Design-Build Request For Proposal

SOF – Language Sustainment Training Facility

PN 66812, FY2010

Certified Final Submittal

W912QR-10-R-0046

Fort Campbell, Kentucky

USACE Louisville District

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1.0 PROJECT OBJECTIVES

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
66812 (SOF) Language Sustainment Training Facility	classroom building

It is the Army's objective that these buildings will have a 25-year useful design life before a possible re-use/re-purpose or renovation requirement, to include normal sustainment, restoration, modernization activities and a 50-year building replacement life. Therefore, 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 site infrastructure will have at least a 50-year life expectancy with industry-accepted maintenance and repair cycles.

The project site should be developed for efficiency and to convey a sense of unity or connectivity with the adjacent buildings and with the Installation as a whole.

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 lowest 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.

2.0 SCOPE

2.1 SOF LANGUAGE SUSTAINMENT TRAINING FACILITY

The 5th Special Forces Group at Fort Campbell is part of the USASOC (United States Army Special Operations Command) organization under USSOCOM (United States Special Operations Command – Worldwide). The sustainment of foreign language skills is required to maintain unit and individual soldier readiness. The instruction will include speaking, listening, reading, and writing skills for target language, military terminology and cultural matter peculiar to various foreign areas for Special Operations Forces (SOF). The SOF Language Sustainment Training Facility (SOF-LSTF) is required to house Administrative Offices, classrooms, Distance Learning/Language Laboratory, Multi-Purpose Room, Oral Proficiency Interview Room, and support spaces. Each Special Forces soldier is required to practice linguistic skills two hours per day to maintain skill level. This project is the design and construction of a facility to support the specialized language sustainment training mission of the 5th Special Forces Group (Airborne).

The new facility will become part of a larger SOF complex, which is partially developed in the vicinity. The existing barracks buildings that are adjacent to the project site are scheduled for future demolition and will be replaced by new Special Forces facilities. The SOF-LSTF must be designed and constructed to meet Leadership in Energy and Environmental Design (LEED) Silver requirements. The project shall be registered and certified with the US Green Building Council, Green Building Certification Institute (GBCI). This building must be designed and built to meet Antiterrorism and Force Protection (ATFP) criteria as per the APPLICABLE CRITERIA in Paragraph 4. The architectural theme of the facility shall be contextually compatible with the Installation's requirements.

Conceptual Plans for the SOF-LSTF are included in Appendix J, Drawings. The plans present possible facility arrangement and adjacencies that meet the minimum requirements of the RFP. The concept plans are included as design development proposals only and are preliminary in nature. Offerors are encouraged to propose a design that incorporates innovation and provides a facility that represents the best value to the Government. The D-B Contractor may utilize any of the design plans provided in the RFP in order to develop a proposal; however, they shall ensure that the plans developed are in accordance with the required functional, operational, and building requirements as stated in this RFP. If a conflict exists between the RFP concept plans and the technical requirements of the RFP, the RFP technical requirements shall govern.

The D-B Contractor shall design and provide all site improvements and construction necessary to complete and support the new facility. The RFP concept plans provide the limits of construction for the approved site development. Refer to Paragraph 3 and Paragraph 6 for additional requirements.

Antiterrorism Force Protection (ATFP) measures shall be included in the facility design in accordance with APPLICABLE CRITERIA. At a minimum, design the facilities to meet LEED Silver sustainable design requirements. Repair or replace all existing sidewalks, pavement, utilities, and/or landscaping damaged as a result of construction activities, restoring them to pre-construction condition or better.

2.1.1 The Contractor shall provide an SOF Language Sustainment Training Facility consisting of a single-story facility with a Maximum Allowable Area of 13,500 square feet.

2.1.2 Deviations, exceptions and clarifications:

2.1.2.1 Section 01 10 00, Paragraph 1.0 identifies the type of construction for this facility as 'Industry Standard' in accordance with APPLICABLE CRITERIA. The Installation prefers a steel structural system with metal framing for this facility; therefore, a wood structural system is prohibited. All other minimum standards associated with 'Industry Standard' construction as specified in Section 01 10 00, Paragraph 1.0 and APPLICABLE CRITERIA (Section 01 10 00, Paragraph 4) continue to apply to the design and construction of this facility.

2.1.2.2 Section 01 10 00, Paragraph 6.4.6.5 identifies Timothy Eayre as a point of contact (POC) for NEC. Replace Tim Eayre as a POC for NEC with Luke Herron, (270) 956-2844, Luke.W.Herron@us.army.mil.

2.1.2.3 Construction of a new parking area to support the occupancy of this facility is not required. In lieu of a new parking area, provide improvements to the existing adjacent parking area as a priced Bid Option in accordance with this Statement of Work.

2.1.2.4. Add Installation specific design guides to Section 01 10 00, Paragraph 4, APPLICABLE CRITERIA, paragraph 4.2 Military Criteria: Fort Campbell Installation Design Guide (IDG), and Fort Campbell Technical Design Guide (TDG). All design and construction for this project shall comply with these Fort Campbell guide documents.

2.1.3 Base Bid, Priced Bid Options, Betterments and Preferences:

Provide a facility, site development, and infrastructure that meet all minimum requirements as a part of the Base Bid. Provide separate bid amounts for the Base Bid and all priced Bid Options. The D-B Contractor may provide a design that includes RFP Preferences and Betterments. Bid Options, Preferences, and Betterments shall be clearly identified as a part of the Offerors' proposals. Bid Options, Preferences and Betterments are defined below:

2.1.3.1 PREFERENCES: Preferences are defined as desirable components or systems that will provide added value to the project. Preference items, if included, shall be a part of the Base Bid and provided at no additional cost to the Government. The provision of preferences will be given consideration during the evaluation of proposals as follows:.

Five Preferences have been identified:

- Standing Seam Metal Roof, with a minimum 3/12 pitch
- Full-height brick façade
- Increased size of the Multi-purpose Room without expanding beyond the maximum allowable building program
- Enhanced main entry appearance and features
- Meet requirements of LEED Gold

2.1.3.2 BETTERMENTS: Betterments are defined as desirable features or items, which exceed the minimum requirements of this RFP, which provide added value to the project. Betterments, if included, shall be described in narrative form in the proposal with an explanation of how they will be accomplished. The provision of Betterments will be given consideration during the evaluation of proposals. Betterments, if provided, shall be included in the Base Bid at no additional cost to the Government. The following Betterments have been included in the RFP Statement of Work (Section 01 10 00) for consideration by Offerors:

- Provide more durable drywall material (impact-resistant)
- Provide underground stormwater management (SWM) facilities for water quality and quantity control
- Provide automatic shading connected to lighting control, light shelves, and/or other means of indirect lighting in classrooms and offices
- Provide enhanced landscape planting beyond the minimum required

2.1.3.3 PRICED BID OPTIONS: Provide separate bid amounts for all Bid Options. The Government may award all, some or none of the Bid Options at their discretion. Priced Bid Options shall include the following items:

Bid Option #1 - Design and construct a patio and outdoor activity area adjacent to the primary building. Construct the outdoor activity area with decorative pavers. The paved patio area shall include area lighting, trash receptacles, and fixed-in-place benches for seating, in support of outdoor activities that conforms to APPLICABLE CRITERIA. Design and construction of the outdoor activity area shall be oriented toward nearby Gabriel Field, as referenced in the RFP Statement of Work. Benches provided for seating shall conform to the Fort Campbell Installation Design Guide for an Administrative Campus visual zone. Bid expiration period is 90 days from award of contract.

Bid Option #2 – Design and provide an improved parking area across from Kentucky Avenue. Parking lot striping shall be provided as a part of the Base Bid. This parking area shall remain open for use by the 5th Special Forces Group at all times during construction of the SOF-LSTF building except during parking area construction.

The Contractor shall perform a geotechnical investigation and develop design recommendations for improving the parking area. The Contractor shall review the design recommendations with the Contracting Officer to determine the appropriate construction solution within available funds. Mill and resurface top course over the entire existing parking lot to accommodate parking requirements as referenced in the RFP Statement of Work. For bidding purposes, price 1-1/2 inch existing pavement milling and 1-1/2 inches of new bituminous asphalt surface course pavement. Provide unit cost information for surface course, base course, and aggregate base course as defined per APPLICABLE CRITERIA. Resurface parking area such that the existing drainage pattern is maintained or improved. Design and construct parking

area landscaping to include but not limited to turf renovation, shade trees, ornamental trees, and ground cover in parking lot islands and visual screening around the perimeter of the parking area.

Reconfigure parking area to accommodate bicycle and pedestrian circulation throughout the 5th Special Forces Group campus. Pedestrian circulation through the parking area shall enhance existing pedestrian routes and provide direct connections to the 3200 block, 6100 block and 6200 block. All sidewalks shall meet APPLICABLE CRITERIA and extend to edge of pavement with accessible transitions/curb cuts and ramps. An entrance drive shall be maintained off of 42nd Avenue to accommodate traffic flow on Physical Training (PT) routes.

Parking lot shall be designed to maximize parking spaces and provide one landscape island for approximately every 8-10 spaces. Landscape islands shall be of sufficient size to support the healthy growth of trees and ornamental plantings. Curb and gutter shall be provided for all islands (only and not at the edge of parking lot pavement) in accordance with APPLICABLE CRITERIA. Bid expiration period is 90 days from award of contract.

Bid Option #3 – Design and install improved area lighting in the existing parking lot: Remove existing lighting fixtures from power poles in the existing parking lot and remove any extraneous lights and poles. Install a new parking lot lighting system using lamps with equipment color, style and design to match the existing SOF complex light standards, as referenced in the RFP Statement of Work. Provide all design and installation of light standards, wiring and electrical connections for adequate light levels per the Statement of Work and APPLICABLE CRITERIA. Bid expiration period is 90 days from award of contract.

Bid Option #4 - Provide a solar powered warning light system at new street pedestrian crosswalks: Provide all design and installation for solar powered crosswalk warning lights for all new crosswalks in the Project. Crosswalk warning lights shall have the ability to synchronize with future traffic signals. Bid expiration period is 90 days from award of contract.

Bid Option #5 - Provide sod in lieu of seeding for turf establishment: Provide all sod placement and other associated material to install sod ground cover in lieu of seeding for all disturbed areas scheduled for grass establishment per the Statement of Work and APPLICABLE CRITERIA. Bid expiration period is 90 days from award of contract.

Bid Option #6 - Provide and install a complete furniture package: Design, purchase and install all furnishings and equipment in a complete furniture package (CFCI) for the entire facility per the Statement of Work and APPLICABLE CRITERIA. Information including specifications, cut sheets, and operations/maintenance manuals shall be submitted in conjunction with the furniture package. Finishes and furnishings shall meet or exceed minimum requirements including function, safety, maintainability, durability, sustainability, aesthetics, and ergonomic considerations. The use of discontinued furnishings and finishes is prohibited. Bid expiration period is 365 days from award of contract.

Bid Option #7 - Provide and install a complete audio-visual equipment package: Design, purchase and install all audio-visual systems in a complete audio-visual equipment package (CFCI) with required provisions for acoustical integration into the facility as a whole per the Statement of Work and APPLICABLE CRITERIA. Information including specifications, cut sheets, and operations/maintenance manuals shall be submitted in conjunction with the equipment package. Bid expiration period is 365 days from award of contract.

Bid Option #8 - Provide and install exterior building security cameras: Design, purchase and install a complete CCTV system (CFCI) per the Statement of Work and APPLICABLE CRITERIA. At a minimum include the following equipment: 4 Pan Tilt Zoom (PTZ) cameras, an 8-channel multiplex recorder and a 24-inch monitor, and all associated wiring, racks and pathways for a complete system. Cameras shall have color video, under normal lighting and shall operate in low light conditions to 0.5 lux (0.05fc). Cameras shall be provided with a security bubble and an integral heater for condensation control, as required. Bid expiration period is 365 days from award of contract.

2.1.3.4 AUDIO-VISUAL REQUIREMENTS

Provide complete audio-visual design including all required systems, components, and equipment for all spaces listed in Paragraph 3.2.2 “Functional Space Requirements” and referenced in 3.4.5.13 “Facility Furniture/Equipment/Audio-Visual Chart”. Coordinate with the user to define the requirements for audio-visual systems. Early coordination of audio-visual design is required for a complete and usable facility.

The procurement and installation of audio-visual systems, components, and equipment is not included in the Base Bid of this contract. Audio-visual systems, components, and equipment will be provided and installed by the Government under a separate vendor/installer contract (GFGI). The D-B Contractor shall accommodate this effort with allowance for entry of

the audio-visual vendor/installer onto the project site at the appropriate time to permit completion of the audio-visual installation for a complete and usable facility to coincide with the BOD of the project. The audio-visual vendor/installer contract will include all electrical pre-wiring and the whips for final connection to the building electrical systems however; the D-B Contractor contract shall make the final connections to the building electrical systems under this contract. Furthermore, the D-B 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, wall and ceiling systems, the services to install the cable and face plates in the furniture, wall and ceiling systems, the coordination with the audio-visual vendor/installer to accomplish the installation at the appropriate time, and all the final IT connections to the building systems.

The Government reserves the right to change the method for procurement and installation of audio-visual systems, components, and equipment to Contractor Furnished/Contractor Installed (CFCI). See Bid Option #7 in Paragraph 2.1.3.3.

2.2. SITE:

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

Approximate area available 2.25 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: Audio-Visual equipment; Intrusion Detection System & exterior security cameras.

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.

2.5. NOT USED

3.0 SOF LANGUAGE SUSTAINMENT TRAINING FACILITY

3.1 GENERAL REQUIREMENTS

The SOF Language Sustainment Training Facility (SOF-LSTF) is required by the Army in order to provide instructional support for the specialized language sustainment training mission of the 5th Special Forces Group (Airborne). Training facilities shall facilitate speaking, listening, and writing skills for target languages, military terminology, and cultural matters particular to various foreign regions. The new SOF-LSTF will assist in maintaining unit and soldier readiness. This project consists of the facility described below.

The SOF-LSTF shall be comprised of Administrative Offices, Classrooms, a Distance Learning/Language Laboratory, an Oral Proficiency Interview Room, a Multi-Purpose Room, and other support areas.

3.2 FUNCTIONAL AND AREA REQUIREMENTS

Gross area shall be calculated in accordance with Appendix Q, Area Computation. Net area is measured to the inside face of the room or space walls. Minimum dimensions where stated, shall be measured to the inside face of the defining enclosure. Net area requirements for programmed spaces are included in this paragraph. The spaces shall be sized to accommodate the required function and to comply with code requirements, overall gross area limitations, and any other requirement of this RFP. Area requirements for corridors, stairs, restrooms, electrical rooms, and mechanical rooms will typically be left to the discretion of the Offeror but shall be counted in the general authorized gross square footage for each facility. Coordinate column spacing and furniture layout with the building's floor plan so that columns occur within or in alignment with walls where they may be concealed as much as possible. Do not let column placement interfere with the functionality of the space. Columns shall not be located within classrooms or the Multi-Purpose Room.

3.2.1 Accessibility Requirements

The building shall be accessible and shall comply with the Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessible Guidelines for Buildings and Facilities as currently amended.

3.2.2 Functional Space Requirements

(a) Administrative Office: Provide a space for three administrative personnel and visitors. Provide borrowed daylight and views through sidelights in interior walls of exterior wall offices. Provide a built-in reception desk adjacent to the lobby with an unobstructed view of the main entry and corridors. The reception desk shall be designed for one person and capable of serving both able and disabled personnel.

(b) Non Commissioned Officer in Charge (NCOIC) Office: Provide a private administrative office with a window for natural daylight and view. Window treatments are required.

(c) Officer in Charge (OIC) Office: Provide a private administrative office with a window for natural daylight and views. Window treatments are required.

(d) Classrooms (12 total): Provide classrooms that accommodate an instructor, 12 students, and necessary audio-visual equipment and reference areas. Each classroom shall have a window for natural daylight and view. Window treatments include blackout shades. Windows shall be positioned so as to avoid distractions in the room. Provide an operable partition between two of the classrooms for the option of creating a conference room.

(e) Distance Learning/Language Laboratory: Provide a learning center equipped with 16 student workstations, an instructor workstation, and necessary audio-visual systems. The Distance Learning/Language Lab shall have windows for natural daylight and view. Window treatments include black out shades. Windows shall be positioned so as to avoid distractions in the room.

