16.7	78.6
24	63.43	91.7	28.8	2.52	32.5	-65.0	0.50	16.1	82.0
25	64.36	94.7	29.0	2.56	32.1	-66.8	0.49	15.6	85.4
26	65.22	97.8	29.2	2.59	31.7	-68.6	0.48	15.1	88.8
27	66.04	101.0	29.4	2.62	31.3	-70.4	0.47	14.6	92.3
28	66.80	104.1	29.6	2.65	30.9	-72.1	0.46	14.1	95.7
29	67.52	107.2	29.7	2.69	30.5	-73.8	0.45	13.7	99.1
30	68.20	110.4	29.9	2.72	30.2	-75.4	0.44	13.3	102.5
31	68.84	113.6	30.0	2.75	29.8	-77.0	0.43	12.9	105.9
32	69.44	116.8	30.1	2.78	29.4	-78.5	0.42	12.5	109.3
33	70.02	120.0	30.2	2.82	29.1	-80.0	0.42	12.2	112.8



1. The roof slope and span distance must be known to use this calculator
2. The coefficient of friction between the snow and the surface on which it slides is assumed to be zero in these calculations. This yields the worst case in terms of speed and distance.
3. The horizontal distance that snow will fall beyond the eaves is the maximum distance that snow sliding all the way from the ridge will land. Snow will land throughout the range from directly below the eaves to this maximum distance.

General Notes:

a. This calculator is for slippery metal or membrane roofs (e.g., EPDM or Hypalon).
b. Snow can fall to lower entrance roofs (at their ridges or eaves) under the eaves of higher roofs, or all the way to the ground.
c. Choose the appropriate slope from the choices above and follow that row across the table.
d. Up is assumed to be the positive sign direction.
e. If a velocity is negative, then it is in the downward direction.
f. The equations assume that the snow is sliding to the right side (positive). To make the lower gable in the illustration work in this manner, "walk around" to the other gable end.

Section: Appendix XX

APPENDIX XX

10-27-2011

1 – NOT USED

2 - RECORD DRAWINGS

a. A/E/C CADD Compliance

(1) GENERAL:

a. All as-built drawings, model files, and sheet files to be provided under this contract shall be accomplished and developed using computer-aided design and drafting (CADD) software and procedures conforming to the following criteria.

b. Site as-builts shall be prepared as GIS themes in Microstation GeoGraphics with as-built specific information attached to each feature in accordance with the Spatial Data Standards for Facilities and Environmental (SDSFIE) latest version. This means there will be a separate feature layer for Buildings, Roads and Parking lots, Electrical Utilities, Water, Sewer, Gas, Communications, topography and general improvements (fences, bollards etcetera). Where the project's nature puts it in a specialty area (such as range construction or airfield structure construction) then the most relevant SDSFIE themes shall be used. Each feature in each layer will be linked to a record of attributes in a table in a database (preferably Oracle.) Each layer's information will be documented in accordance with the Federal Graphic Data Committee (FGDC) metadata standards.

Drawing topology shall consist of lines, shapes or points spatially located on the New York State Plane grid to a 2 cm accuracy in both horizontal and vertical planes. NAD 83 will be the datum used to calculate location coordinates.

Accuracy limits should be +-2 cm in the horizontal and +-4cm in the vertical.

Data may be transmitted as a CADD drawing as long as all features are georeferenced and each type of feature (roads, guardrail, sewer line, sewer manhole, are on levels labeled as such.

c. All drawings shall be arranged and assembled into a recognizable drawing set for ready reference and so that they present complete information. Drawings shall be complete. Detail the drawings such that conformance with the performance specifications can be checked and to the extent that shop drawings can be checked. Unnecessary duplicate views, notes and lettering, repetition of details, etc. shall not be permitted. Show only those standard details that are applicable to the project. Minimize unnecessary wasted space. Do not include details of standard products or items on the drawings which are adequately covered by specifications. The as-built drawing set delivered shall incorporate all facets of this project, both the design provided to the Contractor by the government and any shop drawing designs developed by the contractor.

d. Full-sized drawing sheet files shall be drawn to fit on ANSI D-sized (22 in X 34 in) paper, inclusive of the drawing border. The Contractor shall use the Government-provided standard New York District U.S. Army Corps of Engineers border sheets on all sheet files. All drawings submittals shall include in index of drawings on the Government-provided standard New York District U.S. Army Corps of Engineers cover sheet.

e. All CADD drawings, model files and sheet files shall be prepared in accordance with the Department of Defense Architectural/Engineering/Construction (A/E/C) Computer-Aided Design and Drafting (CADD) Standard, Release 2.0 available at:

Section: Appendix XX

https://tsc.wes.army.mil/products/standards/aec/aecstdweb.asp.

f. Standard drawing size shall be ANSI-D. CADD drawings shall be prepared using soft-metric units.

g. All CADD data shall be supplied in Bentley Systems, three-dimensional, MicroStation V8, native electronic digital format (i.e., .dgn, .cel, etc.). The contractor shall ensure that all digital files and data (e.g., model files, sheet files, reference files, cell libraries) are compatible with the Government's target CADD system (i.e., basic and advanced CADD software, platform, database software), and adhere to the standards and requirements specified herein. The term “compatible” means that data can be accessed directly by the target CADD system without translation, preprocessing, or postprocessing of the electronic digital data files. It is the responsibility of the contractor to ensure this level of compatibility.

h. All model files and sheet files shall include the following project code at the beginning of their A/E/C CADD Standard file-name: (i.e DRUMCDC63102). File name made up of the [installation name][project name][project number] and including drawing name in accordance with the drawing index.

i. The Contractor shall submit a written request for approval of any deviations from the Government's established A/E/C CADD standard. No deviations from the Government's established A/E/C CADD standard will be permitted unless prior written approval of such deviation has been received from the Government.

(2) DELIVERY MEDIA AND FORMAT

a. All CADD data and files developed under this contract shall be delivered to the Government on electronic digital media. The electronic digital data and files shall be provided on CD-ROM (compact disc, read only memory). Each CD-ROM shall be delivered to the Government in a separate container, commonly referred to as a “jewel box.” The electronic digital media shall be in a format that can be read and processed by the Government's target CADD system.

b. Model files, sheet files, and other associated files shall not be device-dependent, nor shall the directory structure of the CD-ROM require any reconfiguration or other manipulation on the Government’s part to view, print, and plot the files directly from the CD-ROM. The directory structure of the CD-ROM shall be configured such that a complete download of the CD-ROM’s contents to an electronic folder on a Government computer’s hard drive will not require any reconfiguration or other manipulation on the Government’s part to view, print, and plot the files.

c. A portable document format (.pdf) file containing the set of full-sized plotted Sheet Files shall be included on each CD-ROM.
d. Each CD-ROM shall be labeled with a printed label and each printed CD-ROM label shall contain, as a minimum, the following information:
(1) The Project’s Name, Contract Number, date, and version and/or submission number.
(2) The format and version of operating system software.
(3) The name of the preparer’s firm and the name and phone number of the preparer’s Point-of-Contact for the project.
(4) The name and office symbol of the Government’s Point-of-Contact for the project.
(5) The sequence number of the digital media.
(6) A description of the contents of the CD-ROM (e.g., “Architectural Plans,” etc.).
e. An .html file named README_DRUMCDC63102.html containing the CD-ROM’s labeling information indicated above as well as any other information as required shall be included on each CDROM.
f. The jewel box label for each CD-ROM shall be printed and each printed jewel box label shall contain, as a minimum, the following information:
(1) The Project’s Name, Contract Number (and Delivery Order Number if applicable), date, and version and/or submission number.
(2) The name of the preparer’s firm and the name and phone number of the preparer’s Point-of-Contact for the project.
(3) The name and office symbol of the Government’s Point-of-Contact for the project.
(4) The sequence number of the digital media.

Section: Appendix XX

(5) A description of the contents of the CD-ROM (e.g., “Architectural Plans,” etc.).
(6) A tabular listing of all files on the CD-ROM.
(7) A chart clearly showing the directory structure of the CD-ROM.
(8) For multiple-CD-ROM packages, a tabular listing of all files in the package with clear indication of the total number of CD-ROMs in the package, and a listing of the contents of, as per item (5) above, of each of the CD-ROMs.
(9) A complete listing of the project’s version and/or submission history.
(3) DRAWING DEVELOPMENT DOCUMENTATION
a. The following information for each model file shall be included in the nonplot level, *-ANNONPLT:
(1) How the data were input (e.g., keyed in, downloaded from a survey total station instrument (include name and model)).
(2) Brief drawing development history (e.g., date started, modification date(s) with brief description of item(s) modified, author's name).
(3) The names of the reference files, cells, symbols, details, tables, and schedule files required for the finished drawing.
(4) Level assignments and lock settings.
(5) Text fonts, line styles used, and pen settings.
(4) HARD COPY TRANSMITTALS
a. A transmittal letter shall accompany each electronic digital media submittal to the Government. The transmittal letter shall be dated and signed by the appropriate Contractor's representative. The transmittal letter shall be provided to the Government on 8-1/2-inch by 11-inch paper. An electronic copy of the transmittal letter in .pdf format shall also be provided on the electronic digital media submitted to the Government. The transmittal letter shall contain, as a minimum, the following information:
(1) The information included on the external label of each CD-ROM, along with the total number being delivered, and a list of the names and descriptions of the files on each media unit.
(2) Brief instructions for transferring the files from the media.
(3) Certification that all delivery media are free of known computer viruses. A statement including the name(s) and release date(s) of the virus-scanning software used to analyze the delivery media, the date the virus scan was performed, and the operator's name shall also be included with the certification. The release or version date of the virus-scanning software shall be the current version which has detected the latest known viruses at the time of delivery of the digital media.
(4) A statement indicating that the Contractor will retain a copy of all delivered electronic digital media (with all files included) for at least one year and, during this period of time, will provide up to five additional copies of each to the Government, if requested, at no additional cost.
b. In addition, the Contractor shall provide the following “Plot File Development and Project Documentation Information” as an enclosure or attachment to the transmittal letter provided with each electronic digital media submittal. The “Plot file Development and Project Documentation Information” shall be provided to the Government on 8-1/2-inch by 11-inch paper. An electronic copy of this information in .pdf format shall also be provided on the electronic digital media submitted to the Government:
(1) Documentation of the plot file for each drawing which will be needed to be able to duplicate the creation of the plot file by the Government at a later date. This documentation shall include the plotter configuration (e.g., name and model of plotter), pen settings, drawing orientation, drawing size, and any other special instructions.
(2) Instructions concerning how to generate plotted, or hard copy, drawings from the provided plot files.
(3) List of any deviations from the Government's standard level scheme and file-naming conventions and a copy of the Government’s signed and dated approval letter allowing these exact deviations from the A/E/C CADD Standards.
(4) List of all new symbol cells created for the project, which were not provided to the Contractor with the Government-furnished materials.
(5) List of all new figures, symbols, tables, schedules, details, and other cells created for the project, which were not provided to the Contractor with the Government-furnished materials, and any associated properties.
(6) List of all database files associated with each drawing, as well as a description and documentation of the database format and schema design.
(7) Recommended modifications which will be necessary to make the data available for GIS use.
c. The Contractor shall also provide five (5) full-size and ten (10) half-size paper hard copies of each finished drawing with each electronic digital media submittal to the Government.

Section: Appendix XX

(5) OWNERSHIP
a. The Government, for itself and such others as it deems appropriate, will have unlimited rights under this contract to all information and materials developed under this contract and furnished to the Government and documentation thereof, reports, and listings, and all other items pertaining to the work and services pursuant to this agreement including any copyright. Unlimited rights under this contract are rights to use, duplicate, or disclose text, data, drawings, and information, in whole or in part in any manner and for any purpose whatsoever without compensation to or approval from the Contractor. The Government will at all reasonable times have the right to inspect the work and will have access to and the right to make copies of the above-mentioned items. All text, electronic digital files, data, and other products generated under this contract shall become the property of the Government. By reference, the following DFAR clauses are included in this contract as a part of the requirements herein:
(1) DFAR 252.227-7013, “Rights in Technical Data - Noncommercial Items.”
(2) DFAR 252.227-7017, “Identification and Assertion of Use, Release, or Disclosure Restrictions.”
(3) DFAR 252.227-7020, “Rights in Special Works.”
(4) DFAR 252.227-7028, “Technical Data or Computer Software Previously Delivered to the Government.”
(5) DFAR 252.227-7037, “Validation of Restrictive Markings on Technical Data.”
(6) DFAR 252.227-7025, “Limitations on the Use or Disclosure of Government-Furnished Information Marked with Restrictive Legends.”
(7) DFAR 252.227-7014, “Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation.”
(6) GOVERNMENT-FURNISHED MATERIALS
(a) Electronic (.pdf) copy of latest version of A/E/C CADD Standard.
(b) Model files containing the Government's standard border sheets.
(c) CADD files of design.
b. Progress As-built Prints: During construction the Contractor is responsible for maintaining one set of up to date paper prints to show as-built construction conditions. These prints shall be kept current and available on the job site at all times. All changes from the contract drawings that are made in the work or additional information, which might be uncovered in the course of construction, shall be accordingly recorded as they occur by means of details and notes. The Contracting Officer's Representative and a responsible representative of the Contractor prior to submission of each monthly pay estimate will jointly inspect the as-built prints for accuracy and completeness. Progress as-builts shall show at a minimum the following information:
(1) The location and description of any utility lines, valves, or other installations of any kind within the construction area. The location includes dimensions to permanent features within +/-150 mm of actual dimensions.
(2) The location and dimensions of any changes with the building and structure.
(3) Correct grade or alignment of roads, structures or utilities if any changes were made from the contract plans.
(4) Correct elevations if changes were made in site grading.
(5) Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including but not limited to fabricated, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.
(6) The topography and grades of all drainage installed or affected as part of the project construction.
(7) All changes, which result from contract modifications.
(8) Where contract drawings or specifications allow options, only the option selected for construction shall be shown on the as-built prints.
(9) All amendments to the contract drawings issued during the solicitation period shall be posted on the as-built drawings.
c. Protection of Records: The Contractor shall be responsible for the protection and safety of prints and CAD records until returned to the Contracting Officer. Any drawings damaged or lost by the Contractor shall be satisfactorily replaced by the Contractor at his expense.
d. As-Built Updates: At the 25%, 50%, and 75% completion point in construction of this project as determined by progress payments) the Contractor shall update the CAD files of the project drawings in the appropriate CAD program to show as-built conditions and submit one set of CAD prints to the Contracting Officer for approval. The submission shall only include drawings that have incurred changes. The intent of the submission is to demonstrate construction changes as marked on the progress as-built drawings, are being made in the CAD files at regular intervals. The Contractor shall make any required corrections before payment will be approved for this item.

Section: Appendix XX

e. Preliminary Record Drawing Submittal: At least 30 calendar days before the anticipated date of final acceptance inspection the Contractor shall deliver 2 copies of progress prints showing final as-built conditions to the Contracting Officer for review and approval. These prints shall correctly show all the features of the project as it has been constructed, adding such additional drawings as may be necessary. Drawings shall be printed from the CAD files updated in the appropriate CAD program. Within 10 days, the Government will provide the Contractor one set of prints indicating required corrections to the preliminary submittal. The Contractor shall correct and resubmit within 5 days. Any required subsequent review and resubmission periods shall each be accomplished within 5 days. Upon Government approval of the preliminary submittal, the Contractor shall prepare final record drawings.
Failure to make an acceptable submission of Record Drawings will delay the Final Acceptance Inspection for the project and will be cause for withholding any payment due the Contractor under this contract.

f. Shop Drawings: Upon completing the work under this contract, the Contractor shall furnish a complete set of all shop drawings as finally approved. These drawings shall show all changes and revisions made up to the time the equipment is completed and accepted.

g. Provide a GPS survey of all roadways, buildings (corners), structures, utilities (direct buried or in conduit), to include laterals and branches from point of origin up to facility tie-ins, storm drains, outlet points, manholes, culverts, sewer lines, domestic water lines, fire lines, gas lines, communication lines, electrical lines, controls, valves, light and power poles, fences, inverts, underground tanks, metering points, roads (centerline, edge of pavement), parking lots (edge of pavement), all control points provided or referenced by the government, shall be identified on as-built drawings and shall be GPS surveyed to a level of +/- 0.1 foot accuracy, they will be located with surveyed coordinates in the New York State Plane Central (survey feet). Coordinates and as-installed material details shall be listed for all pipes, conduits, cables, valves, transformers, manholes, and other appurtenances. All of the aforementioned utility lines shall be surveyed at a minimum of two points along every straight run between manholes, at every change of direction, at every tie in point, at every change in elevation greater than ¼ meter and at any change in line size.

Should the GPS survey not be able to be accomplished due to error sources, then conventional surveying procedures must be used and documented as such. The as-builts shall reflect the results of this survey and geo referenced and all features in the correct location. The survey drawings should also be included and the survey ties to any points of the GPS Survey Control Monumentation Survey by Lafave, White & McGirven, 06 Feb 2006. Survey shall be conducted at time of install by a 3rd party Liscensed surveyor that the contractor will be responsible to retain.

The GPS survey shall be verified for accuracy by the surveyor and a statement be provided to the government stating the level of accuracy for the data being reported. The minimum level of accuracy shall be +/- 5 cm. Survey shall be conducted by a 3rd Party licensed surveyor as the utilities are being installed. Contractor shall be responsible for all costs associated with this.