(f) Oral Proficiency Interview Room: Provide a secure room for testing student aptitude in linguistic skills and other related topics. Layout of this room shall provide for six pre-manufactured and easily assembled testing booths and one instructor workstation.

(g) Multi-Purpose Room: Provide an auditorium for lectures, soldier training, ceremonies, and other meetings. Room shall utilize a fully integrated visual information/audio-visual system that includes audio-visual, and remote control equipment. The floor shall be flat and suitable for a variety of chair arrangements. Provide a handicapped-accessible platform at one end of the room. The platform shall be of sufficient height to ensure adequate sightline visibility for seated and standing

occupants. Provide operable partitions to divide the space into two separate assembly areas in addition to an area for the temporary storage of furniture. Include the services of specialized design consultant to properly address issues of lighting, acoustics, and audio-visual displays. Provide windows to allow natural daylight and views. Window treatments, including blackout shades, are required. The windows shall be positioned so as to avoid distractions within the room. The Multi-Purpose Room shall have direct pedestrian access to the exterior and the patio area, and comply with all applicable egress codes. Columns are prohibited in the Multi-Purpose Room.

(h) Kitchenette (2): Provide two separate break counters; one for administrative personnel and one for instructors. The Kitchenette for the administrative personnel shall have a counter with space for microwave, single sink, and storage cabinets (lower and upper). It shall have space for a full size refrigerator 28” wide. The Kitchenette for the instructors shall have a counter with space for microwave, single sink, and lower cabinets. Provide natural daylight or borrowed light through adjacent spaces on window wall. The design, location, and venting shall minimize food production noises and odors.

(i) Recyclable Area: Provide counter space and cabinet space below for recycling bins for glass, metal, office paper, newspaper, and cardboard, as well as organic waste.

(j) Reference Room: Provide a room for students to borrow books, periodicals, and other references applicable to learning foreign languages and cultures.

(k) Reproduction Room: Provide a room for production of learning materials and repair of media equipment and related materials.

(l) Audio-Visual Storage: Provide one room for audio-visual equipment to serve the Multi-Purpose Room.

(m) Storage: Provide one room for general storage to serve the Classrooms and Distance Learning/Language lab.

(n) Furniture Storage: Provide a storage space for chairs in the Multi-Purpose Room. Racks shall be utilized to ensure efficient stacking and delivery upon demand.

(o) Administrative Storage: Provide a storage space for file cabinets and office supplies in the Administrative Office.

(p) Lobby: Provide an open area from main entry vestibule for a lobby. The Lobby shall be adjacent to the Administrative Office and the Multi-Purpose Room, with secondary adjacency to the classrooms, restrooms, and utility rooms. A waiting area shall be located across from the reception desk’s control function. The Lobby shall express the purpose of the facility in a simple, business-like manner. The Lobby shall contain a space for display of SOF-provided historical and patriotic material, as well as a space for display of future ceremonial and educational events in the Multi-Purpose Room.

(q) Vestibule: Provide vestibules at each entry and egress way. The vestibules shall be designed to accommodate the anticipated number of personnel expected to use the entrances. The main entrance to the building shall be distinguished from the other entrances with larger fenestration and a canopy structure. Provide a minimum distance between successive doors as per applicable code requirements. Design the vestibules in conjunction with the mechanical and security systems in the building. Provide a recessed, drainable floor mat in each vestibule.

(r) Corridors: Provide a minimum 7-foot width for corridors with centered 6-foot wide tempered glass double doors with graphics defined by the Special Operations Force for egress and functional separation between the classroom section and the Multi-Purpose Room. Coordinate recessed fire extinguisher cabinets, electric panel closet doors, and other utility items with code requirements and interior design aesthetics.

(s) Men’s Restroom: Provide toilets, urinals, lavatories, and one shower stall to serve the public and administrative personnel assigned to the building. Provide wall hung partitions for toilet and urinal fixtures, and a dressing area with a wall hung 18-inch bench adjacent to the shower stall. The restroom, fixture dimensions, and layout clearances shall be designed to applicable accessibility criteria. Locate the restrooms away from acoustically sensitive learning areas or provide appropriate sound insulation in walls and ceiling. The number of fixtures shall be determined by a specified percentage of the total facility occupancy as determined by the APPLICABLE CRITERIA in Paragraph 4.

(t) Women’s Restroom: Provide toilets, lavatories and one shower stall to serve the public and administrative personnel assigned to the building. Provide wall hung partitions for toilet fixtures and a dressing area with a wall hung 18-inch bench adjacent to the shower stall. The restrooms, fixture count, and layout clearances shall be designed to applicable accessibility requirements. Locate the restrooms away from acoustically sensitive learning areas or provide appropriate sound insulation in walls and ceiling. The number of fixtures shall be determined by a specified percentage of the total facility occupancy as determined by the APPLICABLE CRITERIA.

(u) Janitor Closet: Provide a room for janitorial supplies and equipment for cleaning and maintenance.

(v) Mechanical, Electrical, Black and Red Communications Rooms, and Telecommunications Room: All utility rooms shall accommodate space for equipment maintenance/repair access without relocating other equipment. These rooms shall be keyed separately for access by installation maintenance personnel. Exterior access at grade is required for the mechanical room. Refer to Paragraphs 3.7 and 3.8 for additional Mechanical, Electrical and Telecommunications Requirements.

3.2.3 Space Allocation Table:

Name	Quantity	Occupancy	Minimum Net Area	Functional Requirements Note[1]
Administrative Office	1	3 + guests	365 SF	Provide sidelights
Reception Area	1	1	Per functional requirements	View to main entry and corridors
Non-Commissioned Officer in Charge Office	1		110 SF	Provide sidelights
Officer in Charge Office	1		120 SF	Provide sidelights
Classrooms	12	13	255 SF	Operable partition between two classrooms only
Distance Learning/ Language Lab	1	16	350 SF	Depressed slab and access flooring
Oral Proficiency Interview Room	1	7	355 SF	Sized for six manufactured soundproof booths
Multi-Purpose Room	1	364 minimum	3250 SF	Divide space by operable partitions; provide exterior doors that access the plaza and face the parade ground
Kitchenette	2		Per functional requirements	
Recycle Area	1 or divided into 2	0	Per functional requirements	Provide base cabinets with removable storage bins
Reference Room	1		240 SF	Sufficient space for nine 6-foot long bookcases and two cabinets
Reproduction Room	1		210 SF	
Audio-Visual Storage/ Storage	2	NA	70 SF each	
Furniture Storage	1	NA	Per functional requirements	Sufficient space to store a minimum of 364 stackable chairs on racks.
Administrative Storage	1	NA	Per functional requirements	See Furniture/Equipment/ Audio-Visual Chart
Lobby	1	1	Per functional requirements	
Vestibules			Per functional	For each entry door

Name	Quantity	Occupancy	Minimum Net Area	Functional Requirements Note[1]
			requirements	
Corridor			Per functional requirements	Tempered Glass in aluminum frames double doors with graphics to include logo of Special Forces Group and other graphics as specified by the government separating the classroom area from the multipurpose areas
Men's Restroom	1	By code	Per functional requirements	The men's restroom should accommodate 70% of the required fixtures based on the population demographic of the SOF
Women's Restroom	1	By code	Per functional requirements	The women's restroom should accommodate 30% of the required fixtures based on the population demographic of the SOF
Janitor Closet	1	NA	Per functional requirements	
Mechanical Room	1	NA		Exterior double doors
Electrical Room	1	NA	Per functional requirements	
Telecommunications Room	1		Per functional requirements	
Black Communications Room	1	77 SF	Per functional requirements	
Red Communications Room	1	77 SF	Per functional requirements	

Note 1 – See the table in 3.4.5.13 for additional furniture and audio-visual requirements.

The maximum size of the building is 13,500 gross square feet. The areas listed above are minimum net areas. A preference is to maximize the Multi-Purpose Room area to accommodate up to 420 personnel for a single event.

3.2.4 Room Adjacencies Table:

Description	Direct Adjacency: Party wall or shared space	Secondary Adjacency: separated by corridor or single room
Administrative Office	Non-Commissioned Officer in Charge Office; Officer in Charge Office; Administrative Storage; Lobby/Reception Area; Kitchenette	Classrooms; Multi-Purpose Room; Distance Learning/Language Lab; Vestibule
Reception Area	Lobby; Administrative Office; Vestibule	Multi-Purpose Room; 12 Classrooms
Non-Commissioned Officer in Charge Office	Officer in Charge Office; Administrative Office; Administrative Storage	Lobby; Reception Area; Kitchenette
Officer in Charge Office	Administrative Office; Non-Commissioned Officer in Charge Office; Administrative Storage	Lobby; Reception Area; Kitchenette
Classrooms	Distance Learning/Language Lab	Oral Proficiency Interview Room; Reference Room; Reproduction Room
Distance Learning/ Language Laboratory	Classrooms	Lobby; Reception Area; Telecommunications Room; Reproduction Room
Oral Proficiency Interview Room	Administrative Office	Reference Room; Classrooms; Distance Learning/Language Lab; Reproduction Room
Multi-Purpose Room	Lobby; Furniture Storage	Reception Area; Administrative Office; Vestibule
Kitchenette (for administration use)	Administrative Office	Lobby; Reception Area; Non-Commissioned Officer in Charge Office; Officer in Charge Office
Kitchenette (for instructors' use)	Classrooms	Oral Proficiency Interview Room; Distance Learning/ Language Lab
Reference Room		Classrooms; Oral Proficiency Interview Room; Distance Learning/ Language Lab
Reproduction Room		Classrooms; Oral Proficiency Interview Room; Distance Learning/ Language Lab
Audio-Visual Storage Room	Multi-Purpose Room	
Storage Room	Distance Learning/ Language Lab; Oral Proficiency Interview Room	Classrooms
Furniture Storage	Multi-Purpose Room	
Administrative Storage	Administrative Office; Non-Commissioned Officer in Charge Office; Officer in Charge Office	Lobby; Reception
Lobby	Vestibule; Reception Area; Administrative Office; Multi-Purpose Room	Classrooms; Restrooms
Vestibule	Lobby	Administrative Office; Multi-Purpose Room
Restrooms	Janitor Closet	Administrative Office; 12 Classrooms
Janitor Closet	Restrooms	
Mechanical Room	Electrical Room	Black Communications Room; Red Communications Room; Telecommunications Room
Electrical Room	Mechanical Room	Red Communications Room; Black Communications Room; Telecommunications Room
Telecommunications Room	Red Communications Room; Black Communications Room	Electrical Room; Mechanical Room

Description	Direct Adjacency: Party wall or shared space	Secondary Adjacency: separated by corridor or single room
Black Communications Room	Red Communications Room	Mechanical Room; Telecommunications Room; Electrical Room
Red Communications Room	Black Communications Room	Mechanical Room; Telecommunications; Electrical Room

3.3 SITE REQUIREMENTS

3.3.1 Pedestrian Walkways:

Construct pedestrian walks within the designated construction area from all exterior occupant user doorways and connect to existing sidewalks, where applicable. Pedestrian circulation shall be designed to encourage connectivity to adjacent sites, particularly those of the Special Forces complex such as Gabriel Field. Provide a direct walkway from the primary entrance of the facility toward the existing parking lot across Kentucky Avenue and incorporate a pedestrian crosswalk to cross the street. Provide additional crosswalks across Kentucky Avenue to accommodate convenient pedestrian routes from the existing parking lot that is to be improved as a Bid Option. Provide a walkway from the classroom wing to 42nd Street and incorporate a pedestrian crosswalk to cross the street. Provide a convenient pedestrian walkway from the facility to the dumpster area. Provide a sidewalk connection from the secondary entrance on the east side of the building, the mechanical yard gate and the Communications Room and Mechanical Room doors to the service access lane.

(a) The geometric design of walks for pedestrian circulation shall adhere to APPLICABLE CRITERIA found in Paragraph 4.

(b) Pedestrian sidewalks shall be a minimum of 6 feet wide. Sidewalks designed for service vehicle traffic shall be a minimum of 12 feet wide. Walks shall be located at least 5 feet from the foundation and beyond the eave drip line. Walks shall be handicapped accessible, in accordance with APPLICABLE CRITERIA.

(c) Construct non-vehicular pedestrian sidewalks of Portland Cement Concrete (PCC) having a minimum nominal thickness of 4 inches. Design joint patterns uniformly, symmetrical and in accordance with the American Association of State Highway and Transportation Officials (AASHTO) standards. Joint construction shall not exceed the length to width ratio of 1.25 for non-reinforced pavements.

(d) Sidewalks designed to support service and emergency vehicle traffic shall be considered roadway pavement and shall be designed to meet AASHTO standards. Vehicular support walks shall be constructed of PCC having a minimum nominal thickness of 6 inches. Design joint patterns uniformly, symmetrical, and in accordance with AASHTO standards. Joint construction shall not exceed the length to width ratio of 1.25 for non-reinforced pavements.

3.3.2 Site Structures and Amenities:

(a) Dumpster Area: Locate, design, and construct a dumpster enclosure area(s) and associated screening. Dumpster screening shall match the character and materials of the SOF-LSTF building and shall be designed in accordance with Installation Guidelines. Locate dumpster areas outside the 82-foot ATFP standoff distance, in accordance with APPLICABLE CRITERIA. New GFGI dumpsters shall be located to allow for servicing activities.

(b) Recycling Area: Locate, design, and construct a recycling enclosure and associated screening to accommodate segregated recyclable waste, including but not limited to paper, cardboard, glass, and cans. Recyclable screening shall match the character and materials of the SOF-LSTF building and shall be designed in accordance with Installation Guidelines. Locate recyclable areas outside the 82-foot ATFP standoff distance, in accordance with APPLICABLE CRITERIA. New GFGI recyclable containers shall be located to allow for servicing activities.

(c) Plaza Area: Provide a patio and outdoor activity area as a priced Bid Option.

(d) Signage: Site signage shall include a decorative, free-standing, lighted identification sign, compatible with the SOF-LSTF building materials, in a location to properly identify the site from the street. Pedestrian and vehicular traffic control signage shall be designed and installed in accordance with APPLICABLE CRITERIA.

(e) Utility Enclosures: All outdoor mechanical equipment within the 33-foot standoff distance shall meet ATFP requirements and shall be screened from streetscape and courtyard views to limit visual impact. Screening of equipment

shall be sight-tight and match the character and materials of the SOF-LSTF building. Height of screening shall be adequate to completely screen equipment from view. Screening shall be equipped with a top closure or otherwise designed, to prohibit entry of unauthorized items. Outdoor mechanical equipment within the 33-foot clear zone that does not face the streetscape or interior courtyards may be placed on an 18-inch high pedestal in lieu of an enclosure. The structure of the pedestal shall be constructed of materials with a maximum 4-inch thickness and shall result in 360-degree visibility around the equipment.

3.3.3 Site Functional Requirements:

(a) Privately Owned Vehicle (POV) Parking: For a facility within a complex of buildings, the parking requirement is 50 percent of the occupancy of the building. The existing parking area across Kentucky Avenue shall be used to accommodate parking for this facility, in lieu of providing on-site parking. At a minimum, provide re-striping for this entire existing parking area. As a priced Bid Option, the existing parking lot shall be resurfaced. Design of the POV parking area(s) shall be in accordance with the Installation's construction requirements. The POV parking shall be handicapped accessible in compliance with APPLICABLE CRITERIA. Please refer to Paragraph 5.2.3 "Vehicle Pavements" for additional POV parking information.

(b) Service Drives: Service drives shall be provided and located to service the mechanical room, mechanical yard, communications room, and electrical room, in accordance with APPLICABLE CRITERIA. Access to service drives shall be restricted with removable bollards, in conformance with ATFP requirements. Pavements shall be designed in accordance with Paragraph 5.2.3 "Vehicle Pavements". Minimum service drive width shall be 12 feet in width. The drives shall be designed and constructed to drain as appropriate per APPLICABLE CRITERIA.

(c) Fire Access Lanes: Provide at least one means of all-weather ground access for emergency vehicles to the building. The fire access lane and the service drive may be one in the same, provided uninterrupted emergency vehicle access is available to the building at all times and the drive is appropriately marked. Access must be a minimum width of 20 feet and be paved, or otherwise designed, to support the largest emergency vehicle at Fort Campbell (see Appendix DD). If structural grass pavers are used for fire access lane, concrete grade beams shall be provided on both sides for edge constraint and to identify the extents of the fire lane. Fire access lanes shall be designed in accordance with APPLICABLE CRITERIA and the Installation's requirements. Fire lane shall be designed to support an 80,000-pound fire truck with a curb return radius large enough to accommodate the largest emergency vehicle at the Installation. If structural grass pavers are used in lieu of full width paving for the fire lane, the structural grass pavers shall be installed as a system and shall meet the same performance criteria for concrete paving.