The survey shall be tied into the North American Datum of 1983 (NED83) and the North American Vertical Datum of 1988 (NAD88). Project survey will be tied into AME 9 English coordinates (N 1,473,967.89556, E 1,044,516.84075 ELEV 672.57).

In addition to the accuracy statement, the following information should be provided to the data compiler:

Coordinate system & Datum used:

Projection:

Units.

Attribute Description (GPS data dictionary; features, attributes and attribute values) Source - Receiver type, antenna type, receiver settings, number of positions per point feature, Correction method and any field other relevant field procedures

Section: Appendix XX

utilized. GPS survey shall be included as part of the as-built drawings a minimum of 1% of project costs shall be help until all Record drawings have been received and accepted (this includes BIM, GPS of utilities and any other items listed in above section 2 - RECORD DRAWINGS.

3 - PHYSICAL DATA

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

b. Weather Conditions: Climatological data determined from records of the U.S. Weather Bureau Station, Fort Drum, NY:

Mean Annual Temperature: 46.3 degrees F Mean Annual Precipitation: 38.5 inches

See also paragraph 5, DEFAULT (FIXED-PRICE CONSTRUCTION) (TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER).

c. Transportation Facilities:

(1) Railroads: Conrail serves the locality of the proposed work. Railhead is located approximately 15 miles from the project site. The Contractor shall make all arrangements at his expense for the use of sidings necessary for the delivery of materials, equipment, supplies, and other facilities required for completion of the work. The Contractor's use of sidings must be arranged so as not to interrupt or delay the operation of the Military reservation.

(2) Highways and Roads: Routes US 11 and NYS Routes 26 & 3 serve the locality of the proposed work. Roads within the military reservation proposed to be used by the Contractor, shall be subject to prior approval of the Post authorities and such roads, if used, shall be maintained throughout construction and shall be restored to as good condition as existed prior to their use.

(3) The Contractor may make use of old NYS Routes 29 and 37, but usage by other vehicles may not be interrupted without prior approval from the Contracting Officer and in compliance with paragraph 19(b). The Contractor shall also construct such temporary haul roads and bridges as may be necessary for the conduct of his work. Any such temporary construction shall be restored to its original condition. All costs for the use of existing transportation facilities, for the construction of temporary facilities, and for maintenance, repair, removal and restoration shall be borne by the Contractor.

4 - CONSTRUCTION PROJECT SIGNS AND BULLETIN BOARD.

a. The Contractor shall construct two project signs for each work site; one for project identification and the other to show on-the-job safety performance.

b. Sample sign drawings together with mounting and fabrication details are provided at the end of this section. The signs shall be erected as soon as possible and within 15 calendar days after the date of Notice to Proceed.

c. The two signs are to be displayed side by side and mounted for reading by passing viewers. The exact placement location will be as designated by the Contracting Officer.
d. Panels are to be fabricated using HDO (High Density Overlay) plywood with dimensional lumber uprights and bracing. The sign faces shall be non-reflective vinyl.

e. All legends are to be die-cut or computer cut in the sizes and typefaces specified and applied to the white panel background following the graphic formats shown on the attached sheets. The Communications Red panel on the left side of the construction project sign with the Corps signature (reverse version) shall be screen printed onto the white background.

f. Immediately upon beginning of work, the Contractor shall provide a weatherproof glass-covered bulletin board not less than 915 by 120 mm in size for displaying the Equal Opportunity Employment poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and other information approved by the Contracting Officer. The bulletin board shall be located at the project site in a conspicuous place easily accessible to all employees, as approved by

Section: Appendix XX

the Contracting Officer. Legible copies of the above information shall be displayed until work is completed.

g. No separate payment will be made for erecting and maintaining the project signs or bulletin boards, and all costs in connection therewith will be considered the obligation of the Contractor. Upon completion of the project, the Contractor shall remove the signs and bulletin board from the work site.

5 - PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS

a. In addition to the requirements contained in contract clause titled PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS, and PROMPT PAYMENT FOR CONSTRUCTION CONTRACTS the following will apply to all payments made under this contract:

b. At the time of submission of the project schedule, the Contractor shall submit for approval by the Contracting Officer or his authorized representative a breakdown of the contract work which shall be to the degree of detail required by the Contracting Officer or his representative to effect reasonable progress payments. The Contracting Officer or his representative will review this breakdown within 30 calendar days after receipt and either advise the Contractor that it is approved or disapproved, and if disapproved the reasons for disapproval. Only after the breakdown is approved will any payment invoice be accepted from the Contractor. The Contracting Officer can determine it is in the best interest of the Government to make payment without an approved breakdown, however, in no case will more than 10% of the contract amount be paid unless the breakdown is approved.

c. The Contractor shall submit requests for payment through submission of a proper invoice to the office or person(s) designated in subparagraph (c). For purposes of payment a "proper invoice" is defined as the following:

(1) An estimate of the work completed in accordance with the approved breakdown indicating the percentage of work of each item and the associated costs.
(2) A properly completed ENG Form 93 and 93a (where required).
(3) All contractual submissions indicated elsewhere in this contract to be submitted with payment, such as updated progress schedules, updated submittal registers, etc.
(4) The following certification executed by a responsible official of the organization authorized to bind the firm. A "responsible official" is either a corporate officer, partner, or owner, in the case of a sole proprietorship. I hereby certify, to the best of my knowledge and belief, that:

(1) The amounts requested are only for performance in accordance with the specifications, terms and conditions of the contract;

(2) Payments to subcontractors and suppliers have been made from previous payments received under the contract, and timely payments will be made from the proceeds of the payment covered by this certification, in accordance with subcontract requirements and the requirements of Chapter 39 of Title 31, United States Code; and
(3) This request for progress payments does not include any amounts, which the prime Contractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of the subcontract;
(4) This certification is not to be construed as final acceptance of a subcontractor's performance; and
(5) All required prime and subcontractor payrolls have been submitted.

(Name)

(Title)

(Date)

d. The Government will designate the office or person(s) who shall first receive the invoice submissions and the Contractor shall be so notified at the pre-construction conference. In addition to the designated Project Engineer, the

Section: Appendix XX

Contractor shall at the same time submit one copy of the detailed breakdown and the ENG Form 93 and 93a to the Area Engineer.

e. The Government representative will return any request for payment that is deemed improper within 7 days of receipt and will specify the defects. If the defect concerns a disagreement as to the amount of work performed and/or the amount of the payment being submitted, the Government and the Contractor's representative will meet to resolve the differences and reach agreement. Upon agreement, the Contractor shall submit a new breakdown and ENG Form 93 and 93a and any other submissions requiring correction. These shall be incorporated with the previous submittal and will then constitute a proper invoice.

f. If agreement cannot be reached, the Government will determine the proper amount per contract clause, PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS and process the payment accordingly. In this event, a "proper invoice" for prompt payment purposes will not have been submitted to the Government.

g. The Government will pay the Contractor in accordance with the following time frames:

(1) Progress Payments. From the date a "proper invoice" is received, in accordance with subparagraphs b and d, the Government will issue a check within 14 calendar days.

(2) Reduction in Retainage Payment. If during the course of the contract, a reduction in retainage payment is required, the Government will issue a check within 14 calendar days after the approval of the release to the Contractor by the Contracting Officer or his authorized representative.

(3) Final Payment. A final payment request will not be considered valid until the Contractor has fulfilled all contract requirements including all administrative items, as-built’s, training, payrolls, warranties, etc. and has submitted a release of claims. When the Contractor has fulfilled all contract requirements and a "proper invoice" has been submitted, the Government shall issue a check within 14 days from the date of acceptance of the project by the Contracting Officer.

6 - HAZARDOUS MATERIAL IDENTIFICATION AND MATERIAL SAFETY DATA

a. "Hazardous material," includes any material defined as hazardous under the latest version of Federal Standard No. 313 (including revisions adopted during the term of the contract).

b. The Contractor shall submit, a Material Safety Data Sheet, (OUS Department of Labor Form OSHA 174) meeting the requirements of 29 CFR 1910.1200(g) and the latest version of Federal Standard No. 313, for all hazardous material 5 days before delivery of the material, whether or not the Contractor is the manufacturer of these items. This obligation applies to all materials delivered under this contract that will involve exposure to hazardous materials or items containing these materials.
c. Neither the requirements of contract clause titled HAZARDOUS MATERIAL IDENTIFICATION AND MATERIAL SAFETY DATA nor any act or failure to act by the Government shall relieve the Contractor of any responsibility or liability for the safety of Government, Contractor, or subcontractor personnel or property.

d. Nothing contained in this contract clause titled HAZARDOUS MATERIAL IDENTIFICATION AND MATERIAL SAFETY DATA shall relieve the Contractor from complying with applicable Federal, State, and local laws, codes, ordinances, and regulations (including the obtaining of licenses and permits) in connection with hazardous material.

e. The Government’s rights in data furnished under this contract with respect to hazardous material are as follows:

(1) To use, duplicate and disclose any data to which this clause is applicable. The purposes of this right are to (i) Apprise personnel of the hazards to which they may be exposed in using, handling, packaging, transporting, or disposing of hazardous materials; (ii) Obtain medical treatment for those affected by the material; and (iii) Have others use, duplicate, and disclose the data for the Government for these purposes.