(d) Stormwater Management: Stormwater management (SWM) on the site shall be designed in accordance with APPLICABLE CRITERIA to provide water quality and quantity control. Roof drainage from the SOF-LSTF building shall be conveyed via underground storm sewer to discharge to the stormwater management system. Splash blocks are prohibited. SWM systems shall be designed to accommodate the 10-year, 24 hour storm event. Stormwater quality measures shall be designed to accommodate the first one-inch of runoff from impervious areas. Low Impact Development (LID) strategies shall be utilized to achieve SWM quality requirements.

The final Geotechnical Report shall provide recommendations for mitigating sinkhole development potential due to SWM infiltration at the project site. If SWM is provided via surface features, masonry sidewalls for SWM depressions shall be utilized. The features shall be visually compatible with the architectural character of the building. Surface SWM features shall be located outside the building 33-foot clear zone and be designed to enhance ATFP passive barriers. Surface SWM features shall be designed in accordance with recommendations provided in the final Geotechnical Report to minimize the impact to sinkhole potential areas. Underground SWM may be provided as a project Betterment, if determined to be feasible based on the site outfall invert elevation, with no mechanical pump required. Mechanical pumping of SWM facilities is prohibited. Storage from underground chambers shall ultimately discharge to the existing underground storm sewer system located at the south western portion of the site.

Stormwater quality and quantity controls shall be provided as surface features or underground (as a project Betterment). If designed as surface features, provide a series of retention facilities (outside the 33-foot building clear zone), or rain gardens, to collect and retain runoff to predevelopment levels. Provide infiltration facilities as a part of the rain garden design to accomplish water quality improvements per APLICABLE CRITERIA.

Stormwater management is the sole responsibility of the Contractor and will be inspected monthly by the Fort Campbell Environmental Division.

3.3.4 Demolition

Prior to the D-B Contractor commencing work, the Installation's Department of Public Works (DPW) shall provide hazardous material abatement, demolition of Building 3217, and pavement demolition. Building demolition shall include basement foundation walls, basement concrete, including, but not limited to, floor slab and foundation. Temporary backfill will be placed in the site depression remaining in the location of the demolished basement of Building 3217 (by others). Said backfill will be placed only for temporary positive drainage until such time as the D-B Contractor begins site construction. This temporary fill will not be suitable to support new construction. Remove all existing temporary fill from the site and the former basement area, and provide stabilized structural fill to support the new facilities based on the D-B Contractor's geotechnical analysis and structural design.

Pavement demolition shall include removal of parking lot and sidewalks. The DPW shall stabilize the site for temporary drainage and provide temporary fill in the basement area for safety. The Government expects the Building 3217 to be removed from the site by 01 September 2010.

The D-B Contractor shall remove all remaining on-site utilities. Temporary backfill in the basement shall be removed by the D-B Contractor and replaced with stabilized structural fill to support construction of the proposed facility as designed by the D-B Contractor's structural engineer.

3.4 ARCHITECTURAL REQUIREMENTS

3.4.1 Non Destructive Emergency Access System:

Not Used

3.4.2 Finish Hardware:

Provide a commercial finish hardware system compatible with Fort Campbell requirements. Extension of the existing system shall be provided. See Paragraph 6.5.2.6d.

All requirements for hardware keying shall be coordinated with the Contracting Officer at Fort Campbell. Locksets for mechanical, electrical, and communications rooms shall be keyed to the existing Installation Master Keying System. Hasps and padlocks shall not be used. The HVAC terminal units that are accessed from a central corridor shall have a deadbolt to minimize protrusion into the corridor. The biting list shall be added to the keying schedule. Four blank keys are to be provided with each change key. Knobs and NOT levers shall be provided on all doors. Panic device hardware shall be a touch pad type. Concealed door closers are required unless prior DPW approval is obtained for an alternative. Door stops are required at all interior and exterior locations. Electrical pad-mounted transformer locks shall be included in the contract.

3.4.3 Special Acoustical Requirements:

Exterior walls and roof/floor/ceiling assemblies, doors, windows, and interior partitions shall be designed as a contained envelope to provide for control of reverberation, a balanced spectrum of absorption and reflectivity, and attenuation of incoming background and external noise sources, and outgoing noise sources in accordance with APPLICABLE CRITERIA. The D-B Contractor shall engage an acoustical design consultant and an audio-visual design consultant to determine the appropriate Noise Criteria (NC) and Sound Transmission Class (STC) criteria. Although specialized zones of the buildings require more acoustical attenuation than other areas, the entire building shall be assessed for acoustical interconnectivity in sound quality and noise control. Rooms that include special attenuation are the classrooms, the Distance Learning/Language Lab, the Oral Proficiency Interview Room, and the Multi-Purpose Room. The complete envelope of floors, walls (including operable partitions), ceiling, doors, and windows shall be assessed for absorption and reflectivity within their own space, in relation to adjacent spaces, and in relation to the proximity of mechanical, electrical, and plumbing systems and devices in accordance with the APPLICABLE CRITERIA in Paragraph 4. Specific minimum room criteria includes the specifying of a Noise Criteria (NC) rating and Sound transmission Class (STC) rating by selecting finishes over structural systems for each of the basic architectural components in accordance with APPLICABLE CRITERIA. At a minimum, these specialized areas shall have the following ratings: Acoustical Ceiling Tile; Ceiling Attenuation-Class (CAC 39); Gypsum Board Ceiling: Sound Transmission Class (STC 50) & Noise Criteria (NC 30); Sound Walls: Sound Transmission Class (STC 50) & Noise Criteria (NC 30); Operable Partition Systems: Sound Transmission Class (STC 50) and Glass Windows: Sound Transmission Class (STC) 45; Doors shall be gasketed and equipped with astragals to maintain a minimum rating of STC 35.

3.4.4 Exterior Design Objectives:

Provide sustainable materials and finishes that are durable and easily maintainable. Do not use exterior materials that require periodic repainting or similar refinishing processes. Material exposed to weather shall be factory pre-finished, integrally colored or provided with intrinsic weathering finish, and caulked and sealed. The exterior massing and finishes of the building shall be compatible with the Installation and set the tone and palette of the entire SOF complex in this area. See Appendix F for guidance on appropriate architectural character for the facility.

3.4.4.1 Exterior Walls:

Material other than concrete masonry units (CMU) or other masonry material, when used as an exterior finish material, shall be in conjunction with a CMU wainscot. An Exterior Insulation Finish System (EIFS) is prohibited. Provide insulation to obtain a minimum R-19 value for exterior walls in coordination with the HVAC system design.

3.4.4.2 Roof:

Minimum roof slope for flat roofs shall be 1/4-inch per foot. Minimum slope for a pitched roof is 3:12. Roofs of the EPDM type are prohibited. Provide a roof drainage system that directs storm water away from the building to the stormwater management system. Splash blocks are prohibited. Provide insulation to obtain a minimum R-30 value in coordination with the HVAC system design.

3.4.4.3 Trim and Flashing:

Gutters, downspouts, and fascias shall be provided if applicable to roof type. Trim and flashing shall be factory pre-finished and shall comply with the SMACNA Architectural Sheet Metal Manual. Provide efficient roof drainage that prevents water from infiltrating the building and directs it away to an outside storm drainage system.

3.4.4.4 Bird Habitat Mitigation:

Provide details in the design necessary to eliminate the congregating and nesting of birds at, on, and in the facility.

3.4.4.5 Exterior Doors and Frames:

(a) Main Entrance Doors - Provide aluminum storefront doors and frames with Architectural Glass 1 anodized finish, fully glazed, caulked and sealed, with medium or wide stile for entry into lobbies or corridors. Framing systems shall have thermal-break design. Storefront systems shall comply with wind-load requirements of applicable codes and ATFP criteria.

(b) Other Exterior Doors - Provide galvanized insulated hollow metal exterior doors for entry to all spaces other than corridors, vestibules, and lobbies. Doors and frames shall comply with ANSI A250.8/SDI 100 and APPLICABLE CRITERIA. Doors shall be heavy duty (grade 2) 16 gage insulated metal door, top edge closed flush, and A60 galvannealed. Frames shall be 12-gauge, with continuously welded mitered corners and seamless face joints. Doors and frames shall be constructed of hot dipped zinc coated steel sheet, commercial steel, Type B, minimum A40 coating weight; factory primed. Fire-rated openings shall comply with applicable codes, and the requirements of the labeling authority. Door and frame installation shall be caulked and sealed, and comply with applicable codes for ATFP and APPLICABLE CRITERIA.

3.4.4.6 Exterior Windows:

Provide insulated, high efficiency window systems, with thermally broken frames complying with ATFP requirements and other APPLICABLE CRITERIA. Curtain wall systems shall be capable of withstanding area wind loads, thermal and structural movement as required by location, project requirements, Window glazing shall be laminated to comply with ATFP requirements and other APPLICABLE CRITERIA. Windows shall be fabricated with low ‘e’ glazing and be coordinated with the mechanical engineering design requirements. Window sills shall be designed to discourage bird nesting.

3.4.4.7 Louvers:

Provide louvers and other air intakes that are sized and located in coordination with mechanical engineering requirements, ATFP criteria, and other APPLICABLE CRITERIA. Louvers shall be designed to complement the aesthetic appearance of the building. Exterior louvers shall exclude wind-driven rain and withstand wind loads in accordance with the applicable codes. Wall louvers shall bear the Air Movement & Control Association (AMCA) International certified ratings program seal for air performance and water penetration in accordance with APPLICABLE CRITERIA. Louvers shall be equipped with bird screens. Louver finish shall be factory applied and color shall match adjacent finish.

3.4.5 Interior Design Objectives:

Provide sustainable materials and furnishings that are easily maintained and replaced. Maximize use of daylighting and views. Provide interior surfaces that are easy to clean and light in color.

3.4.5.1 Display Case:

Provide one recessed display case near the main entrance Lobby and Reception Area adjacent to the Administrative Office and Multi-Purpose Room. The display case shall have a header panel and lockable, glazed doors. See Furniture/Equipment/Audio-Visual Chart in 3.4.5.13.

3.4.5.2 Corner Guards:

Provide surface mounted, high impact resistant, integral color, snap-on type resilient corner guards, extending from floor to ceiling at wall and column outside corners in high traffic areas. Factory fabricated closure caps shall be furnished for the top and bottom of surface mounted corner guards.

3.4.5.3 Chair Rail:

Chair rails shall be installed in areas prone to high impact use. See INTERIOR FINISHES table in 3.4.5.11 for designated rooms and areas.

3.4.5.4 Millwork:

Provide cabinets complying with Architectural Woodwork Institute Standards. Countertops shall have waterfall front edge and 4-inch integral backsplash.

3.4.5.5 Fire Extinguisher:

Furnish and install recessed fire extinguisher cabinets and mounting brackets as required by APPLICABLE CRITERIA. The Fort Campbell Department of Public Works (DPW) shall provide fire extinguishers.

3.4.5.6 Interior Doors, Sidelights, and Frames:

Provide hollow metal doors, or flush solid core wood doors as required. All door frames shall be hollow metal. The STC ratings shall meet the sound classification required and include the entire door and frame assembly. Provide 6-foot aluminum framed tempered glass double doors to include logo of Special Forces Group and other graphics as specified by the government at corridor between classroom and administrative/multi purpose area to offer functional and programmatic separation of the training, administrative and assembly functions of the building.

(a) Wood doors - Provide flush solid core wood doors conforming to the APPLICABLE CRITERIA. Stile edges shall be non-finger jointed hardwood compatible with face veneer. Provide Architectural Woodwork Institute (AWI) grade ‘A’ hardwood face veneer for transparent finished doors. Also refer to Paragraph 3.4.3 “Special Acoustical Requirements”.

(b) Insulated Hollow Metal Doors - Comply with APPLICABLE CRITERIA. Doors shall be minimum Level 2, physical performance Level B, Model 2; factory primed. Provide insulated hollow metal doors for utility rooms, storage rooms, and restrooms. Also refer to Paragraph 3.4.3 “Special Acoustical Requirements”.

(c) Hollow Metal Frames - Comply with APPLICABLE CRITERIA. Frames shall be minimum Level 2, 16 gauge, with continuously welded mitered corners and seamless face joints, and factory primed.

(d) Fire-rated and Smoke Control Doors and Frames - Comply with applicable codes, criteria, and labeling requirements.

(e) Provide sidelights in conjunction with interior doors in rooms indicated in Paragraph 3.2.2 “Functional Space Requirements”. Sidelights shall be provided with tempered glass per APPLICABLE CRITERIA.

(f) Provide Special Forces logo on glass at interior doors separating classroom corridor from the rest of the building.

3.4.5.7 Window Treatment:

Provide commercial grade, horizontal, and room-darkening blinds with a minimum of 15 slats per foot at each exterior window. Provide the same for interior windows where privacy is required. Blinds shall meet all APPLICABLE CRITERIA. Provide blackout shades per INTERIOR FINISHES table in 3.4.5.11. Blackout shades, where required, shall be 100% blackout fabric with blackout sill and side channels for engaging the roller shade. Coordinate with the electrical engineer for lighting control. See Section 01 10 00, Paragraph 5.3.5.6.

Provide energy efficient solar shading systems for exterior windows. The system shall maintain visibility while reducing glare, solar heat gain during the summer, and heat loss during the winter. Openness configuration shall be no more than 5% for most areas. The system fabrics and components shall be dimensionally stable and shall be manufactured to withstand fading, fire, mildew, and soiling.

3.4.5.8 Toilet Accessories:

Furnish and install the items listed below and all other toilet accessories necessary for a complete and usable facility. All toilet accessories shall be Type 304 stainless steel with satin finish.

(a) Public Toilets/Showers: Accessories shall include the following items.

1. Glass mirrors on stainless steel frame and shelf
2. Liquid soap dispenser at each lavatory
3. Combination recessed mounted paper towel dispenser/waste receptacle
4. Sanitary napkin disposal at each female toilet
5. Recessed mounted lockable double toilet paper roll holder
6. Sanitary toilet seat cover dispenser, one per restroom
7. Grab bars as required by applicable accessibility criteria
8. Shower curtain rod, curved extra heavy duty
9. Shower curtain, white anti-bacterial nylon/vinyl fabric shower curtain to completely close the shower stall width
10. Soap dish in pre-fabricated accessible shower
11. Robe hook, adjacent to shower stall entry
12. Wall hung bench
13. Electrical hand dryer
14. Sanitary napkin supply dispenser

3.4.5.9 Mold and Mildew Mitigation:

The designer of record shall provide details in the design analysis and design that show the methods taken to mitigate the potential growth of mold and mildew in the facility.

3.4.5.10 Interior Wall and Ceilings:

(a) Provide 5/8-inch gypsum board walls and 1/2 inch for ceilings unless fire-rated or otherwise noted. Gypsum board shall be paperless. Provide water-resistant gypsum board on walls and ceilings in wet areas such as restrooms, janitor closet, kitchenettes, and recycling area. Provide fire-rated assemblies where required per the APPLICABLE CRITERIA in Paragraph 4.

(b) Provide concrete masonry walls where appropriate per acoustics, fire-rated assemblies, structural, aesthetic, or other reasons per APPLICABLE CRITERIA.

3.4.5.11 Minimum Interior Finishes - General:

(a) Finish designers are not limited to the minimum finishes listed in the following INTERIOR FINISHES table and are encouraged to offer higher quality finishes.

(b) Floor, Base, Walls, and Ceiling finishes shall conform to the requirements of APPLICABLE CRITERIA. Where code requirements conflict, the most stringent code requirements shall apply.

(c) Floor and Base Finishes:

Carpet shall be a minimum of 2 yarn ply, modular tile conforming to ISO 2551, ASTM D 418, ASTM D5793, ASTM D 5848, commercial 100% branded (federally registered trademark) filament.

Vinyl composition tile (VCT) shall be minimum 1/8-inch thick, conforming to ASTM F 1066, Class 2, through pattern tile, Composition 1, asbestos free, with color and pattern uniformly distributed throughout the thickness of the tile.

Ceramic tile shall be impervious unglazed floor tile, minimum 1/16-inch joint width, with latex cement mortar and integral sanitary cove base.