(2) To use, duplicate, and disclose data furnished under this clause, in accordance with subparagraph (h)(1) of this clause, in precedence over any other clause of this contract providing for rights in data.

(3) The Government is not precluded from using similar or identical data acquired from other sources.

Section: Appendix XX

f. The Contractor shall insert this requirement, including this paragraph (f), with appropriate changes in the designation of the parties, in subcontracts at any tier (including purchase designations or purchase orders) under this contract involving hazardous material.

g. SAFETY AND HEALTH REQUIREMENTS MANUAL if this contract is for construction or dismantling, demolition, or removal of improvements with any Department of Army agency or component, the Contractor shall comply with all pertinent provisions of the latest version of U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, in effect on the date of the solicitation. The latest edition of the U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1 and it changes are available at http://www.hq.usace.army.mil (at the HQ homepage select Safety and Occupational Health). Contractor shall be responsible for complying with the current edition and all changes posted on the web as of effective date of this solicitation.

h. Before commencing the work, the Contractor shall: (1) Submit a written proposal for implementing the Accident Prevention Plan; and (2) Meet with representatives of the Contracting Officer to discuss and develop a mutual understanding relative to administration of the overall safety program.

7 – WHOLE BUILDING & ENHANCED COMISSIONING REQUIREMENTS & UTILITY CERTIFICATION

Contractors shall practice Enhanced Commissioning, Building commissioning shall be performed for all projects. Commissioning is a multi-disciplined process of verifying accurate design, installation and operation of all building systems. The commissioning process should begin in the design phase and continues through occupancy and operation. Enhanced commissioning is a set of best practices that go beyond fundamental commissioning to further ensure proper building function. A third party commissioning authority shall be utilized the cost of which shall be borne by the contractor. An independent, experience commissioning authority (CxA) shall be submitted for approval to the COR, he/she shall review and oversee the commissioning efforts from initial design submission to construction completion. All review comments that the CxA provides to the desing reviews shall be included in the ITR comments. The Commissioning agent shall submit a whole building commissioning plan that addressed the minimum as follows: HVAC components and equipment HVAC system: interaction of cooling, heating, and comfort delivery systems Building Automation System (BAS): control hardware and software, sequence of operations, and integration of factory controls with BAS Lighting Control System and interface with day-lighting Domestic hot water systems Renewable energy generation systems Building Envelope.

COMMISSIONING PROCESS

The following activities outline the commissioning tasks and the general order in which they occur. The Commissioning Agent shall coordinate all activities.

A. Design Review and Documentation.
1. Documentation of Basis of Design and Owner’s Project Requirements.
2. Design Development Review.
3. Construction Document Review.

B. Commissioning Scoping Meeting.
C. Commissioning Plan.
D. Submittals Review.
E. Start-Up/Pre-Functional Checklists.
F. Functional Performance Testing.
G. Short-Term Diagnostic Testing.
H. Deficiency Report and Resolution Record.
I. Operations and Maintenance Training.
1 O&M Manual.
2 Training.
3 O&M Database.

Section: Appendix XX

J. Record Documents Review.
K. Final Commissioning Report
L. Deferred Testing.
1. Unforeseen Deferred Tests.
2. Seasonal Testing.
3. End-of-Warranty Review.

UTILITY CERTIFICATION

Utility Certification: Stormwater system, sanitary sewer systems, and communication duct-banks and manholes requiring certification will be observed, tested, verified by a 3rd party with appropriate certification (depending on type of utility) such as a testing lab, surveyor firm, DOR , etc... The certification shall be provided as part of the Designer of Records certification packet for that system."

8 - PREWORK CONFERENCE

a. A preconstruction conference will be arranged by the Contracting Officer, or the Contracting Officer's Representative, after award of the contract and before commencement of work. The Contracting Officer's Representative will notify the Contractor of the time and date set for the meeting. At this conference, the Contractor will be oriented with respect to Government procedures and line of authority, contractual, administrative, and construction matters. Additionally, a schedule of required submittals will be discussed.
b. The Contractor shall bring to this conference the following items in either completed or draft form:

- The Contractor's order of work
- Accident Prevention Plan
- Quality Control Plan
- Superintendent Appointment Letter
- Subcontractors List

9 - CONSTRUCTION COLOR BOARD SUBMITTALS.
All color Boards shall be provided to the Base Architect for approval thru the COR. Refer to the architectural requirements in section 01010 and appendix for specific requirements.

10 - ROAD CLOSURES AND UTILITY OUTAGES

a. Utility Outages:

(1) The Contractor is advised that the existing utilities service other buildings or areas adjacent to the specific work sites. These buildings will be active and utilized for the entire period of this contract. The Contractor shall maintain all utilities and systems operational at all times except outages approved by the Contracting Officer.

(2) (2) All utility outages shall be scheduled by the Contractor and approved by the Contracting Officer. No outage will be approved which will adversely affect the current operation or mission accomplishment. Outages shall only be approved to perform tie-ins of new or temporary utilities to existing lines. The Contractor shall request, in writing, the Contracting Officers approval, of any proposed outages at least 14 calendar days prior to the date of the proposed outage. The Contractor shall also be responsible for any repairs or start-up procedures in the affected facilities caused by the outages. The Contractor shall coordinate with the Contracting Officer and representatives of the Installation regarding the work that the Contractor must accomplish in various buildings to re-establish the utilities to proper working conditions. The request for the approval of a utility outage shall include, at minimum, the following: description of the utility; time and

Section: Appendix XX

duration of the outage; areas and systems affected; proof that all preparatory work is complete; proof that all necessary materials, equipment and manpower are in place; utility lines have been verified; and a contingency plan is in place. Utility connections shall be made "Hot"/"live" whenever possible.

(3) Time frames during which the Contracting Officer may approve utility outages:

Electrical Services:

2200 to 0400 hours, Monday – Sunday (daily) Domestic Water:

2200 to 0400 hours, Monday – Sunday Fuel (Natural) Gas:

2200 to 0400 hours, Monday – Sunday (daily) Sanitary Drainage:

2200 to 0400 hours, Monday – Sunday (daily) Fire Detection/Alarm:

0700 to 1400 hours, Monday – Sunday. Maximum duration of two (2) hours, subject to contingency plan. Fire Protection Systems:

0700 to 1400 hours, Monday – Sunday. Maximum duration of two (2) hours, subject to contingency plan. Telecommunications (telephone, LAN, CATV): 2200 to 0400 hours, Monday – Sunday. Maximum duration of four (4) hours.

(4) The Contractor shall have on-site all materials, equipment, manpower, etc. to complete all work during the approved duration of the outage. All utilities and systems shall be fully tested and operational prior to the end of the approved outage. Unscheduled outages shall be repaired immediately. Repairs and corrective actions shall proceed continuously in a diligent manner until all services and utilities are restored to their original condition.

b. Road Closures: Road closures shall not be allowed. Utility installations that affect the roads shall be accomplished in manner to provide through-traffic at all times. In this regard, the Contractor shall provide plates, install utilities in one half of the road at one time; provide temporary access, etc. The Contractor shall submit to the Contracting Officer, a proposed plan indicating how the work is to be performed in road areas and how through-traffic will be maintained. The Contractor shall provide temporary protection, signage, flagmen and traffic controls to maintain free vehicular movement as shown on the plans. Temporary protection, signage and traffic controls shall comply with New York State Department of transportation requirements. The plan shall be submitted 30 calendar days prior to initiating any work in the affected road access. No work shall take place until the Contracting Officer approves the plan. The Contractor shall notify the Contracting Officer, at a minimum of the one-week in advance, prior to any disruption in parking or traffic flow. Utility installations crossing roads shall be accomplished by "Trenchless Construction" methods.