Drainable floor mat shall be recessed, heel-proof, and carpeted on an aluminum frame.

Sealer coat shall be provided on concrete floors in rooms indicated in the INTERIOR FINISHES table.

(d) Wall Finishes:

Paint is described in Paragraph 3.4.5.12.

Acoustical panels shall be light-weight and made from recycled content with a Class A fire rating. Panel should not contain volatile organic compounds (VOCs), fiberglass, or formaldehyde. Panels must be fungi and mold/mildew resistant.

Ceramic wall tile shall be commercial grade glazed tile with a minimum coefficient friction of 0.6, and a minimum 1/16-inch joint width, with latex cement mortar. Provide with flat-top cove base and bullnose and trim pieces. Tile must meet ASTM C1028.

(e) Ceiling Finishes:

Paint is described in Paragraph 3.4.5.12.

Acoustical Ceiling Tile (ACT) with grid shall have washable, impact and soil resistant lay-in tiles. The ACT shall be made from a minimum 70% recycled content and 0.80 Light reflectance, Noise reduction Coefficient (NRC) 0.60, Ceiling Attenuation Class (CAC) 35. Refer to Paragraph 3.4.3 “Special Acoustical Requirements” for designated rooms and areas.

INTERIOR FINISHES TABLE

SOF Language Sustainment Training Facility Interior Finishes															
Name	**Floors**					**Wall Base**		**Walls**				**Ceiling**			**Remark**
	Resilient Flooring	Ceramic Tile	Recessed Entry Mat	Sealed Concrete	Carpet Tile	Resilient Base	Ceramic Base	-Paint	Ceramic Tile	Laminated Glass, Insulated Storefront System	Chair Rail, Painted	Paint	Acoustical Ceiling Tile	Minimum Finish Height '9-'0" unless stated Otherwise	
Administrative Office					●	●		●					●	●	5
Administrative Storage	●					●		●					●	●	
Audio-Visual Storage/ Storage	●					●		●					●	●	
Black Communications Room				●		●		●						●	
Classrooms	●					●		●					●	●	4, 8, 9
Corridors	●					●		●			●		●	●	
Distance Learning/ Language Lab	●					●		●					●	●	4, 8, 9
Electrical Room				●		●		●						●	
Kitchenette	●					●		●					●	●	
Recycle Area	●					●		●					●	●	
Furniture Storage					●	●		●					●		
Janitor Closet				●		●		●				●		●	2
Lobby	●					●		●			●	●	●	●	
Multi-Purpose Room					●	●		●			●		●		4, ,5, 8, 9
Mechanical Room				●				●						●	4
Restrooms		●					●	●	●			●		●	1
Non-Commissioned Officer in Charge Office					●	●		●					●	●	5, 8
Officer in Charge Office					●	●		●					●	●	5, 8
Oral Proficiency Interview Room	●					●		●					●	●	5, 8, 9
Red Communications Room				●		●		●				●	●	●	
Reference room	●					●		●					●	●	

SOF Language Sustainment Training Facility Interior Finishes															
Name	Floors					Wall Base		Walls				Ceiling			Remark
	Resilient Flooring	Ceramic Tile	Recessed Entry Mat	Sealed Concrete	Carpet Tile	Resilient Base	Ceramic Base	Paint	Ceramic Tile	Laminated Glass, Insulated Storefront System	Chair Rail, Painted	Paint	Acoustical Ceiling Tile	Minimum Finish Height '9-'0" unless stated Otherwise	
Reproduction Room	●					●		●					●	●	
Telecomm. Room				●		●		●					●	●	3
Vestibule		●	●				●	●		●		●		●	6, 7

1. All wet walls in toilet rooms shall have 60-inch high ceramic tile wainscot. All showers shall have full height tile on walls.
2. Walls adjacent to mop sink shall have 4-foot high ceramic tile wainscot or painted CMU.
3. Ceiling may be painted exposed structure if consistent with mechanical design and allowed by applicable codes.
4. Coordinate room acoustics with an acoustical design consultant by selecting finishes as per the criteria stated in Paragraph 3.4.3.
5. Provide commercial grade carpet tiles.
6. Provide drainable floor mat in vestibules to minimize the entry of pollutants into buildings.
7. Return exterior wall finish into vestibule as interior finish material.
8. Provide window treatments.
9. Provide blackout shades.

3.4.5.12 Minimum Paint Finish Requirements:

(a) All paints shall be listed on the 'Approved product list' in the Master Painters Institute (MPI). Application criteria shall be as recommended by the MPI guide specifications for the substrate to be painted and the environmental conditions existing at the project site.

(b) Exterior surfaces, except factory pre-finished material or exterior surfaces receiving other finishes shall be painted a minimum of one prime coat and two finish coats. Paints having a lead content over 0.06 percent by weight of nonvolatile content are unacceptable. Paints containing zinc chromate, strontium-chromate, mercury or mercury compounds, or confirmed or suspected human carcinogens, shall not be used on this project. Exterior paints and coating products shall be classified as containing low volatile organic compounds (VOCs) in accordance with MPI criteria. Application criteria shall be as recommended by MPI guide specifications. Provide an MPI Gloss Level 5 Finish (Semi-gloss), unless otherwise specified.

(c) Interior surfaces, except factory pre-finished material or interior surfaces receiving other finishes, shall be painted a minimum of one prime coat and two finish coats. Paints having a lead content over 0.06 percent by weight of nonvolatile content are unacceptable. Paints containing zinc-chromate, strontium-chromate, mercury or mercury compounds, or confirmed or suspected human carcinogens, shall not be used on this project. Interior paints and coating products shall contain a maximum level of 150g/l (grams per liter) of volatile organic compounds (VOCs) for non-flat coatings and 50 g/l of VOCs for flat coatings. Provide an MPI Gloss Level 5 Finish (Semi-gloss) in wet areas and a flat finish in all other areas.

3.4.5.13 Facility Furniture/Equipment/Audio-Visual Chart:

Name	Furniture/Equipment	Audio-Visual
Administrative Office	3 desks, 3 ergonomic chairs, 3 lateral file cabinets, 1 4-drawer minimum 500-pound safe, reception desk, 3 standard guest chairs, 3 coax cable drops, fax, copier, printer, shredder, 3 NIPRnet drops, 3 SIPRnet drops, 1 book shelf, 3 telephone drops	3 telephone intercoms
Reception area	1 reception desk, 1 ergonomic chair, 1 lateral file, 1 NIPRnet drop, 1 SIPRnet drop	1 telephone intercoms
Non-Commissioned Officer in Charge Office	1 desk, 1 ergonomic chair, 2 guest chairs, 1 lateral file cabinet, 1 NIPRnet drop, 1 SIPR drop, 1 coax cable drop, 1 telephone drop	1 telephone intercom
Officer in Charge Office	1 desk, 1 ergonomic chair, 2 guest chairs, 1 lateral file cabinet, 1 bookcase, 1 NIPRnet drop, 1 SIPR drop, 1 coax cable drop, 1 telephone drop	1 telephone intercom
Classrooms	For each classroom: 1 instructor desk, 1 ergonomic chair, 1 conference table for 12 students, 12 standard chairs, 1 computer desk, 1 desk chair, 1 lateral file cabinet, 2 bookcases, 3 NIPRnet drops, 4 coax cable drops, 1 telephone drop, 1 operable partition to enlarge two classrooms into one large room, blackout shades	For each classroom: 1 interactive whiteboard, 1 computer for interactive whiteboard, 1 VTC (for the classrooms with partition only), 1 ceiling mounted interactive whiteboard projector, 1 TV, 1 DVD player, 1 telephone intercom
Distance Learning/ Language Lab	1 instructor desk, 16 workstations having side privacy screens that extend from the worksurface to 4' AFF for each station, 17 ergonomic chairs, 1 computer desk, 1 desk chair, 1 lateral file cabinet, 17 NIPRnet drops, 16 SIPRnet drops, 1 coax cable drop, 2 telephone drops, black out shades, access flooring	1 wall-mounted 42" plasma TV, 1 interactive whiteboard, 1 interactive whiteboard computer, 1 ceiling mounted interactive whiteboard projector, 2 telephone intercoms
Oral Proficiency Interview Room	Six 4'x4' x7' soundproof booths, 1 desk, 1 ergonomic chair, 1 NIPRnet drop, 7 telephone drops (w/separate phone numbers), blackout shades	7 telephone intercoms
Multi-Purpose Room	Movable seating for minimum of 364 persons, raised accessible platform, lectern, operable partition to divide room into two assembly areas, 2 SIPRnet drops, 4 NIPRnet drops, 4 RG-6 coax cable drops (2 DishNet and 2 CATV), 2 telephone drops, 1 commercial CAT6 data drop located in optimal location for a wireless router, blackout shades	2 wall mounted 65" plasma screens, 2 ceiling mounted projectors, 2 interactive whiteboards, 2 interactive whiteboard computers, 2 ceiling mounted interactive whiteboard projectors, 2 projection screens, 2 telephone intercoms, 1 wireless router, separate mass notification panel
Kitchenette	Kitchenette for administrative personnel: countertop with wall and base cabinet with sink, disposal, and recycling slots and bins; refrigerator, microwave oven, coffee maker. Kitchenette for instructors: countertop with wall and base cabinets with sink, disposal, microwave oven, and coffee maker.	
Recycle Area	Counter and base cabinet with recycling slots and bins	
Reference room	Nine 6' long bookcases, 2 locking cabinets, 1 telephone drop	1 telephone intercom
Reproduction Room	1 desk, 1 ergonomic chair, 2 copy machines, 1 lateral file, 1 bookcase, 1 storage cabinet, 1 layout table, recycling containers, 1 coax cable drop, 1 telephone drop	1 telephone intercom
Audio-Visual Storage Room and Storage Room	For each: 1 small table, two 6' long bookcases 1 telephone drop	1 telephone intercom each

Name	Furniture/Equipment	Audio-Visual
Furniture Storage	Movable stacking chair racks for a minimum of 364 chairs	None
Administrative Storage	3 lateral file cabinets, 1 safe, shelving	None
Lobby	Artifacts cabinet or recessed wall display case (TBD), 1 coax cable drop	1 telephone intercom
Vestibules	0	None
Corridors	Recessed fire extinguisher cabinets, 1 commercial CAT6 data drop located in optimal location for a Wireless router to serve the classrooms.	Intercom, 1 Wireless router located in classroom corridor.
Men's Restroom	Low flow toilets within partitions (1 is accessible and provided with grab bars), waterless urinals, lavatories (1 is accessible), 1 accessible shower with changing area, toilet accessories	None
Women's Restroom	Low flow toilets within partitions (1 is accessible and provided with grab bars), lavatories (1 is accessible), 1 accessible shower with changing area, and toilet accessories	None
Janitor Closet	Floor mounted mop sink, mop and broom rack, hose bib, storage shelf	None
Mechanical Room	HVAC, HHW and CHW pumps, domestic hot water heater, Heating Hot Water boilers, fire riser system, 1 telephone drop	1 telephone intercom
Electrical Room	1 main, 2 electrical panels	None
Telecommunications Room	CATV and commercial telecom, DISH Network, De Marc panels, PBX, router, 2 racks, 1 telephone drop	1 telephone intercom
Black Communications Room	2 racks, 6160, 1 telephone drop	Black comm. equipment, 1 telephone intercom
Red Communications Room	2 racks, 6160, encryption server, 1 telephone drop	Red comm. equipment, 1 telephone intercom

3.6 STRUCTURAL REQUIREMENTS

3.6.1 General:

Design and construct as a complete system in accordance with APPLICABLE CRITERIA found in Paragraph 4.

3.6.2 Live Loads:

Live loads shall be per IBC but not lower than the following minimums:

Classrooms: 40 PSF

Offices: 50 PSF

Assembly Areas (removable seats): 100 PSF

Corridors: 100 PSF

Mechanical Room: 150 PSF

Roof: 20 PSF

3.6.3 Design Criteria/Standards and Applicable Codes

The applicable design and construction criteria references are identified in Paragraph 4, APPLICABLE CRITIERIA.

3.6.3.1 Lateral Analysis and Design:

The D-B Contractor is responsible for providing both a wind and a seismic analysis and design in sufficient manner to demonstrate that all structures possess the lateral stability required by the APPLICABLE CRITERIA.

3.6.3.2 Foundation Design:

Foundation shall be designed to suit subsurface conditions, and shall be capable of transmitting all building loads to the ground. Subsurface soil information is included in other portions of this RFP. Foundation design shall comply with the APPLICABLE CRITERIA.

Any included subsurface data and information is only for the D-B Contractor's information and is not guaranteed to fully represent all subsurface conditions. The Government shall not be responsible for any interpretation or conclusion by the D-B Contractor drawn from the data or information. Any geotechnical report included with site investigation data is provided only to better convey data (boring logs, testing, etc.) or to document observed site conditions. The assumptions, analysis, and recommendations of the accompanying report were developed for preliminary planning purposes only and may not be based upon present project requirements.

The D-B Contractor is required to retain a geotechnical engineer experienced and licensed in the geographic region of the project to interpret the provided data as related to his design concept and develop requirements for bidding. Additional requirements for the geotechnical design of this project are provided elsewhere in this RFP. In addition to tests indicated in Section 01 33 16, the Contractor shall provide Loss of Ignition (LOI) testing in accordance with the Louisville District Design Guide (LDDG).

Minor variations between borings should be anticipated. The D-B Contractor shall bear all costs associated with the site preparation and actual foundation except as allowed by the Contract Clause FAR 52.236-2, "Differing Site Conditions". The Contractor's Geotechnical Engineer shall perform additional subsurface investigation as required to adequately determine all applicable geotechnical factors including the type and capacity of the project foundation(s). The Contractor's Geotechnical Engineer shall consider the provided information and any additional information obtained and prepare a report as described in other portions of this RFP.

3.6.3.3 Superstructure:

Wood construction shall not be allowed for framing, members, diaphragms, or other structural elements.

3.7 MECHANICAL REQUIREMENTS

3.7.1 Plumbing:

The domestic water system, from the service line connection to the all of the fixtures, shall conform to APPLICABLE CRITERIA with regard to design, fittings, and selection of materials. Pipe sizing and system design shall be based on all plumbing fixtures called out in the final building design. The D-B Contractor shall fully comply with the Fort Campbell requirement disallowing dead-end piping and requiring all domestic water piping to be looped. Domestic water connections to mechanical equipment shall be protected with backflow preventers.

The drainage system, from each fixture down to the sewer service line connection, shall conform to APPLICABLE CRITERIA with regard to design, fittings, and selection of materials.

The natural gas supply system, from the service line connection up to each gas-burning appliance, shall conform to APPLICABLE CRITERIA with regard to design, fittings, and selection of materials. The intention is to have no natural gas fired devices inside the building other than in the mechanical room. Some of the outdoor packaged HVAC equipment may require natural gas service.

As the roof of the building is intended to be a conspicuous design feature, the D-B Contractor shall coordinate plumbing vents with the overall roof design to minimize the visual impact. Consolidate plumbing vent lines inside the building to the maximum extent possible, in order to minimize roof penetrations.

Provide lavatories and water closets, showers, electric water coolers, and a janitor sink, as well as other fixtures that may be required in the final building design, for a complete and fully-functional domestic water system, including domestic hot water. Non-freezing hose bibbs shall be provided on each of the four exterior wall orientations of the building.

Refer to APPLICABLE CRITERIA for specific performance requirements of these items:

1. Lavatories: Note that the required Domestic Hot Water storage temperature may be at or above 140F to prevent Legionella growth. Provide with water-saving nozzles and anti-scald valve sets, or a centralized temperature modulating device upstream.
2. Water Closets: Water-saving type
3. Showers: Water-saving showerheads with anti-scald valve set
4. Custodial Sink: Standing utility sink with anti-siphon air breaker
5. Hose Bibbs: Freeze-protected type set inside the building wall.
6. Urinals: Water-Free type

The domestic hot water system shall be provided with a small recirculation loop system to keep hot water immediately available at the fixtures.

The Hot Water Heater shall be of a high quality commercial design, natural gas fueled, with a high efficiency burner that derives all combustion air from the outside. The water heater shall be placed in the mechanical room. The storage capacity and recovery rate of the hot water heater shall be selected based upon APPLICABLE CRITERIA for the plumbing fixtures in the building. The water heater storage capacity must not exceed 120 gallons, as this will require the water heater to obtain an air quality permit. Note that the hot water storage temperature must be high enough to control Legionella growth per APPLICABLE REQUIREMENTS.

3.7.2 Heating Ventilation and Air-Conditioning (HVAC):

The HVAC system for the building will be separated into two separate air handling systems; one serving the Multi-Purpose room only (Multi-Purpose Room Section), and the other serving everything else in the building (Classroom Section). This is desirable as the usage patterns for the two areas are very different, with the Classroom Section being mostly a steady part-load, and the Multi-Purpose Room Section being an intermittent but sudden maximum load. The two systems are generally intended to be independent in terms of heating and cooling generation; however, the chilled water and heating hot water systems may serve both air handlers, provided this can be done efficiently, without oversized equipment and excessive cycling or energy waste. Only zero-ODP refrigerant shall be used in equipment.

The mechanical room is the preferred location for most of the mechanical equipment. However, due to restrictions of building square footage, mechanical equipment that does not fit in the mechanical room shall be installed outdoors in an ATFP-compliant equipment area with visual screening. An attempt should be made to confine all natural gas fueled equipment inside the mechanical room, and all refrigerant-containing equipment outdoors. If this is not possible, observe all APPLICABLE CRITERIA regarding combustion air of gas-fueled equipment and design of mechanical rooms containing refrigerant. In designing equipment layout, provide manufacturer’s recommended service access to all equipment.

All return air shall be ducted back to the respective Air Handling Unit (AHU). Return air plenum ceilings are not acceptable due to the sound isolation required in the building. Supply and return air duct is to be lined where necessary to reduce sound transmission between classrooms and originating from HVAC equipment.

In all cases, diffusers shall be carefully sized and selected for proper discharge air pattern, velocity and mounting height per APPLICABLE CRITERIA. Do not oversize diffusers and do not use a single, overly large standard size diffuser throughout the building. For lay-in ceilings, diffuser and grilles smaller than 24”x 24” shall be fitted into a 24”x 24” painted steel pan for convenient installation in the ceiling grid. Do not cut small diffusers and grilles directly into acoustic ceiling tiles.

Do not use volume dampers mounted at the grille or diffuser face; use duct volume dampers at the branch duct takeoff. Perforated diffusers and diffusers or grilles with adjustable (hinged) louver blades shall not be permitted.

Air supply shall generally be from ceiling diffusers. In areas where ceilings are over nine feet in height, the supply air shall have a combination of ceiling diffusers and adjustable wall registers to reduce stratification in heating mode. Floor diffusers and grilles are prohibited for this project because they collect dirt, are prone to furniture blockage, and physically deteriorate from foot traffic.

Custom-built HVAC equipment is prohibited for this Installation. All units must be manufacturers’ standard available models.

3.7.2.1 HVAC Design: Classroom Section

The Classroom Section of the building shall be served by a single-duct VAV (Variable Air Volume) system with hot water reheat coils. Supply and return air originate with the classroom VAV air handling unit in the mechanical room. No fan-powered VAV boxes or any fans above the classrooms will be permitted. If the ceiling is of lay-in type, it is acceptable to install simple reheat-only VAV boxes above the classroom ceilings. Coordinate location of VAV boxes to avoid service access conflicts with lights or other ceiling fixtures. Rooms with hard ceilings shall not have mechanical equipment installed above them. The HVAC system-generated noise in any classroom shall not exceed NC-30 at maximum design airflow conditions.

All classrooms and other major rooms in the Classroom Section of the building shall have their own VAV box and functioning independent control zone. The classrooms, OIC and NCOIC offices specifically shall have locally-adjustable thermostats with a numeric readout of existing space temperature and space temperature setpoint. Classrooms divided by a stacked folding wall shall have thermostats and control zones on both sides of the wall, with the duct system designed as if the walls were permanently deployed. The remaining rooms in the Classroom Section shall have temperature sensors only, with the setpoint temperature for each space programmed at the BAS (Building Automation System) level. See Building Zone Control Matrix in this section.

Provide a humidity sensor in the occupied space. This sensor shall signal the AHU control program to utilize cooling and heating coils as necessary to keep space humidity within required parameters at all times per APPLICABLE CRITERIA in Paragraph 4.

3.7.2.2 HVAC Design: Multi-Purpose Room Section

The Multi-Purpose Room shall be served by an air-cooled, self-contained system that incorporates heating, cooling, fans and air filtration. Due to the limited interior space available in the mechanical room, it is assumed that this unit will be an outdoor package system that is ducted through the wall into the Multi-Purpose Room. If it is possible to install this equipment completely or partially indoors without increasing the allocated mechanical room area, this design option may be pursued.

A folding wall shall be installed across the Multi-Purpose Room; therefore HVAC design must treat each side of the wall as a separate zone. The unit must be able to efficiently and independently control both zones, or two smaller units will be required. Design space conditions shall conform to APPLICABLE CRITERIA. Humidity sensing shall be provided in the space and the AHU shall be capable of controlling space humidity and IAQ at all times, regardless of occupancy.

Provide occupancy sensing based on motion detection, room lighting, or other simple and reliable means to signal the system into occupied mode. Occupied mode shall drive the system to pre-set “occupied” temperature setpoints, and increase airflows and ventilation above the unoccupied minimums. A labeled wall switch or pushbutton shall be provided inside the Multi-Purpose Room to override a sensor failure and drive the system into occupied mode manually. CO_2 sensors may be incorporated into the system for improved efficiency, but they shall not be used as the sole input to trigger occupied mode.

HVAC-generated noise levels in the space shall not exceed NC-30 at maximum design airflow, as this room will be used for lectures and ceremonial events. Provide interior lining on all connecting duct between the outdoor unit and the building, and provide a sufficient length of lined duct, and elbows, before the first diffuser or return grille for adequate reduction of duct-path noise from the unit. Provide sound absorption on the outside wall near the unit if through-wall sound transmission is an issue, or increase the distance between the unit and the wall.

Provide heavy-gauge weatherproof metal jacketing and insulation on all outside duct. The exterior jacketing must present a smooth, orthogonal, finished appearance. No insulation shall be exposed.

The ductwork in the Multi-Purpose Room may be concealed or exposed, depending on the final architectural design. If it is exposed, the HVAC designer must coordinate with the architect for an effective, acoustical, and aesthetically pleasing result. No soft flexible duct or duct lining shall be visible. The diffuser and duct arrangement should be symmetrical and orthogonal, with use of round spiral duct encouraged. Excess straps, attachments, and similar appurtenances shall be removed from the duct to the extent possible. Exposed duct shall be painted according to architectural specifications.

3.7.2.3 Building Zone Control Matrix:

For each room listed, see APPLICABLE CRITERIA in Paragraph 4 for required design temperatures, static pressure, airflows, and humidity.

(a) Classrooms (all), OIC Office, NCOIC Office: Provide dedicated VAV box and control zone; locally adjustable thermostat with numeric readout.

(b) Administrative Office, Corridors, Reception area, Reproduction Room, Distance Learning/Language Lab, Reference Room, and Oral Proficiency Interview Room: Provide dedicated VAV box and control zone, fixed temperature sensors in space, with setpoints preset in the BAS.

(c) Restrooms: Supply air is required for proper temperature control, with 100% exhaust. Negative pressure shall be maintained at all times, with excess make-up air drawn from hallway space. The men's restroom shall be supplied with a dedicated VAV box with zone temperature sensor. The box shall supply air to all restrooms.

(d) Communications rooms, electrical room, and storage room(s): Provide minimal supply air for these rooms. Zone temperature control is not required for storage, communications, or electrical rooms. All return air shall be ducted back to the AHU.

(e) Multi-Purpose Room: A folding wall divides this room; therefore each side of the wall will be considered an independent HVAC zone, with its own sensor. Space temperature will be preset in the BAS.

3.7.2.4 Mechanical Equipment:

(a) VAV System AHU: The classroom section of the building shall be served by a single-duct VAV system with hot water reheat coils. The main supply AHU shall be in the mechanical room. The VAV fan speed modulation shall be accomplished by electronically varying the fan motor speed. Cooling shall be by chilled water coil, with chilled water temperature reset possible for energy efficiency. Heating shall be by heating hot water or propylene glycol coils (ethanol glycol is prohibited), with a gas boiler and circulating pumps. The AHU system controls must be extensively mapped into the BAS system. See APPLICABLE CRITERIA for a list of control points. The classroom area of the building may be densely populated, and the entire VAV system shall be designed to meet APPLICABLE CRITERIA for ventilation based on the maximum building population when necessary. Provide a main outside air intake flow sensor for LEED value and optimum system operation. The VAV system shall be sized, designed, and programmed to flow all required ventilation air with reheat when necessary, independent of minimum flows required for space temperature requirements. Provide a Ventilation Schedule with the drawings.

(b) Energy Recovery System: Perform an analysis on the final HVAC design and determine if the use of energy recovery heat exchange equipment at the Classroom VAV air handling unit is justified economically. See APPLICABLE CRITERIA for this cost analysis. If it is justified, provide an outside air energy recovery system in the mechanical room to transfer wasted energy between relief air and intake air at the Classroom VAV air handling unit.

(c) Chiller: The cooling for the Classroom VAV AHU shall be derived from chilled water coils supplied by an outdoor package air-cooled chiller. This unit shall be self-contained and self-controlled, with significant control points addressable through the BAS. See APPLICABLE CRITERIA for control points. Any outdoor chilled water piping shall be buried sufficiently deep for freeze protection year round. The system shall have freeze protection where necessary and be capable of low-ambient operation sufficient for the ASHRAE 99% winter minimum design low temperature. The chilled water pumps shall have N+1 redundancy to allow replacement of a failed pump while the system is running at full load.

(d) Boiler and Heating Water: Heating and reheat shall be served by a heating hot water or glycol loop throughout the building with a high-efficiency gas hot water boiler, with circulating pumps providing N+1 redundancy. The hot water will supply coils in the reheat boxes and a heating coil in the AHU. If indoors, the boiler shall be of sealed combustion type with combustion air inlet and flue exhaust ducted to the outside. The mechanical room shall not be used as a combustion air source. The system will be designed to allow heating water temperature reset to optimize efficiency.

(e) Exhaust Fans: There shall be no small exhaust fans outside of the mechanical room. Provide a central toilet exhaust system served by an easily-accessed utility fan in the mechanical room. Provide other exhaust services in the building as required by APPLICABLE CRITERIA, with necessary fans located in the mechanical room.

3.7.2.5 Multi-Purpose Room AHU:

The Multi-Purpose Room unit, or units, shall be capable of running efficiently at full load, part load and minimum load conditions without excessive compressor or burner cycling. It is necessary that the unit(s) have an efficient minimum mode that runs continuously, or nearly so, to control humidity and prevent mold and IAQ issues from developing in an empty room, as well as maintain moderated temperatures during unoccupied mode for quick transition to a sudden assembly in the room. The unit sizing shall allow for sufficient pickup capacity for both heating and cooling; see APPLICABLE CRITERIA.

3.7.2.6 Mechanical Special Considerations

(a) Communication Rooms: If the electronic loading in these rooms grows to the point of computer servers or switchgear, and if the rooms serve classified functions such as SIPRNET, then the rooms shall be provided with a dedicated split system, cooling-only DX unit with the matching condenser unit outside, per APPLICABLE CRITERIA. The condenser unit shall be placed adjacent to the large outdoor HVAC equipment so that it may sit inside the same aesthetic enclosure. Placing the condenser unit on the roof, or at ground level without aesthetic screening, is prohibited.

(b) Reproduction Room: Provide exhaust per APPLICABLE CRITERIA.

(c) Intake and Exhaust for HVAC System: The elevation and design of air intake and exhaust louvers on the outside walls must comply with ATFP requirements. If the outside wall is insufficiently tall to install wall louvers, then rainproof hoods on the roof shall be provided. The D-B Contractor shall coordinate appearance and location of these hoods with the roof design for an aesthetically acceptable result.

(d) Mechanical Room: Provide ventilation and heat per APPLICABLE REQUIREMENTS. Do not air condition.

(e) Oral Proficiency Interview (OPI) Room: This room will contain several isolating sound booths with dedicated air inlet and return connections to each booth. Each booth shall have a direct supply air connection, with direct return air connection optional. At a minimum, provide at least one VAV box and zone to serve the room and the booths it contains, using averaging, supply temperature setpoint control, or other means to provide reasonable comfort to all the booths. Direct individual control of temperature in each booth is not required.

(f) Glycol*:* Use of glycol for HVAC hydronic systems is generally discouraged by APPLICABLE CRITERIA. Where a glycol mix is necessary for safety and system protection, specify low-toxicity propylene glycol and provide means for fully flushing, filling, draining and sampling of the glycol hydronic system.

3.8 ELECTRICAL AND TELECOMMUNICATIONS REQUIREMENTS

3.8.1 Power:

The D-B Contractor shall maintain conduit count capacity when crossing roadways. Provide exterior-rated oil filled 12.47 KV to 208/120V transformer with remote metering in compliance with 6.4.6.1a to feed into a service-rated panel located inside the main electrical room. This panel shall have a digital meter read out and shall have a TVSS. The machine room, Multi-Purpose Room and Administration Area shall all be provided with a separate panel. The SIPRnet room shall have a dedicated panel with TVSS and a UPS to support the telecom racks in this room.

Receptacles shall be located as follows and coordinated with furniture and equipment layouts:

(a) Each classroom shall have six receptacles around the perimeter of the room and shall have one receptacle in the floor under the conference table, one receptacle located in the ceiling for the projector, one receptacle behind the mounted television and one receptacle for the interpretive whiteboard.

(b) Each printer and loads over 960 VA shall have a dedicated circuit or receptacle. Office areas shall have a minimum of one receptacle on each wall. Office counters shall have a minimum of two receptacles or a receptacle every four feet, whichever is greater.

(c) Utility rooms shall have a minimum of one quadriplex receptacle. The mechanical room shall have one dedicated GFCI receptacle on every wall.

(d) Each telecomm or data rack shall have a dedicated quadriplex receptacle located either on the equipment panel or rack or within 18 inches of located equipment.

(e) Each restroom shall have a dedicated circuit with a minimum of three receptacles, one on each side of the sinks/mirrors, and one on the inside entrance of the bathroom. All shall be GFI protected. Hand dryers shall be provided with dedicated circuits.

(f) Corridors shall have a receptacle within 20 feet of any hallway location with a 20 amp fully rated receptacle for heavy duty vacuums or buffer machines. Vestibules shall have a minimum of two receptacles, one on each side of the entrance.

(g) Distance Learning/Language Lab shall have adequate circuits to serve 16 computers.

(h) Reference Room shall have at a minimum, one receptacle per wall with one receptacle for each workstation or desk.

(i) Oral Proficiency Interview Room shall have a dedicated receptacle/circuit for each sound booth, a receptacle on each open wall, and two receptacles for the instructor workstation.

(j) Multi-Purpose Room shall have receptacles along the walls at 12-foot intervals and four recessed floor receptacles on the podium. Two ceiling mounted receptacles shall be provided for the two ceiling mounted projectors. Four (4) receptacles shall be provided at a higher level to power the two wall-mounted Plasma screens and the two interactive whiteboards.

(k) All other rooms shall be provided with a minimum of one receptacle per 80 square feet.

The exterior of the building shall have a GFI protected WP receptacle within 10 feet of every entrance and a minimum of one GFI WP receptacle on the roof, and an additional service receptacle for each major item either located on the roof or in the courtyard area that serves this building. All exterior GFI protected receptacles shall be individually protected and not share a common GFI Receptacle for common protection.

3.8.2 Grounding:

Provide all the necessary grounding components for the lightning protection system, static grounding system, and communications grounding system, and bonding. Provide the documentation, plans and specifications to install such systems in an appropriate manner. All grounding shall comply with the APPLICABLE CRITERIA in Paragraph 4.