11 - ACCESS ROUTES, CONTRACTOR AREAS, DELIVERY AND VISITOR CONTROL

a. The Contractor shall utilize only entry points as shown on the Title Sheet and Vicinity Maps, unless otherwise designated by the Contracting Officer. The Contractor will only be allowed to access the installation through Onieda/Ontario Gate. Contractor's personnel and construction equipment will not be permitted in any place other than the project site and the haul route for the borrow and spoil sites, unless specifically authorized by the Contracting Officer. A request for authorization to use alternate limited access shall be made by the Contractor to the Contracting Officer at least 7 calendar days in advance.

b. The Contractor shall utilize the project site areas for his daily staging. Trailers, materials, or equipment shall not be placed or stored outside the project site unless such trailers, materials or equipment are assigned a separate and distant storage area by the Contracting Officer away from the vicinity of the staging area but within military boundaries. At the

Section: Appendix XX

end of each work day mobile equipment, such as tractors, wheeled lifting equipment, cranes, backhoes and like equipment, shall be parked within the project site. The following shall remain fully accessible: sally ports, hydrants, standpipes and access ways. The Contractor shall be responsible for all temporary connections (power, water telephone, etc.) to the project site. The Contractor shall maintain the area in a clean and neat condition. Parking for Contractor's employees shall be on the project site. The Contractor will return all disturbed areas to their original condition unless specifically authorized by the Contracting Officer.

c. Additional off-site storage areas, if available, may be provided by the Government upon request from the Contractor at no additional cost. The Contractor must maintain all necessary security of his materials and supplies at this off-site location.

d. The Contractor shall be responsible for the control of material deliveries, vendors, suppliers, prospective employees and other authorized personnel entering the project area as relates to this contract. The Contractor shall install signs at entrances to the project directing deliveries and visitors to the proper entry points.

e. The Contractor shall be permitted to utilize the area for material storage and unloading, material hoists, rubbish containers, rubbish chutes (if any), temporary office and personnel dressing facilities, and all other items required for staging. Contractor shall maintain the grounds within his area. Grass and weeds shall be cut at least weekly during the growing season.

f. The Contractor shall provide chemical toilets for his personnel in the project site, and shall be responsible for cleaning and servicing these toilets in accordance with pertinent health regulations and assure a frequency of service as required to prevent odors or other nuisance. Use of toilet facilities by Contractor’s employees within surrounding buildings will not be permitted.

g. The Contractor shall provide weather tight and waterproof storage facilities for all materials stored at the site and required to be incorporated into the work.

h. The Contractor shall remove rubbish containers when full or every 2 weeks which ever comes first.

i. The color of dumpsters, trailers, and storage sheds and portable latrines shall be approved by the Contracting Officer.

j. All materials, trailers, and storage sheds in staging and construction areas shall be elevated and stored a minimum of 3 feet from any structure or fixed object. Trailers shall have doors on both ends.

k. Contractor shall limit employees to his work site.

12 - EXISTING PARKING

The existing parking for visitors and Government employees shall not be used by the Contractor. No contractor or subcontractor employee parking is available near the immediate facility and no parking on the shoulders of the roads are allowed.

13 - MAINTENANCE OF ACCESS ROADS

a. The Contractor shall be responsible for the maintenance of access roads at the construction site. Maintenance of access roads shall include snow removal. The Contractor shall remove snow piles and rows when they affect safety, hamper emergency and fire vehicles, or block proper drainage.

b. The Contractor shall provide and allow full access to the project site to all traffic, except as noted, to other contractors and authorized personnel as designated by the Contracting Officer.

c. The Contractor shall not inflict damage upon land properties, roads outside the authorized construction areas by unwarranted entry upon, driving over curbs, passage through, damage to or disposal of, material on such land or property, or overloading of roads. The Contractor may make a separate agreement with any other party, regarding the use of, or right to, land or facilities outside the Installation. If such an agreement is made, it shall be in writing and a copy shall be furnished to the Contracting Officer. The Contractor shall hold and save the Government, its officers and agents free from liability of any nature or kind arising from any trespassing or damage occasioned by Contractor operations.

Section: Appendix XX

14 - FIRE PROTECTION

a. The Contractor will provide fire protection in accordance with Section 9 of EM 385-1-1, US Army Corps of Engineers Safety and Health Requirements Manual. The Contractor's means of providing such protection will be included in his safety plan as required by the contract. The plan shall include fire exits and access routes during construction and during partial acceptance of the facilities, if any. Although the Fort Drum Fire department and local departments with whom the installation has mutual aid agreements will respond to emergencies, the capabilities of these departments will be limited by their available equipment and access to the construction sites. The Fort Drum Fire Department does not permit open flame heating devices or tar kettles on roofs.

15 - SITE AND BUILDING SECURITY

a. The Contractor shall be responsible for the security of the areas within the contract limits. When the Government takes possession of certain areas, the Contractor shall be responsible for the areas remaining under Contractor control.

b. The Contractor shall be responsible for furnishing an identification required by Fort Drum to each employee in accordance with paragraph titled IDENTIFICATION OF EMPLOYEES. The Contractor shall provide an updated list of all employees working on the site. This list shall be provided on a monthly basis or when requested by the Contracting Office throughout the duration of this contract.

16 - UTILITY VERIFICATION

The RFP drawings depict the general layout of all known utilities. The utility lines are presented for informational purposes only and shall be field verified by the Contractor prior to the start of any utility excavation work. The Contractor shall locate and determine elevations of all existing utilities that will be encountered during work and shall protect all such utilities from any possible damage during the progress of work. The Contractor shall excavate by hand, in the vicinity of existing lines and operations. If damage should occur due to the Contractor's operations, repairs shall be made by qualified personnel at the Contractor's expense. Known existing Utilities-Existing utilities are shown on the Utility Plans, as could be located by surface survey and plotted from record drawings. These are approximate locations, and must be verified by the contractor. The contractor shall be responsible for verifying the existence, location, size, depth, and condition of the utilities. The Contractor is required to physically locate and establish the depth of existing utilities by either utilizing the "pot hole" method or Ground Penetrating Radar.

17 - ARTIFACTS, PRESERVATION & PROTECTION OF HISTORICAL, ARCHAEOLOGICAL AND CULTURAL RESOURCES

a. Any and all items of prehistoric, historic and military relics or memorabilia, which may be discovered in the course of the construction activities, shall remain the property of the Government. Examples of such items include but are not limited to: printed matter or other papers, buttons, buckles, or fragments of uniforms, buried weapons, bayonets, sabers, cannon balls, ammunition, fragments of structures or foundations, in short any item of historical or archaeological value. Federal legislation provides for the protection, preservation and collection of scientific, prehistorical, historical and archaeological data, including relics and specimens, which might otherwise be lost due to alteration of terrain or building features as a result of any federal construction project. Any person who, without permission, injures, destroys, excavates, appropriates or removes any historical or prehistorical artifact, object of antiquity or archaeological resource from public lands of the United States is subject to arrest and penalty of law.

b. Cultural resources on Federal property are protected and managed by the Archaeological Resources Protection Act of 1979 and other applicable laws. The Contractor shall exercise care so as not to disturb or damage artifacts or fossils

Section: Appendix XX

(should any be uncovered) during the excavation operations. Should the Contractor or any parties operating or associated with the performance of this contract discover evidence of possible scientific, prehistoric, historic or archaeological finds within the work limit lines or adjacent to work area shall immediately cease work at that location and notify the Contracting Officer. The Contractor shall provide the Contracting Officer with all information as to the specific location and nature of the findings. The Contractor shall cooperate fully with the Contracting Officer, except that all notifications by the Contractor shall be to the Contracting Officer and that all directions to the Contractor will be from the Contracting Officer. Where appropriate by reason of discovery, the Contracting Officer may order delays in time of performance or changes in the work or both. If such delays or changes are ordered, an equitable adjustment will be made in the contract in accordance with the applicable clauses of the contract.
c. Protected properties on Fort Drum, marked with “Off-Limits” signs, shall not be entered.

18 - CONNECTION WITH WORK OF OTHER CONTRACTS

a. During the period of this contract, other contracts may be in force for the construction of other features of work on or adjacent to the site of work being accomplished under this contract. The Contractor shall arrange his plant and shall schedule and perform the work as to effectively cooperate with all other contractors and Government agencies. It is the Contractor's responsibility to know the extent of the limits of his contract. No direct or extra compensation will be allowed on account of the cooperation required.

b. At all points of connection with work of other contracts, the Contractor shall have weekly coordination meetings until all connections have been completed with the adjoining contractor(s) to insure proper and timely connections.

c. Where the work under this contract is completed before that of the adjoining contractor, the Contractor shall terminate his work in an approved manner ready for future connection by the adjoining contractor. Pipes and conduits shall be closed with suitable caps or plugs that will prevent entry of dirt or debris, but that are readily removable when final connections are made. For underground lines that are back-filled, approved type markers that extend above the ground surface shall be provided to facilitate future location of the lines by the adjoining contract.

d. Where the work of the adjoining contractor is already in place, the Contractor shall perform all work required to effect the necessary connection, including locations of underground lines, removing of caps, providing necessary adapters or joining pieces, and all related incidental work for necessary for a proper, secure connection.

19 - WORKING CONDITIONS, WORKING HOURS, AND NON-WORKING DAYS

a. Working Hours: Normal working hours shall be Monday - Friday, 0700 to 1700 hours. Differences to these working hours must be approved by the Contracting Officer.

b. Non-Working Days: During the course of this contract the Contractor shall not perform any physical work during the activities listed below, unless otherwise agreed to by the Contracting Officer. The dates provided are the “on or about” dates of the activities.