3.8.3 Lighting:

3.8.3.1 Interior Lighting

Provide interior lighting that uses florescent T-5 fixtures at 3800 K or greater where feasible in the teaching portion of the building. Foot candle level illumination shall be as follows: Classrooms, Reference Room, Distance Learning/Language lab, Telecom rooms, and Administrative Office - 50 foot candles (fc). Multi-Purpose Room shall have 30 fc general and 100+ fc with the assistance of track lighting around the podium area. The corridors, restrooms and all other rooms shall be illuminated to 30 fc, with 70 fc in the vertical plane in front of any mirrors. The CRI of all lamps shall be 80 or greater inside the building. Bathroom fixtures over the mirrors shall be 90 CRI or greater. All classrooms shall have two occupancy sensors with manual override to control dual ballasts in the classroom fixtures. This is required to provide bi-level lighting control to override the lighting so that the interactive whiteboards and projectors can be used during room occupancy. The classrooms shall also have recessed can lighting that provides an extra 20 fc illumination on the conference table, which shall be controlled with a dimmer switch on the wall. Corridors shall have occupancy switches with on duration limited to LEED requirements for lighting control. Deviations from the above standards are allowed only if they are proven to be not in accordance with the IESNA guidelines. Any other areas not specifically mentioned are to be illuminated per the IESNA guidelines. Exit signs and egress lighting shall be include combination exit signs with lights and/or wall packs. They shall be located in the exit ways, corridors, and where required per APPLICABLE CRITERIA and the approval of the Fire Protection Review Inspector.

3.8.3.1 Exterior Lighting

The D-B Contractor shall provide exterior lighting with decorative standards and fixtures as a combination of wall mounted, pole mounted or bollards as required to meet egress and exterior requirements of the Post. As a minimum, the average lighting around the building and gathering areas shall meet IESNA guidelines. Sidewalk lighting shall be provided with battery backup for the bollards or overhead lighting.

The D-B Contractor shall provide work lighting for mechanical equipment located outside. This lighting shall provide illumination of the general work area to 50 lux (5 fc) average.

3.8.4 Telecommunications System:

The telecom system shall include a PBX Demarcation and a CATV/commercial telecom Demarcation that can be co-located in the telecom room.

An additional run of 12 single mode fiber optic cables shall be installed from the building’s SIPRnet room to Group HQ (Building 6101) located approximately 3100 feet distant and having 5 existing Manholes available for fiber pulls.

Sixteen (16) commercial CAT6 drops shall be installed in the Distance Learning/Language lab, one at each PC location. Four (4) Commercial CAT6 drops shall be provided at every classroom. Five (5) commercial CAT6 drops shall be provided in the Administration area. Four (4) Commercial CAT6 drops shall be provided in the Multi-Purpose Room. The

CATV/commercial telecom Demarcation shall have a rack mounted router that has a minimum of 25% spare capacity after supplying these loads.

The telephone system shall support a telephone drop in each classroom, two voice drops in the Distance Learning/Language Lab, two voice drops in the Multi-Purpose Room, seven voice drops in the Oral Proficiency Interview Room, one drop in each telecom room, one drop in the mechanical room, one drop in the Reception area, and five drops in the Administration area. The telephone system shall support an intercom-PA system that can broadcast on all phones and selectively page/call each phone. These systems shall be designed and installed per the Applicable Criteria of Paragraph 4 with any deviations authorized by Paragraph 6.4.6.5.

3.8.5 Video Teleconferencing:

Provide power, pathways, cable and lighting to one of the classrooms for video teleconferencing (VTC). The classroom with movable partitions would be the location for this requirement. This classroom shall have an upgraded lighting package with full range of dimming and be able to provide additional illumination to 80 fc. Recessed bubble lamps located in the ceiling with directional capability are preferred, but other solutions may be acceptable. The podium area of the Multi-Purpose Room shall be similarly equipped.

3.8.6 CATV:

The D-B Contractor shall provide a pathway of 2-inch schedule 40 PVC from the point of connection, routed under 42nd street via jack and bore. The line shall be at a minimum depth of 24 inches while outside of the building. The line shall connect to a designated CATV/commercial telecom Demarcation inside of the building. The D-B Contractor shall provide a 4’ x 8’ panel for CATV/commercial telecom for the CATV vendor to locate their equipment. Provide the RG-6 cabling to all the televisions inside the building to this Demarcation point. Provide pathways for a satellite system which shall also be installed and routed to its own Demarcation point location, which can share the telecom room as well. The D-B Contractor shall provide all cable from this Demarcation point to all the televisions located in the building. Do not mount satellite dish, receivers or other equipment on the roof. All RG-6 cable shall be less than 200 linear foot from the Demarcation point to the television.

3.8.7 Mass Notification:

Provide one Mass Notification System (MNS) for this building with a battery backup. The battery backup shall provide power to the MNS for required operation and duration needed per IBC, NFPA 72 and other APPLICABLE CRITERIA in Paragraph 4.

3.8.8 Secure Telecommunications:

Provide SIPRnet to be installed at every seat in the Distance Learning/Language Lab (16). Two (2) SIPRnet drops shall be provided at every classroom. Three (3) SIPRnet drops shall be provided in the Administrative Office. Two (2) SIPRnet drops shall be provided in the Multi-Purpose Room. The SIPRnet closet shall have a rack mounted router that has a minimum of 25% spare capacity after supplying these loads. All installations shall be in conformance with APPLICABLE CRITERIA. All drops located in unsecured locations shall be secured in an approved lock box or other approved PDS.

Provide NIPRnet to be installed at every seat in the Distance Learning/Language Lab (16). Three (3) NIPRnet drops shall be provided at every classroom and one NIPRnet shall be provided in the Oral Proficiency Interview Room. Five (5) NIPRnet drops shall be provided in the Administration area. Four (4) NIPRnet drops shall be provided in the Multi-Purpose Room. The NIPRnet closet shall have a rack mounted router that has a minimum of 25% spare capacity after supplying these loads. All installations shall be in conformance with APPLICABLE CRITERIA.

3.8.9 Other Considerations:

Provide cable drops for projectors to be located in the center of the classrooms and two drops to be located in the Multi-Purpose Room. The Multi-Purpose Room needs to support two large Plasma screen televisions. The D-B Contractor shall assume all televisions have capability to support three video inputs as follows: CATV, Dish Network and a local DVD player. The Multi-Purpose Room shall be equipped with two large speakers and a supporting PA system to be located on each side of the podium. Every projector drop shall have the provision of a 120V receptacle and the following cable provisions routed to the instructors station and provide the following five cables: one VGA cable, one S-Video, one DVI-D or HDMI cable, one composite, and one component video cable. Every classroom shall have an interactive whiteboard and a ceiling-mounted television with two video feeds, one from CATV and the other from Dish Network. A DVD rack provision shall be required with the television mount.

The D-B Contractor shall provide drops at each corner of this building for four CCTVs and pathways back to the Administration Area to install a monitor and a multiplex recorder. These drops will require a 120V receptacle and the identified cable as required by the CCTV system. This will be GFCI equipment. The D-B Contractor shall offer a complete CCTV system with four Pan Tilt Zoom cameras with an 8 Channel multiplex recorder and a 20-inch monitor as a priced Bid Option.

Meeting EPACT requirements for renewable energy is a goal. Whatever technology that may be selected cannot be located on the roof of this structure nor obstruct or interfere with ATFP clearance requirements.

3.8.10 Fire Alarm Requirements

Provide a graphics panel inside the main entrance of the building. Provide a Knox box vault just outside the main entrance of the building (see Appendix DD for details). Provide an addressable Fire Alarm system with a master Fire Alarm Control Panel (FACP) to be located in the electrical room or an approved room by the Fire Department Review inspector. Provide remote monitoring to be tied into the Post's closest Fire Response Center or Fire Station.

Provide signaling light(s) on the exterior of the building visible to approaching Fire Department personnel. Provide a CO Sensor in the mechanical room, which contains gas-fired equipment that sounds an audible alarm, and transmits an alarm signal to the fire alarm panel.

3.8.10.1 General Design Requirements:

The fire protection system for the building shall comply with all APPLICABLE CRITERIA for the size and occupancy of the building. The building functions are classroom, office, and assembly, with no unusual hazardous storage or operations.

The building shall contain a wet pipe fire sprinkler system and electronic components as mandated by the APPLICABLE CRITERIA in Paragraph 4. The fire riser shall be located in the mechanical room. The HVAC duct system shall be provided with fire dampers and delineation of fire separations in the architectural design. As this is a densely populated building, provide active smoke/fire dampers for added protection. Provide smoke dampers in lieu of standard fire dampers where required or recommended in APPLICABLE CRITERIA. Provide HVAC duct smoke detection and system shutoff.

3.8.10.2 Special Considerations:

In addition to a standard fire protection system, there are additional items required for this project. The following is a partial list, with details for each described under APPLICABLE CRITERIA:

(a) CO Sensor: The mechanical room, which may contain gas-fired equipment, shall have a carbon monoxide detector that sounds a local audible alarm, and transmits an alarm signal to the fire alarm panel.

(b) Extinguisher Cabinets: Fire extinguisher cabinets required in the building shall be of the wall-recessed type.

(c) Exterior Strobe Light: Provide signaling strobe light(s) on the exterior of the building visible to approaching Fire Department personnel.

4.0 APPLICABLE CRITERIA

Unless a specific document version or date is indicated, use criteria from the most current references as of the date of issue of the contract or task order, including any applicable addenda, unless otherwise stated in the task order. 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 C2-2007	National Electrical Safety Code
ANSI/AF&PA NDS-2001	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
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)	
Version 1.2	AWI Quality Standards 7th Edition
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(1997)	Standard Practice for Thermographic Inspection of Insulation Installations in Envelope Cavities of Frame Buildings
ASTM E 779 (2003)	Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
ASTM E1827-96(2002)	Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door
Builders Hardware Manufacturers Association (BHMA)	
ANSI/BHMA	American National Standards for Builders Hardware
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 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) TG for the Integration of SECRET Internet Protocol (IP) Router Network (SIPRNET). See Paragraph 3 for applicability to specific facility type. May not apply to every facility. This is mandatory criteria for those facilities with SIPRNET.

5.0 GENERAL TECHNICAL REQUIREMENTS

This paragraph contains general technical requirements. See also Paragraph 3 for facility-specific 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. Provide underdrain systems for pavement designs over cohesive soil subgrades. 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.

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 50 percent using LEED credit WE1.1 baseline, 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: Each building shall have exterior signage permanently attached on two faces of the 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. Coordination of the building colors and finishes is necessary for a cohesive design. Color selections shall be appropriate for the building type. The use of color, texture and pattern shall be used 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. Finishes should be selected with regards to aesthetics, maintenance, durability, life safety and image. Limit the number of similar colors for each material. Color of Ceramic and porcelain tile grout shall be medium range color to help hide soiling. Plastic laminate and solid surface materials shall have patterns that are mottled, flecked or speckled. Finish colors of fire extinguisher cabinets, receptacle bodies and plates, fire alarms / warning lights, emergency lighting, and

other miscellaneous items shall be coordinated with the building interior. Color of equipment items on ceilings (speakers, smoke detectors, grills, etc.) shall match 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: Interior window treatments with adjustable control shall be provided in all exterior window locations for control of day light coming in windows or privacy at night. Uniformity of treatment color and material shall be maintained to the maximum extent possible within a building.

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.

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 needs to be compatible with the intended functions and components that allows for future flexibility and reconfigurations of the interior space. 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. 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.

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.

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 such as at elevator shafts.

5.5.2.9. Damper and control to close all ventilation or make-up air intakes and exhausts, atrium smoke exhausts and intakes, etc when leakage can occur during inactive periods.

5.5.2.10. Compartmentalize garages under buildings 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) 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 either pressurization or depressurization or both. 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.

(b) 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.

(c) 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, the design for underslab piping systems and underground piping serving chillers, cooling towers, etc, shall include features 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, piping should be suspended 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 vitreous china, wall-mounted, wall outlet, non-water using, with integral drain line connection, and with sealed replaceable cartridge or integral liquid seal trap. Either type 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. For complexes, non-water using urinals are not required for barracks type spaces.

5.6.8. BUILDING WATER USE REDUCTION. Reduce building potable water use in each building 20 percent using IPC fixture performance requirements baseline except where precluded by other project requirements.

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.

5.7. 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: The project's facilities must connect 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: Lighting shall comply with the recommendations of the Illumination Engineering Society of North America (IESNA).

5.7.5.1. Interior Lighting: Interior lighting shall utilize electronic ballast and energy efficient fluorescent lamps with a Correlated Color Temperature of 4100K. Compact fluorescent fixtures shall have a Color Rendering Index of (CRI) of 82 or higher. Linear fluorescent fixtures shall have a CRI of 85 or higher. Fluorescent lamps shall be the low mercury type qualifying as non-hazardous waste upon disposal. Surface mounted fixtures shall not be used on acoustical tile ceilings. An un-switched fixture with emergency ballast shall be provided at each entrance to the building.

5.7.6. TELECOMMUNICATION SYSTEM: All building telecommunications cabling systems (BCS) and OSP telecommunications cabling system shall conform to APPLICABLE CRITERIA to include 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. 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.

5.8.2.2. Design systems in geographical areas that meet the definition for high humidity in UFC 3-410-01FA in accordance with the special criteria for humid areas therein.

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. Avoid the use of direct expansion cooling coils in air handling units with constant running fans that handle outside air.

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,(including SIPRNET ROOMS, where applicable for specific facility type). Comply with ANSI/EIA/TIA 569 and the I3A.

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. Provide a Building Automation System consisting of a building control network , and integrate the building control network into the UMCS as specified.

The building control network shall be a single complete non-proprietary Direct Digital Control (DDC) system for control of the heating, ventilating and air conditioning (HVAC) systems as specified herein. The building control network shall be an Open implementation of LONWORKS® technology using ANSI/EIA 709.1B as the only communications protocol and use only LonMark Standard Network Variable Types (SNVTs), as defined in the LonMark® Resource Files, for communication between DDC Hardware devices to allow multi-vendor interoperability.

5.8.3.1. The building automation 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 Contractor. This includes, but is not limited to the following:

(a) Install hardware such that individual control equipment can be replaced by similar control equipment from other equipment manufacturers with no loss of system functionality.

(b) Necessary documentation (including rights to documentation and data), configuration information, configuration tools, programs, drivers, and other software shall be licensed to and otherwise 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:

(a) Be connected to a TP/FT-10 ANSI/EIA 709.3 control network.

(b) Communicate over the control network via ANSI/EIA 709.1B exclusively.

(c) Communicate with other DDC hardware using only SNVTs

(d) Conform to the LonMark® Interoperability Guidelines.

(e) Be locally powered; link power (over the control network) is not acceptable.

(f) Be fully configurable via standard or user-defined configuration parameter types (SCPT or UCPT), standard network variable type (SNVT) network configuration inputs (*nci*), or hardware settings on the controller itself to support the application. All settings and parameters used by the application shall be configurable via standard or user-defined configuration parameter types (SCPT or UCPT), standard network variable type (SNVT) network configuration inputs (*nci*), or hardware settings on the controller itself

(g) Provide input and output SNVTs required to support monitoring and control (including but not limited to scheduling, alarming, trending and overrides) of the application. Required SNVTs include but are not limited to: SNVT outputs for all hardware I/O, SNVT outputs for all setpoints and SNVT inputs for override of setpoints.

(h) To the greatest extent practical, not rely on the control network to perform the application..

5.8.3.3. Controllers shall be Application Specific Controllers whenever an ASC suitable for the application exists. When an ASC suitable for the application does not exist use programmable controllers or multiple application specific controllers.

5.8.3.4. Application Specific Controllers shall be LonMark Certified whenever a LonMark Certified ASC suitable for the application exists. For example, VAV controllers must be LonMark certified.

5.8.3.5. Application Specific Controllers (ASCs) shall be configurable via an LNS plug-in whenever t an ASC with an LNS plug-in suitable for the application exists.

5.8.3.6. Each scheduled system shall accept a network variable of type SNVT_occupancy and shall use this network variable to determine the occupancy mode. If the system has not received a value to this network variable for more than 60 minutes it shall default to a configured occupancy schedule.

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

5.8.3.8. Not Used

5.8.3.9. Perform all necessary actions needed to fully integrate the building control system. These actions include but are not limited to:

- 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.
- Install IP routers or ANSI/CEA-852 routers as needed to connect the building control network to the UMCS IP network. Routers shall be capable of configuration via DHCP and use of an ANSI/CEA-852 configuration server but shall not rely on these services for configuration. All communication between the UMCS and building networks shall be via the ANSI/CEA-709.1B protocol over the IP network in accordance with ANSI/CEA-852.