(1) All Government Holidays.

c. Working Conditions:

(1) Open trenches or road restrictions will not be permitted without the approval of the Contracting Officer.

(2) Access ways shall be fully usable.

(3) The Explosive Safety Limit shown on the drawings is a DoD Explosive Safety Board Minimum separation distance. No building construction is allowed within this area.

(4) (4) All cost for conformance with the above stated requirements shall be included with the lump sum contract amount and no claim for extra cost shall be considered.

Section: Appendix XX

20 - CLEANING UP (CONSTRUCTION DISPOSAL, HOUSEKEEPING AND FINAL CLEANUP)

a. All construction debris or other rubbish generated as a result of construction activities shall be disposed of, off the Installation, at the Contractor's expense. Clean soil removed from the construction site will be allowed to be disposed of on Fort Drum as a means of rehabilitation for existing borrow pits. Scrap, debris or surplus construction materials shall not be buried or burned on the site or disposed of in the Installation sanitary disposal containers (dumpsters) but shall be loaded in the Contractor's dumpsters for disposal at a location other than the Fort Drum Installation. The Contractor must obtain all necessary permit/applications required for the disposal of debris for off site locations. The Contractor is responsible for obtaining all necessary permits required for the disposal of all construction debris, including proper disposal of Hazardous Materials.

b. All spillage and mud from the Contractor's trucks shall be removed promptly. All damages to existing curbing, roads, walks, trees, fencing, walls, landscaping and other Government Property resulting from the Contractor's activity, shall be repaired promptly, as directed by the Contracting Officer, and at the Contractor's expense.

c. Project housekeeping shall be done on a daily basis. Areas requiring housekeeping include the Contractor's area, all staging areas provided to the Contractor and around all trailers. At the end of each day, the Contractor shall leave the housekeeping areas broom clean and free of rubbish, litter, and construction debris generated by that day's work. Any dirt or mud which is tracked onto paved or surfaced roadways, shall be cleaned away immediately and in no case shall the Contractor leave the site at the close of work without verifying that all dirt or mud has been removed from any paved surface beyond the limits of construction.

d. The Contractor shall provide and maintain a dumpster of sufficient size at the project site. The dumpster shall be replaced or emptied at regular intervals to avoid overfilling and spillage and the area around the dumpster shall be kept clean at all times.

e. If, at any time during the progress of the work, the Contracting Officer determines that the Contractor is failing to comply with the requirements of the subparagraphs above, the Contractor will be directed to take such measures, as deemed necessary to constitute corrective action. Such measures may include the requirement to increase the work force assigned to the housekeeping and cleanup operations or to work during evenings or weekends until proper job conditions have been restored.

21 - DUST AND NOISE CONTROL

a. Dust Control: The Contractor shall maintain all excavation, embankments, stockpiles, haul roads, permanent access roads, plant sites, waste areas, borrow areas and all other work areas within or outside of the project boundaries free from dust which would cause a hazard or nuisance to others. Approved temporary methods of stabilization consisting of sprinkling, chemical treatment, light bituminous treatment or similar methods will be permitted to control dust. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area damp at all times, and the Contractor shall have sufficient competent equipment on the project site to accomplish this if sprinkling is used. Dust control shall be performed as the work proceeds and whenever dust nuisance or hazard occurs. No separate or direct payment will be made to the Contractor for dust control and the cost thereof shall be considered incidental to and included in the contract prices. The Contractor will control his operations to prevent any measurable or visible dust form migrating outside of the work area.

b. Noise Control: The Contractor shall schedule extremely noisy activities with the Contracting Officer. The activities shall be planned to minimize the impact on existing facilities and building occupants.

22 - OPERATION AND MAINTENANCE MANUALS

a. The Contractor shall provide 4 sets of operation and maintenance manuals to be used for training, operation and maintenance for each piece of operating equipment and material finishes. All material shall be clearly identified, including its location on the project. Sheets shall be 8 1/2" x 11", except pull out sheets which may be neatly folded to 8 1/2" x 11".

Section: Appendix XX

Manuals shall be properly indexed, bound in plastic covered 3-ring, loose-leaf binders with the project title lettered on the front cover, and shall contain:
(1) Name, address, phone number and trade of all subcontractors.

(2) Complete maintenance instruction; name, address and phone number of installing contractor, manufacturer's local representative, for each piece of operating equipment.

(3) Narrative consisting of instruction for equipment and systems to include:

(a) Description of system and intent.

(b) Start-up Procedures.

(c) Emergency Procedures.

(d) Shut-down Procedures.

(e) Maintenance Instructions.

(f) Wiring Diagrams and trouble shooting guidelines.

(g) System Layout Diagrams

(4) Catalog data on plumbing fixtures, valves, water heaters, heating and cooling equipment, temperature controls, fans, electrical panels, and service entrance equipment, elevators and light fixtures.

(5) Instructions for use in training and operation and maintenance of each item of operating equipment.

(6) Manufacturer's name, type, color designation for ceramic tile, resilient floors, windows, doors, brick, concrete block, paint, roofing and other materials.

b. Submit 4 copies of maintenance manual to the Contracting Officer for the Installation's use prior to request for substantial completion.

c. Posted Operating Instructions: All major items of mechanical equipment shall have posted in a convenient and appropriate location operating instruction consisting of description of system operation, including necessary diagrams keyed to valve and piping identification systems. One set of instruction shall be 36” X 24” for posting on the wall. The instructions shall be laminated on both sides with clear plastic laminate. Two sets of laminated 8 1/2” X 11” instructions shall be provided with O&M manuals.

23 - PREPARATION OF DD FORM 1354 "TRANSFER OF ACCEPTANCE OF MILITARY REAL PROPERTY"

a. At the conclusion of this contract, the Contractor shall compile and furnish to the Contracting Officer all costs and quantity data of materials and systems furnished and installed. A list of items for which the costs and quantity data is required and blank DD Form 1354 will be furnished to the Contractor by the Designert. The Contractor shall return this information on a completed DD Form 1354 to the Contracting Officer within 10 days from receipt of the list. The following statements shall also be provided at the same time as the completed DD Form 1354:

b. No Asbestos Statement: Upon completion of the work, the Contractor and all of his subcontractors shall provide a written statement stating that "No Asbestos-Containing" material/products were used in the construction.

c. No Polychlorinated Biphenyl (PCB) Statement: Upon completion of the work, the Contractor and all of his subcontractors shall provide a written statement stating that "No Polychlorinated Biphenyl (PCB)" material/products were used in the construction.

d. No Lead Statement: Upon completion of the work, the Contractor and all of his subcontractors shall provide a written statement stating that "No Lead" material/products were used in the construction.

e. If there are exceptions to the above statements, the contractor shall identify every location, the material, and provide an assessment of the hazard(s) to humans.

Section: Appendix XX

f. The Contractor shall submit all project closeout documents not previously provided to the Contracting Officer at the time of the Beneficial Occupancy Inspection.

24 - COORDINATION OF TRADES

a. The contract drawings are in part diagrammatic and show the general arrangement of duct, piping and other mechanical and electrical trades. The Contractor must have a competent engineer on the project site to coordinate all fieldwork and shop drawings of the various trades prior to installation and/or submission of field or shop drawings for approval. The Contractor shall allot spaces to the various trades prior to installation of the work. In spaces where all the various installations cannot be accommodated, the Contractor shall notify the Contracting Officer and shall submit alternate solutions as to its solution at no cost to the Government. The decision of the Contracting Officer shall be final.

b. The Contractor shall be responsible for the coordinated drawings of the various trades showing locations and sizes of all sleeves, electric outlets, inserts, piping, shafts, hangers, lights, ducts, catwalks, pads, chases, sprinklers, smoke detectors, soffits, fascias, steel trusses, etc. Composite signed off coordinated shop drawings shall be developed at 3/8" equals 1'-0 scale showing all mechanical electrical work in hung ceilings and chases.

25 - PROGRESS PHOTOGRAPHS

The Contractor, as directed by the Contracting Officer's representative, shall submit monthly, a minimum of twelve (12) 8" X 10" color digital images showing construction progress and provide an electronic copy on CD in JPEG image format each month of the photographs submitted. Minimum resolution of the digital images shall be 300 pixels per inch (ppi).

26 - DIGGING PERMIT

a. The Contractor shall be responsible for obtaining a digging permit prior to commencing any excavation. No excavation whether minor or major including trenching, sidewalk replacement, etc. will be permitted without an approved digging permit. Contractor shall carefully avoid contact or damage with any known or identified underground utilities. Work on or near roadways shall be flagged in accordance with the safety requirements in Safety and Health Requirements Manual EM 385-1-1, which forms a part of these specifications. Work located along the alert force route shall not cause blockage, and the Contractor shall maintain unobstructed access for alert force traffic at all times. b. Contractor shall apply for renewal of work permits as required if the work continues beyond the original permit expiration date.