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

- The latest version of all software 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:
    - Device address and NodeID.
    - Input and Output SNVTs including SNVT Name, Type and Description.
    - Hardware I/O, including Type (AI, AO, BI, BO) and Description.
    - Alarm information including alarm limits and SNVT information.
    - Supervisory control information including SNVTs for trending and overrides.
    - Configuration parameters (for devices without LNS plug-ins) 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 ANSI.CEA-709.1 addresses, IP addresses, and network names.
- Control System Schematic diagram and Sequence of Operation for each HVAC 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.
- LONWORKS® Network Services (LNS®) database for the completed system.
- 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 TP/FT-10 local control bus.	
2	Communication between DDC Hardware is only via EIA 709.1B using SNVTs. Other protocols and network variables other than SNVTs have not been used.	
3	All sequences are performed using DDC Hardware.	
4	LNS Database is up-to-date and accurately represents the final installed system	
5	All software has been licensed to the Government	
6	M&C software monitoring displays have been created for all building systems, including all override and display points indicated on Points Schedule drawings.	
7	Final As-built Drawings accurately represent the final installed system.	
8	O&M Instructions have been completed and submitted.	
9	Connections between the UMCS IP network and ANSI/CEA-709.1B building networks are through ANSI/CEA-852 Routers.	
By signing below I verify that all requirements of the contract, including but not limited to the above, been met.		
Signature:_____ Date:_____		

5.8.3.11. 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.

5.8.3.12. 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.

5.8.3.13. 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.

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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 Fundamental 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. The Contractor shall hire the Commissioning Authority (CA), certified as a CA by AABC, NEBB, or TABB, as described in Guideline 1.1. The CA will be an independent contractor and not an employee or subcontractor of the Contractor or any other subcontractor on this project, including the design professionals (i.e., the DOR or their firm(s)). 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.

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 30% 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 or FEMP designated products. 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 three 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.

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. 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 Engineering Criteria) 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

(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 FORT CAMPBELL, KY

6.1. GENERAL

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

6.2. APPROVED DEVIATIONS

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

6.2.1.1. See paragraph 6.12.1. There is no need to perform a life cycle cost analysis for or to install 30% solar domestic hot water heating, as required in paragraph 5.9.4. The Government has determined it not to be life cycle cost effective.

6.2.2 Building Automation System

Perform all necessary actions needed to fully integrate the building control system to the FMCS. The following requirements supersede paragraphs 5.8.3.7 and 5.8.3.9.

6.2.2.1 Meter all utilities, and interface with the Building Automation System. Install Cat 6 wiring from the building communications closet to two RJ-45 outlets installed adjacent to the location of the Building Point of Connection hardware for connection to the existing FMCS at Fort Campbell.

6.2.2.2 The building automation system (BAS) controls in the facilities under this contract will be integrated to and become part of the Facility Management and Control System (FMCS). Provide Java Application Control Engines (JACE), version R2, within each building or facility. The JACE (version R2) shall connect the BAS in the building or buildings to the FMCS via Fort Campbell's wide area network.

6.2.2.3 Access to the BAS shall be available locally in each building, and remotely from personal computers residing on the Fort Campbell network. Accomplish access through standard Web browsers, via the Internet and the Fort Campbell network.

6.2.2.4 Each JACE shall communicate with the BAS including the LonMark/LonTalk controllers and other open systems and devices provided in the building. The FMCS is based on the Niagara Framework, a Java-based framework developed by Tridium. Niagara provides an open automation infrastructure that integrates diverse systems and devices regardless of manufacturer into a unified platform that can be easily managed in real time over the Internet using a standard Web browser.

6.2.2.5 The JACE shall serve as the interface between the BAS and the FMCS. The JACE may perform BAS data manager functions such as time schedules for equipment, trend logging, and alarm processing and alarm handling functions. However, the JACE shall not perform process control. Process control shall be handled by the Application Specific Controllers and Programmable Controllers included in the BAS.

6.2.2.6 Provide graphics for each piece of controlled HVAC equipment and other equipment. The graphics shall include the building floor plan with links to mechanical rooms and all controlled equipment. As a minimum, the graphics shall show the equipment modes, commonly adjusted setpoints, sensed variables, output commands, and actuator positions for each piece of controlled equipment. The graphics shall be available locally using a laptop service tool, or remotely as described above. Demonstrate the graphic interface and show that all sensed values are accurate, that dynamic screen links work properly, that set points can be changed remotely, and that any input or output variable can be trend logged and graphed. Additionally, perform a JACE failure test using an out-of-the-box test JACE furnished by Fort Campbell. The test JACE will be void of any programming. Demonstrate that the program and database required to make the test JACE operate can be successfully loaded from a service lap top tool, and that the test JACE then operates and functions correctly as a replacement JACE.

6.2.2.7 Provide non-expiring licenses for all controllers and software and which require licensing to Fort Campbell.

6.2.2.8 The graphics shall be similar to the existing graphics used on the Fort Campbell Facility Management and Control System. Sample FMCS graphic screens are included in the applicable Appendix. The first graphic resides on the server in building 865. Modify this graphic to add the newly connected building or buildings to the graphic.

6.2.2.8 Green light means no building alarms.

6.2.2.10 Red means building alarms exist.

6.2.2.11 Yellow means the building is not communicating.

6.3. SITE PLANNING AND DESIGN

6.3.1. General:

Design and construct a facility compatible with the Fort Campbell Installation, which has an architectural appearance coordinated with the surrounding SOF complex. Renderings of the desirable architectural character, and photos of existing SOF facilities, are shown in Appendix F. These should be interpreted as concept examples that meet the required application of the area architectural theme.

6.3.1.1. Provide design and construction for a complete and usable facility per Section 01 10 00 Statement of Work and the APPLICABLE CRITERIA in Paragraph 4. Provide complete and detailed construction site plans, building plans, and infrastructure plans for development of the project. The scope of work shall consist of all site work, including erosion and sediment control, grading, utilities, and other support facilities. Site development plans, building plans, and infrastructure plans shall be prepared by qualified professionals and address all site and building elements including, but not limited to, facility design, vehicular access and parking, pedestrian access and circulation, infrastructure and utilities, grading, Antiterrorism Force Protection (ATFP) features, site amenities, site lighting, and landscape design and construction.

6.3.1.2. A Concept Site Plan that meets the project objectives has been provided in Appendix J, as an example. The SOF-LSTF shall be constructed as part of the overall SOF complex. The D-B Contractor shall provide a site design that facilitates the planned re-development of the area immediately adjacent to the project site. The re-development area is currently occupied by older barracks buildings (B-3215, B-3213 and B-3211). There is no finalized master plan for the expansion of the complex adjacent to the new facility; however demolition of the existing “hammerhead” style barracks buildings is expected. Site and facility features shall be architecturally compatible with other site amenities at the Installation, in particular, the existing SOF complex.

(a) Site Location: The SOF-LSTF project site is located at the intersection of Kentucky Avenue and 42nd Street. The existing SOF complex in the area currently consists of Group and Battalion headquarters facilities located two blocks from the project site on Tennessee Avenue; motor-pool facilities across Kentucky Avenue; and new SOF barracks across 42nd Street. Future expansion of the SOF complex is planned for the SOF-LSTF site area and the remainder of the block. Additional barracks are also planned as part of the SOF complex across 42nd Street. The site is separated from Gabriel Field, to the north, by a paved fire department access way. The project site encompasses approximately 2.25 acres.

(b) Gabriel Field: The open space north of the site includes Gabriel field, which is a Special Forces memorial site used as a parade grounds. This open space amenity will become the central focus of the SOF complex as re-development occurs. The design shall orient building entrances and pedestrian access throughout the SOF-LSTF site to facilitate pedestrian circulation to and from Gabriel Field for ceremonial activities.

(c) Standoffs and Clear Zones: Site plan development for the SOF-LSTF shall be compliant with the required ATFP standoff and clear zones as a “primary gathering” facility within a “controlled perimeter”. A 33-foot clear zone shall be maintained around the building exterior perimeters where no facilities, improvements or planting may be placed higher than six inches such that they would obstruct visual inspection of the area. An 82-foot standoff distance is required from the building to all roads, parking areas, and drives, with the exception of any service lanes which may intrude into this standoff provided they meet the design requirements of APPLICABLE CRITERIA in Paragraph 4

6.3.2. Site Structures and Amenities

Refer to Appendix J, Site Plan for dumpster location.

6.3.3. Site Functional Requirements:

6.3.3.1. Stormwater Management (SWM) Systems.

For volume control, an on-site storm water retention/detention system shall be required. Design criteria for storage facilities shall follow the “Fort Campbell Policy for Storm Water Erosion and Sediment Control at Construction Sites" developed by Fort Campbell DPW, as posted on the Fort Campbell Environmental web site (http://www.campbell.army.mil/envdiv/). Take special note of the Precipitation Frequency Estimates and the required Pre-developed curve number included in the policy.

6.3.3.2. Erosion and Sediment Control

(a) Fort Campbell Environmental Division of Public Works oversees the Stormwater Sediment and Erosion Control Management Plan for the Post. The point of contact for DOIM Fort Campbell Environmental Divisions is Dan Etson, (270) 798-1073, dan.etson@us.army.mil.

(b) In 2003, Fort Campbell was issued permit coverage under the Tennessee Phase II MS4 general permit through February 2008 and Kentucky Phase II SMS4 general permit through December 2007. In order to comply with the provisions of the state and EPA NPDES permits, all construction projects, excluding those located in the Clarksville Base Development, must comply with the provisions of the "Fort Campbell Policy for Storm Water Erosion and Sediment Control at Construction Sites" developed by Fort Campbell DPW, as posted on the Fort Campbell Environmental web site (http://www.campbell.army.mil/envdiv/). These provisions include preparation of a project specific Storm Water Pollution Prevention Plan (SWPPP) and enforcement of the plan components. Projects located in the Clarksville Base Development are covered under an Individual NPDES Permit for Construction Activities. The Contractor will be signing onto Fort Campbell’s permit. Fort Campbell will be sampling project storm water outfalls and using a third party EPSC inspector.

(c) Be aware of any Wetlands, Sinkholes, or Class V Injection Well that may be associated with this project. Do not discharge any storm water off the installation on to private land owners. Install and maintain all erosion and sediment control devices in accordance with the Fort Campbell Policy for Storm Water Erosion and Sediment Control at Construction Sites.

6.3.3.3. Vehicular Circulation.

Maintain vehicular access to the SOF-LSTF site and provide new facilities for service/loading and emergency vehicles. All vehicular circulation improvements in the Statement of Work shall be provided by the D-B Contractor. No off-site road improvements or drop-off lanes are included in the project scope of work. Vehicular access shall be temporarily maintained to the adjacent Building 3215 by preserving a minimum 38-foot width of the existing asphalt paving immediately adjacent to Building 3215, and driveway connections to 42nd Street and the alleyway north of the site. This temporary existing paved vehicular access must remain outside of the 82-foot ATFP setback from the new facility. Pavement will be removed in conjunction with the future demolition of Building 3215. Saw-cut edges of existing asphalt paving to remain.

(a) Privately-Owned Vehicles (POV) Parking: The existing paved parking area located adjacent to the site, across Kentucky Avenue, shall be used by visitors and occupants of the new SOF-LSTF. Handicapped accessible parking spaces shall be provided per APPLICABLE CRITERIA. As a priced Bid Option, the entire parking area shall be re-surfaced. As a separate priced Bid Option, provide new area lighting for the entire existing parking area. Connect the primary entrance of the SOF-LSTF to this existing lot with sidewalks and a pedestrian crosswalk crossing Kentucky Avenue. Provide one additional pedestrian crosswalk crossing 42nd Street from on-site walkways to the future barracks site across the street. Pedestrian crosswalks shall be striped and improved with warning lights per APPLICABLE CRITERIA and Fort Campbell standards.

(b) Service Drives: Provide one service drive to the SOF-LSTF for loading purposes to accommodate the maximum size design vehicle. This drive may intrude into the 82-foot ATFP standoff in conformance with APPLICABLE

CRITERIA. Service drives shall be designed to restrict access to unauthorized vehicles by removable bollards, gates or other passive barriers to meet ATFP requirements.

(c) Fire Access Lanes: Provide fire access lanes in accordance with the Statement of Work and APPLICABLE CRITERIA.

6.4. SITE ENGINEERING

6.4.1. Existing Topographical Conditions

The Government has provided a three dimensional digital topographic and utility survey. Bring any discrepancies which are found in the Government furnished survey to the immediate attention of the Government for clarification. The survey provides control points based on state plane coordinates and identifies horizontal and vertical datums.

The topographic, planimetric and utility information provided by the Government for this site is based on Geographic Information System (GIS) data only and does not represent an aerial or field run topographic survey. The criteria in this paragraph supersede the previous paragraph (with regard to topographic survey only) and the criteria stated herein shall govern. The RFP Existing Conditions and Concept Demolition plan is provided for information only. The D-B Contractor shall provide a three-dimensional topographic, utility, and telecommunications survey for the site as part of the design and construction documents for the project. This survey shall provide control points in a coordinate system based on state plane coordinates. All surface features and underground utilities on the site shall be identified by this topographic survey. Locations, depth, and status of all underground infrastructure facilities shall be identified as part of the construction survey prior to final design. The Site Constraints/Existing Utilities map provided herewith (Appendix G GIS Data) and the Existing Conditions and Concept Demolition Plan (Appendix J Drawings) may be used as reference material until such time as the construction survey has been completed. The Government does not guarantee the accuracy of the aforementioned information.

The SOF-LSTF site is bounded on three sides by existing roadways and access drives. Recent site photographs are provided in Appendix AA showing site conditions, as of 17 February 2010. The project area currently houses a barracks (Building 3217) for SOF occupants. The site area is lower in elevation than some surrounding areas and drainage is provided by overland flow through intermittent culverts to roadside ditches. Rainwater outfalls from the site in the vicinity of the intersection corner of Kentucky Avenue and 42nd Street. The existing site grades along the east side of Building 3217 slope gently away from the building to perimeter ditches along the north and south sides of the site. The site grades along the west side of the building, along Kentucky Avenue are mildly sloping.

Grade entire site to provide positive overland drainage away from the building and minimize steep slopes on site. The D-B Contractor shall protect the root zones of any specimen trees suitable for preservation during construction. Several mature trees exist along Kentucky Avenue and shall be evaluated by the Installation Forrester for viability and preserved where possible.

An approved Stormwater Pollution Prevention Plan (SWPP) shall be completed prior to commencing construction activities. Site specific Best Management Practices (BMP's) shall be used at the construction site, in accordance with the approved SWPP and the Fort Campbell Policy for Storm Water Erosion and Sediment Control at Construction Projects. See Appendix E, Record of Environmental Consideration, Mitigation Action Plan for additional requirements

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

6.4.2.1. Geotechnical Engineer. A qualified independent testing agency shall observe and test subgrade suitability (by proof rolling operations), fill placement and compaction operations on a full time basis as directed by the Contractor's project Geotechnical Engineer.

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.

Fire Flow tests were performed at two fire hydrants near the site (#H46-13 and #H46-15) on 01 March 2010. Distribution system parameters as a result of these flow tests at #H46-13 are static pressure = 56 psi, residual pressure = 52 psi and flow = 2060 gpm. Distribution system parameters as a result of the flow test at #H46-15 are static pressure = 60 psi, residual pressure = 56 psi and flow = 2060 gpm. The D-B Contractor shall verify fire flow tests prior to design and construction. The D-B Contractor shall coordinate fire flow tests with CH2M Hill prior to execution.

6.4.4. Pavement Engineering and Traffic Estimates:

6.4.4.1 Pavement Design. Minimum flexible pavement sections shall consist of 3.5 inches of asphalt (1.5 inches of surface course and 2 inches of base course) and 8 inches of aggregate subbase and/or base. Minimum rigid pavement section shall consist of 6 inches of concrete and 8 inches of aggregate subbase and/or base. The minimum subbase/base can be neglected if the subgrade has a CBR greater than 30.

Final pavement construction shall accommodate the vehicle and use types specified in Paragraph 5.1.2 "Site Planning Objectives". The design of these pavements shall be based on the D-B Contractor's geotechnical report. The report shall include calculations to support the requirements for bearing capacity, settlement, and pavement sections. Any sidewalks designed to accommodate vehicular usage shall be designed to structurally support design vehicle loading. Traffic estimates are not provided as no off-site road improvements are included in the scope of work for this project. Visitors and occupants of the SOF-LSTF will be encouraged to walk to the new facility from nearby buildings.

6.4.5. Traffic Signage and Pavement Markings

Provide roadway signage, site signage and pavement markings for vehicular and pedestrian safety, as appropriate, per APPLICABLE CRITERIA in Paragraph 4.