27 - PEST CONTROL

a. The Contractor shall deposit all food refuge in sealed trash containers to restrict food source for rodents.

b. The Contractor shall replace construction dumpsters at least every two weeks to prevent rodent harborage.

c. All materials, trailers, and storage sheds in staging and construction areas shall be elevated and stored a minimum of 3 feet from any structure or fixed object.

d. The Contractor shall cap all pipes at the end of each day to prevent pest infiltration.

28 - COORDINATION MEETINGS

a. Weekly coordination meetings shall be conducted by the Contracting Officer representative with the Contractor and Fort Drum personnel to review and coordinate the construction schedule. The Contractor shall provide typed minutes of each meeting within 3 days of meeting.

b. The Contractor shall submit at each meeting, for approval by the Contracting Officer a “2- week construction look ahead” construction plan indicating the type and extent of construction to be performed. The plan shall be submitted 14 calendar days prior to actual construction.

Section: Appendix XX

29 - CONTINUITY OF QUALITY PERFORMANCE

The Contractor agrees that in the event of any staffing or corporate changes, or substitution of subcontractors and/or consultants, during the performance of this contract the employees, subcontractors, or consultants engaged in the performance of the contract will continue to have the qualifications, professional background, education, and experience equal to that proposed by the Contractor and accepted by the Government for contract award. Any changes in key management personnel shall be submitted for approval by the Contracting Officer.

30 - GOVERNMENT RESIDENT MANAGEMENT SYSTEM AND CONTRACTOR QUALITY CONTROL MODULE.

The Government will utilize an in-house Contract Administration program, Resident Management System (RMS). The Contractor shall utilize a Government furnished CQC Programming Module. See Section 01312, Resident Management System for requirements.

31 - CONTRACTOR WARRANTY MANAGEMENT (NY District 4/03)

a. References:

(1) Clause “Warranty of Construction”, (FAR 52.246-0021)
(2) Clause “Inspection of Construction” (FAR 52.246-12)
(3) Special Requirement paragraph entitled ”Record Drawings”
(4) Specification Section entitled “Contractor Quality Control”
b. General: Warranty of Construction. Per ref 1.a all construction shall be warranted against defects for a one-year period beginning at the project acceptance point. In addition, there may equipment, systems or items for which labor and/or materials are warranted beyond the one year point. These are extended warranty items. In order to insure that the Government systematically receives all warranties of construction, equipment and systems to which it is entitled, the contractor shall execute all actions as required by above references and as contained herein. The contractor shall not be permitted to claim improper and/or lack of maintenance as a reason to abdicate its responsibility to correct a warranty or latent defect items if the contractor is not in contract compliance pursuant to submission of O&M Manuals and /or maintenance instructions as required by references indicated in paragraph 4. or elsewhere in this contract.
c. Tagging of Extended Warranty Items: The Contractor shall install tags to identify items protected by extended warranty. The tags shall be minimum 3 inches by 5 inches in size, machine-printed in minimum 14-point type, and shall be weatherproof and oil resistant. Tags shall be attached to equipment if accessible or to accessible control panel, etc. As a minimum, tags shall indicate the following information:

“Extended Warranty Item:” Name of Item Name of System with which associated, number designation within system, or other identifier Model Number Serial Number Start and end Dates of Warranty Contract number Contract Name Contractor Name Warranty Point of Contact name, organization and telephone number. Warranty response time priority code “WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE DURING THE WARRANTY PERIOD.”
Contractor shall install additional tags on all equipment and systems where required for reasons of safety, maintenance, and prevention of damage.

d. Posting of Instructions: In addition to any posting of operating procedures as may be required elsewhere in this contract, any equipment or system for which proper operation or maintenance is critical in order to preserve warranties, prevent damage, or for reasons of safety shall have proper operating procedures and a Summarized Schedule of Maintenance Instructions posted near the equipment, system or near the operating point. The summarized schedule of Maintenance Instructions shall be inclusive and specific regarding all system components, indicate frequency of maintenance for each maintenance item, and briefly describe each maintenance procedure and cross-reference the volume

Section: Appendix XX

and page number of the O&M Manual that details the maintenance procedure. Training shall include review of the Summarized Schedule of Maintenance Instructions and O&M Manual cross-references. Instructions shall be protected by 1/16 inch thick plastic sheet. As a minimum such equipment or system shall include:

e. Warranty Plan. Within 10 days of the 80% completion point of this contract (or deliverable phase thereof), the contractor shall submit three copies of a warranty plan for each building for Government approval per section “Submittals”. The Warranty Plan shall include all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan shall be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The plan shall be signed by a principal of the contractor. All documents in the plan shall be assembled in a binder. Upon acceptance it shall be signed by a Government Representative. The term “status” as Electrical Substations Transformers Electrical Generators Major HVAC System components including chillers, air-handlers, fans, etc. HVAC Control Panel Boilers Air Compressors indicated below shall include due date and whether item has been submitted or was accomplished. As a minimum the plan shall indicate:

(1) Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the contractor’s, subcontractors or suppliers involved. This shall cover both the one year warranty of construction and extended warranty items or systems. Three copies of the approved warranty plan shall be submitted to Fort Drum DPW at project completion.

(2) Listing and status of O&M manuals and As-built drawings, and expected delivery dates.

(3) Listing and status of all training to be provided to Government personnel, whether specified by contract or required by manufacturers. Indicate dates of training both planned and accomplished.

(4) Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.

(5) A spreadsheet-type list (per building) for each warranted equipment, item, feature of construction or system, to include roofs, HVAC components, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc., as applicable. For each item, the list shall indicate the following information:

Name of item

Model and serial numbers. Location where installed Names of manufacturers or, suppliers and phone numbers.

Names addresses and telephone numbers of sources of spare parts Identification of Warranted materials and labor, and other terms of warranty. Cross-reference to warranty certificates as applicable. Starting point and duration of warranty period.

Summary of maintenance procedures required to continue the warranty in force. Cross-reference to specific pertinent Operation and Maintenance manuals

Organization, names and phone numbers of persons to call for warranty service Typical response time and repair time expected for various warranted equipment

(6) List of spare parts supplied and/or recommended by manufacturer for each piece of equipment.

(7) The contractor’s acknowledgement of intention to attend the Four and Nine month post-construction warranty inspections conducted by the Government.

(8) Status of tagging of all equipment covered by extended warranties.

Section: Appendix XX

(9) Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons

(10) Contractor's understandings with respect to warranty responsibilities for the one year overall warranty of construction, and expected performance on warranty calls during this period.

f. Warranty Meeting. Within 10 days after the approval of the Warranty Plan the contractor will notify the Government representative for the purpose of scheduling a meeting to clarify understandings of responsibilities with respect to warranties to which the Government is entitled. The Government and contractor shall attend the warranty meeting, as well as any subcontractors, or suppliers involved in the warranty process. The Warranty Plan shall be the basis of the meeting's agenda. Contractor will prepare minutes of the meeting indicating major understandings reached, and submit for Government approval within 3 days of the meeting. Minutes will be signed by authorized representatives of the Contractor and Government.
g. Warranty Requirements Compliance. Expected performance of the Contractor on warranty work is indicated herein. If Contractor performance on a warranty call is unsatisfactory, the Contracting Officer may authorize the use of funds remaining in the contract to accomplish the warranty work on an expedited basis including the cost of Government administrative expenses. Repeated poor performance may result in retaining any payment due the Contractor until after the warranty of construction period. The Contractor's Performance Bond shall remain effective through the contract-specified warranty period. Poor warranty performance may also result in a poor contractor performance rating being entered into the Government CCASS system, or downward revision of such rating if already entered.

h. Warranty Performance – Expected Response to Construction Warranty Service Requests and Completion of Repairs: Following oral or written notification by the Contracting Officer, the Contractor shall respond to construction warranty service requirements in accordance with the "Construction Warranty Service Priority List" and the three categories of priorities listed below. The Contractor shall submit a report on any warranty item that has been repaired during the warranty period. The report shall include the cause of the problem, date reported, corrective action taken, and when the repair was completed.

(1) First Priority Code 1. Perform onsite inspection to evaluate situation, and determine course of action within 4 hours, initiate work within 6 hours and work continuously to completion or relief.

(2) Second Priority Code 2. Perform onsite inspection to evaluate situation, and determine course of action within 8 hours, initiate work within 24 hours and work continuously to completion or relief.

(3) Third Priority Code 3. All other work to be initiated within 3 work days and work continuously to completion or relief.
(4) The "Construction Warranty Service Priority List" is as follows: Code 1-Air Conditioning Systems

(1) Recreational support.

(2) Air conditioning leak in part of building, if causing damage.

(3) Air conditioning system not cooling properly. Code 1-Doors

(1) Overhead doors not operational, causing a security, fire, or safety problem.

(2) Interior, exterior personnel doors or hardware, not functioning properly, causing a security, fire, or safety problem. Code 3-Doors

(1) Overhead doors not operational.

(2) Interior/exterior personnel doors or hardware not functioning properly. Code 1-Electrical

(1) Power failure (entire area or any building operational after 1600 hours).

(2) Security lights

(3) Fire Alarm Systems Code 2-Electrical

Section: Appendix XX

(1) Power failure (no power to a room or part of building).

(2) Receptacle and lights (in a room or part of building).
Code 3-Electrical Street lights.
Code 1-Gas
(1) Leaks and breaks.
(2) No gas to family housing unit or cantonment area.

Code 1-Heat (1). Area power failure affecting heat. (2). Heater in unit not working.

Code 2-Kitchen Equipment
(1) Dishwasher not operating properly.
(2) All other equipment hampering preparation of a meal. Code 1-Plumbing
(1) Hot water heater failure.
(2) Leaking water supply pipes. Code 2-Plumbing
(1) Flush valves not operating properly.
(2) Fixture drain, supply line to commode, or any water pipe leaking.
(3) Commode leaking at base. Code 3 -Plumbing Leaky faucets. Code 3-Interior

(1) Floors damaged.

(2) Paint chipping or peeling.

(3) Casework.

Code 1-Roof Leaks Temporary repairs will be made where major damage to property is occurring.

Code 2-Roof Leaks Where major damage to property is not occurring, check for location of leak during rain and complete repairs on a Code 2 basis.

Code 2-Water (Exterior) No water to
facility.

Code 2-Water (Hot) No hot water in portion of building
listed.

Code 3-All other work not listed above.

i. Post-Completion Inspections: The Government conducts project inspections for purposes identifying warranted deficiencies at the four and nine month points after project acceptance. The Contractor is required to attend these inspections in order to better manage any warranty items for which it may be responsible.

32 - RESPONSIBILITY OF THE CONTRACTOR FOR DESIGN

a. The Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all designs, drawings, specifications, and other non-construction services furnished by the Contractor under this contract. The Contractor shall, without additional compensation, correct or revise any errors or deficiency in its designs, drawings, specifications, and other non-construction services and perform any necessary rework or modifications, including any damage to real or personal property, resulting from the design error or omission.

b. The standard of care for all design services performed under this agreement shall be the care and skill ordinarily used by members of the architectural or engineering professions practicing under similar conditions at the same time and locality. Notwithstanding the above, in the event that the contract specifies that portions of the Work be performed in

Section: Appendix XX

accordance with a performance standard, the design services shall be performed so as to achieve such standards.

c. Neither the Government's review, approval or acceptance of, nor payment for, the services required under this contact shall be construed to operate as a waiver of any rights under this contract or of any cause of action arising out of the performance of this contract. The Contractor shall be and remain liable to the Government in accordance with applicable law for all damages to the Government caused by the Contractor's negligent performance of any of these services furnished under this contract.

d. The rights and remedies of the Government provided for under this contract are in addition to any other rights and remedies provided by law.

e. If the Contractor is comprised of more than one legal entity, each entity shall be jointly and severally liable hereunder.

33 - DEPARTMENT OF ARMY RADIATION PERMITS

a. 32 CFR Part 655 requires Army radiation permits (DA FORM 3337) for use, storage, and possession of ionizing radiation sources by civilian contractors on an Army installation. Approval of the Installation Commander is required prior to the start of work projects. Allow 30 days for review of forwarded documentation. The Command Safety Office (315-772-5352) reviews and assists in the processing for the permit. Once all safety requirements are met, a letter of approval shall be issued to the non-Army agency. The letter of authorization or extension letter will have a start and end date, and not extend more than 180 days from start date of the contract, or extension issue date. Non-Army radioactive materials (RAM) are not authorized overnight storage on Fort Drum.
b. The non-Army applicant's documentation will specify the start and stop dates for the Army radiation permit and describe for what purposes the applicant needs the Army radiation permit (proposed work statement). The proposed work statement will also clearly identify the following information:

(1) Name of the person(s) operating the equipment and their training (Phone Number or POC Phone Number);

(2) Name and training of the organization Radiation Protection Officer;

(3) How will the tester be stored during lunch hour or breaks. The documentation will include manufacturer, model and serial numbers of the devices/sources to be used and the latest required leak test results on the sources. The isotopes and activity used by each device must also be provided To minimize delays, close coordination with the Command Safety Office, Fort Drum NY is strongly recommended during the preparation of the applicants documentation.

c. Prior to the issuance of the letter of approval all non-Army agencies must possess one of the following:

(1) A valid NRC License or Department of Energy (DOE) radiological work permit that allows the applicant to use the source as specified in the Army radiation permit application;

(2) A valid New York State Agreement/License that allows the applicant to use radioactive material as specified in the Army radiation permit application.

(3) For Naturally occurring or accelerator produced radioactive material (NARM) and machine-producing ionizing radiation sources, the applicant has an appropriate State authorization that allows the applicant to use the source as specified in the Army radiation permit application or has in place a radiation safety program that complies with Army regulations. d. All Army radiation permits will require applicants to remove all permitted sources from Army property by the end of the permitted time. Disposal of radioactive materials by non-Army agencies on Army property is prohibited.

End of Section

P/N 58005 Ammunition Supply Point Improvements

Security, Access, and Relocation Appendix YY

Purpose:

The nature and location of the Ammunition Supply Point Improvements Project require that specific security and access measures be implemented in order to maintain the levels of security required at these facilities**. It should be noted that any deviations (deliberate or accidental) from the requirements listed herein shall result in the immediate dismissal of the individual offender(s)** and be considered grounds for disciplinary and/or contractual actions against employers, and/or contractors, responsible for enforcing them. The successful contractor shall be responsible for all of their employees, subcontractors, suppliers, and any other support personnel.

General:

1. There will be no smoking at/on any portion of this project, except in the area designated on the attached site plan. The contractor shall provide a suitable shelter, approved cigarette receptacles, and be responsible for enforcing this requirement. In addition, no smoking will be allowed within any vehicles at/on this project site.
2. Parking for Privately Owned Vehicles (POV) shall only be allowed at the location shown on the attached site plan.

Administration Building:

1. Sections of the chain link perimeter fencing, highlighted on the attached site plan, will be removed/replaced, and relocated along with any new fencing required, to the new location, also shown on the attached site plan. **This is the first activity that will occur for work in/around the Administrative area.**
2. The construction road, shown on the attached site plan, will be established, utilized, and maintained throughout the duration of the project. Any damage to the pavement, existing around the current administration building, will be replaced at the Contractor's expense. At the project's completion, the construction road will be restored to a natural setting, and seeded.
3. The existing well cap needs to be raised to eighteen-inches above the final finished grade and protected with four bollards and the concrete around the well shall be replaced.
4. The existing radio antenna will be relocated to a new, thirty-five-foot high pole, meeting all applicable codes, regulations, and standards, at the location indicated on the attached site plan. Once relocated, the antenna will be re-connected to the building's radio equipment.

Ammunition Magazines:

1. The Contractor shall provide a new, sliding, motorized gate, with controllers, to replace the existing gate shown on the attached site plan. ***(NEED TO PROVIDE GATE DETAILS) XX*** number of controllers will be provided to the Owner. **This work shall be accomplished prior to any other magazine activities.** It shall be the responsibility of the Contractor to monitor access through this gate and it will be manned whenever an authorized vehicle needs to gain access or exit the site. The gate will normally be closed.
2. The hours of work for this phase and for the duration of this project will be: Monday through Friday, 0700-16:00 (7:00 AM-4:00 PM). No work shall be performed on Federal holidays for the duration of the project and it is the Contractor's responsibility to determine the dates of these holidays. Any proposed deviations need to be submitted to the Project Manager, in writing, for approval, at least twenty (20) working days prior to the date(s) requested.

3. Pedestrian access will only be allowed through the existing man-gate located on the attached site plan. This gate will be manned by a Contractor employee at all times that the gate needs to be open. The Contractor will make provisions to provide locking capability for at least two (2) separate locks.
4. No Personally Owned Vehicles (POV) will be allowed access to the magazine site. The Contractor will submit to the Project Manager, a list of supervisory personnel who have an absolute need to drive a vehicle into the magazine areas, along with detailed justification. (Justification does not include parking there for the day.) This will include any subcontractors. It is solely the decision of the Project Manager to determine if this access will be allowed.
5. Without exception, approved personnel with drive-in access, and any material suppliers, will have professional identification of their firm located on both sides of the vehicle, and the minimum size of the identification shall be twenty-four-inches by thirty-six-inches.