6.4.6. Base Utility Information

6.4.6.1. Utilities

(a) The Installation's DPW Fort Campbell supervises infrastructure and utilities and in some cases they are owned and operated by private entities. Existing utility services such as potable water, sanitary sewer, electric, natural gas, and COMM are all located:

adjacent to the site. The existing on-site structure (Building 3217) is currently occupied. The building is served by existing adjacent utility mains, which are adequate to serve the new SOF-LSTF. Remove existing underground utility service lines on-site, in accordance with APPLICABLE CRITERIA. Provide new service line connections to the SOF-LSTF per the Statement of Work (Section 01 10 00) and APPLICABLE CRITERIA. Verify all utility data provided in this RFP prior to design and construction. Any new utility construction proposed under existing roadways shall utilize jack and bore. Saw cutting existing roads for new utility construction is prohibited.

Water service: Existing waterlines are located along 42nd Street, Kentucky Avenue, and the fire department access north of the site. Sizes of the existing waterlines adjacent to the site are 12-inch, 14-inch, and 6-inch, respectively. Recent fire flow tests are included in Appendix D. The proposed fire protection and domestic water service shall be

provided from the existing 14-inch water main along Kentucky Avenue. The D-B Contractor shall supply the new water service from the point of connection to the building.

Sanitary Sewer Service: Existing 8-inch sanitary sewer is located along 42nd Street. An existing 4-inch force main is located along the access drive at the north side of the site that expands to an 8-inch sanitary sewer main near the northeast corner of Building 3217, at manhole MH46-26. The proposed sanitary sewer service shall connect to the existing 8-inch sewer main along the existing fire access lane north of the site. The D-B Contractor shall supply the new sanitary sewer from the point of connection to the building.

Gas Service: Existing 10-inch gas mains exist along both the east and west sides of Kentucky Avenue. The proposed gas service shall connect to the 10-inch main on the east side of Kentucky Avenue. The D-B Contractor shall supply the new gas service from the point of connection to the building.

Electric Service: Existing overhead 12.47KV electric service is located along the south side of 42nd Street and along the west side of Kentucky Avenue. The proposed electric service shall be provided underground from the service along 42nd Street to the point of connection to the building.

Telecommunications Service: Existing telecommunications ductbanks are located along the fire department access drive north of the site and along the south side of 42nd Street. The new telecommunications service shall be provided from the ductbank along 42nd Street. The D-B Contractor shall provide the new telecommunications service from the point of connection to the building.

Cable Television Service: Existing overhead cable television is located on Pole B#1202 along the south side of 42nd Street and along the west side of Kentucky Avenue. The proposed cable television service shall be provided underground from the service along 42nd Street to the point of connection to the building. The D-B Contractor is responsible for all CATV installation drops in the building after the Demarcation point, and not CATV vendor or Dish Network as specified in Paragraph 6.4.6.6.

(b) Connect the meter(s) to the building Direct Digital Control system so that the data is transmitted to the building controls and to the Post FMCS in accordance with paragraph 6.2.1.

(c) Do not construct buildings over or within 10 feet of any new or existing utility lines, to include Water and Wastewater, Storm Sewer, Sanitary Sewerage, Gas, and COMM. Coordinate with respective provider to determine final routing of lines, and locations of connections points.

6.4.6.2. Water Distribution and Sanitary Sewerage System:

(a) CH2M Hill is the owner and operator of the Fort Campbell water distribution sanitary sewerage system. Design and construct the new distribution system and new sewer lines, the building services , and any modifications to the existing distribution lines and main sewers in accordance with the latest edition of CH2M Hill's "Fort Campbell Water and Wastewater Design Guide and Construction Standards". Coordinate with CH2M Hill to determine the connection points to the existing water distribution system and final routing of the new water distribution lines and service lines including the locations of meters, back-flow preventers, the locations of fire hydrants and post indicator valves. In addition coordinate the routing of the new sanitary sewer mains and services, connection points to the system, manholes, lift stations, and force mains. Submit to CH2M Hill a completed "Application for Water and Wastewater Connection" form and the associated application fee. Include adequate time in the proposal for the design of the water system, the acquisition of State permits, and the construction of the water lines. Point of contact for CH2M Hill at Fort Campbell is Chris Semler, (931) 431-2015. Alternate contact for CH2M HILL is Robert Neath (314) 421-0313.

(b) Contact CH2M HILL representative in a timely manner to coordinate water and sewer service to the facilities being constructed or renovated under this contract. No water and wastewater design or construction may begin without the execution of a permit issued by CH2M HILL. All new construction must satisfy the terms of the permitting process before water or wastewater services will be activated. Comply with all policies, procedures, standards, specifications and details required by CH2M HILL governing the design, construction and supply of water and sewer services required under this contract.

(c) After award and during the design phase of the project, coordinate with CH2M Hill and submit preliminary drawings to CH2M Hill for review. The drawings shall show all new distribution lines, fire hydrants, new service lines, and any modifications to existing distribution system. In addition show all modifications to the sanitary sewer collection system. This includes but is not limitied to new mains, building service lines, cleanouts, manholes,

pumping stations and force mains. , Provide the projected sewer flow rate from each building and at each manhole.

(d) Base the design of the water distribution system on the static and residual water pressure conditions as shown in Paragraph 6.4.3 Fire Flow Tests.

(e) Determine the following for each building in the project and provide this information to CH2M Hill:

- the required capacity of domestic water supply
- the domestic water service line size
- the required capacity of the fire water service line
- the fire water service line size and
- the location of the entrances to the building of the domestic water and fire water service lines.

(f) Coordinate the sequence and timing of all water line tie-ins to existing water lines with CH2M Hill. No work associated with the water system shall begin until all required permits and approvals for the water system are obtained. Existing water service lines and mains serving buildings on the site which remain occupied during construction shall remain in service, uninterrupted, until those buildings are abandoned or until the new water distribution line has been accepted by the Government.

(g) Coordinate the sequence and timing of all tie-ins to existing sewer lines with CH2M Hill. Do not begin construction of the sanitary sewer system until all required permits and approvals for the sanitary sewer system are obtained. Existing sanitary lines serving buildings on the site which remain occupied during construction shall remain in service, uninterrupted, until those buildings are abandoned.

(h) Submit the final design drawings and specifications for review and comment. Include any changes as a result of the comments in the drawings and specifications prior to the start of construction.

(i) Provide water meter on building. Connect the meter to the building Direct Digital Control in accordance with Paragraph 6.4.6.1.1.

(j) CH2M Hill will inspect all construction of water distribution piping and sanitary sewer piping. Point of contact for CH2M HILL at Fort Campbell is Chris Semler, (931) 431-2015. Alternate contact for CH2M HILL is Robert Neath (314) 421-0313.

(a) Field Quality Control for Sanitary Sewer Distribution System. The contracting officer and CH2M Hill will conduct field inspections and witness field tests specified. The Contractor shall perform field tests, and provide labor, equipment, and incidentals required for testing including means for water transport when water is needed. CH2M Hill will furnish water needed for field tests.

6.4.6.3. Gas Distribution System:

(a) Clarksville Gas and Water Department (CG&W) is the owner of the Fort Campbell gas distribution system. The design and construction of the required building service lines and modifications to any distribution lines shall be in accordance with the requirements of CG&W. Coordinate with CG&W to determine the routing of any new or relocated gas distribution lines, the routing and locations of new and existing service lines, the locations of connection points to the main gas distribution system, the locations of existing gas distribution lines to be removed, and the locations of new valves. Coordinate directly with CG&W to obtain the cost of the design, permits, and construction of the required building service lines to the five foot line up to and including meters and regulators and any necessary modifications to the distribution lines. Include this cost in the appropriate line item in the CLIN schedule. CG&W may require the following information to determine the cost of the gas system changes: the capacity of gas required for each building; the low pressure gas service line size for the building; the location of the entrances to the buildings of the gas service lines, and locations of the gas regulators and meters. Include adequate time in the proposal for the design of the gas system and the acquisition of permits and approvals. Point of contact for CG&W at Fort Campbell is Randall Lewis, (931) 542-9600. Point of contact for CG&W pertaining to gas service line capacity, size, routing, and points of connection to the gas distribution system is Tae Eaton, (931) 645-7422.

(b) After award, during the design phase of the project, provide information to CG&W about the expected building gas consumption and shall coordinate with CG&W to complete the gas distribution system design.

(c) Design and installation of the gas distribution system must be in accordance with all policies, procedures, standards, specifications and details required by CG&W. Determine the following for each building in the project:

- the required capacity of gas service,
- the low pressure gas service line size, and
- the preferred location of the service entrance including the gas regulators and meters.

(d) C&W will furnish and install meters and regulators on all buildings. The Contractor shall connect the meters to the building Direct Digital Control system in accordance with paragraph 6.4.6.1.1. The Contractor shall be responsible for all costs incurred for the gas system installation, including meters and regulators.

(e) Do not abandon in place any gas lines.

(f) Include the following in the design plans and specifications:

- the routing of gas distribution and gas service lines outside the buildings
- the location of gas meters and regulators
- existing gas distribution and service lines to be removed

(g) Coordinate the sequence and timing of all gas line construction activities with CG&W. No work associated with the gas system shall begin until all required permits and approvals for the gas system are obtained. Include adequate time in the proposal for the design of the natural gas system and the acquisition of permits and approvals.

(h) Submit the final design drawings and specifications for review and comment, and include any changes as a result of the comments in the drawings and specifications prior to the start of construction.

(i) Point of contact for CG&W at Fort Campbell is Randall Lewis, (931) 542-9600. Point of contact for CG&W pertaining to gas service line capacity, size, routing, and points of connection to the gas distribution system is Tae Eaton, (931) 645-7422.

6.4.6.4. Electrical:

(a) Furnish and install a meter on electric service to each building. Equip the electric meter with a pulse initiator. Connect the pulse initiator on the electric meter to the building Direct Digital Control system in accordance with Paragraph 6.4.6.1., (b).

6.4.6.5. Telecommunications:

(a) Government Telephones and Data Connectivity. Furnish and construct all outside plant manholes, duct, conduit, and the required distribution cables, between underground terminal boxes and the building central communications closet for Government telephones and data connectivity. Coordinate with Network Enterprise Center (NEC) formally known as the Department of Information Management (DOIM) during the design process. The Points of contact for NEC is Greg Lantz at (270) 798-6238 or email gregory.lantz@us.army.mil, Tim Eayre at (270) 412-5504 or email timothy.eayre@us.army.mil, or Phil Butler at (270) 798-9654 or email phillip.r.butler@us.army.mil.

6.4.6.6. Cable Television:

(a) Provide cable television outlets in areas as described Paragraph 3. Design, furnish, and install all conduit, wiring and outlet boxes within the facilities. Comcast will be responsible for all the interior jacks and faceplates. Coordinate with Comcast during the design process. The Point of contact for Comcast is Bill Goodwin at (615) 244-7462 ext. 1646 or email billy_goodwin@cable.comcast.com.

6.4.7. Cut and Fill

6.4.7.1. Grading.

(a) All Fort Campbell projects should generally maintain existing topography and slopes while recognizing standard minimum and maximum gradients. There should be a balance of the quantity of cut and fill which would create a smooth transition of graded areas into the existing natural terrain. The plan should reflect selective site clearing that preserves groups of trees. Grading should manage site runoff to maintain the rate and quantity of flow to pre-development levels, or reduce site runoff where possible. Apply the principles of positive drainage to control the conditions that remove rainfall away from facilities and functions. Lawn sheet flow shall not flow over sidewalks or paved areas. Do not drain new parking areas onto 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

existing water quality by incorporating sustainable design principles are encouraged, and consistent with budget constraints and activity requirements.

(b) The finished grades adjacent to the new building will be a minimum of 6 inch below finished floor except where grades are required on walk ways and entrances to buildings that are handicap accessible. Slope finish grades away from the building at 5% for the first 10 feet and then at a minim of 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 the space) shall be 1-1/2%.

6.4.7.2. Historically, the potential for sinkholes does exist at Fort Campbell. The preliminary site characteristics for this particular site are located in Appendix A. Geotechnical Information.

6.4.8. Borrow Material

A primary design goal shall be to achieve a balance of the quantity of cut and fill material which would create a smooth transition of graded areas into the existing natural terrain. Any borrow or landfill material required for construction shall be coordinated with the Contracting Officer and obtained from sources at the Fort Campbell Installation borrow pit. Hauling of material shall be at the D-B Contractor's expense. The Installation borrow pit is located on Angels Road. Any materials to be removed shall be taken to an approved dump site at the Installation's landfill located at 101st Airborne Division Road. Recyclable materials shall be taken to the Installation's recycle center. Disposal of any waste dirt shall be taken to the Installation's approved waste dirt site on Angels Road.

6.4.9. Haul Routes and Staging Areas

Use Gate 7 as the Haul Route to the construction work area for all projects at Fort Campbell. Refer to Appendix J, Borrow/Disposal Area Plan for Haul Route.

Use designated haul routes at the Installation on 101st Airborne Division Road, Tennessee Avenue, Screaming Eagle Boulevard, Market Garden Road, Angels Road and On The Line Road. See Appendix BB for potential conflicts between Physical Training (PT) routes that occur between 6:30 AM and 8 AM daily. All vehicular traffic is restricted on PT routes during PT activities and alternate routes are made available. A designated material storage and laydown area shall be provided by the D-B Contractor. Laydown areas shall be coordinated with the Installation's Department of Public Works. Contractor laydown and staging areas shall be located in accordance with APPLICABLE CRITERIA. See Appendix EE for potential staging area location.

All construction and demolition debris shall be disposed of at the Installation landfill as approved by the Contracting Officer. If the debris is to be sent to a grinder for recycling on-Post, the grinding equipment capacity (tons/hours) shall be obtained in order to determine if air permitting and other CAA related compliance issues apply. D-B Contractor shall allow approximately 120 day lead time to obtain state operating permit. Maintain all excavations, stockpiles, access roads, waste areas, and all other work areas free from excess dust to such a reasonable degree as to avoid causing a hazard or nuisance.

6.4.10. Clearing and Grubbing:

The D-B Contractor's demolition responsibility for this project includes, but is not limited to: demolition of underground and overhead utilities, vegetation removal required for construction, and demolition of remaining pavement, building or site features. Existing utilities and infrastructure for connection are located nearby. The Contractor shall verify the location of all remaining site features prior to the design and construction of the SOF-LSTF.

At the time construction is expected to commence for this project, existing surface features, including Building 3217, and existing paving, will have been demolished by the DPW at Fort Campbell. If at the time of construction, there are remaining items that require demolition, the construction contract will be modified for the additional work.

Preservation of existing trees on the site is desirable where possible. Identify existing trees to remain on construction plans and provide tree protection devices on site to encompass the drip-line of the existing tree to

remain. Protect existing trees to remain during construction by avoiding equipment damage, excavation within the root zone, compaction due to equipment or material storage, ponding of runoff, and spills of construction materials.

6.4.11. Landscaping:

(a) Landscaping shall be in accordance with the Standard Appendix I, Acceptable Plants List. Use the services of a qualified Landscape Architect, experienced in site planning and planting design. Provide a complete, integrated landscape-planting plan consisting of trees only for the overall project. The design shall reflect appropriate groupings and street tree plantings to define the open spaces. Choose tree materials on the basis of plant hardiness, climate, soil conditions, low maintenance, and quality. Selected tree materials shall be easily maintained and tolerant of the specific site conditions. Incorporate sustainable design principles into the selection of plants. Plant only during periods when beneficial results can be obtained. Planting for site development within the 5-foot line shall consist of establishing groundcover (turf or other materials) consistent with adjacent landscaped areas. Additional landscaping such as ornamental planting at building entrances may be provided as a project betterment.

(b) Passive Barriers may be installed as a landscape component and consist of any combination of berms, steep banks, ditches, fences, walls, bollards, trees, and other plant materials that is located between the vehicular circulation areas and the building(s). Trees may be used as long as the spacing between branch structures and size at the time of installation would prevent vehicle intrusion. Some species will require a double row with close proximity to achieve this functionality.

(c) Maintenance during Planting Operation.

Maintain installed plants in a healthy growing condition. Begin maintenance operations immediately after each plant is installed and continue until the plant establishment period commences.

(d) Plant Establishment Period.

On completion of the last day of the planting operation, the plant establishment period for maintaining installed plants in a healthy growing condition shall commence and shall be in effect for the remaining contract time period not to exceed 12 months. When the planting operation extends over more than one season or there is a variance to the planting times, the plant establishment periods shall be established for the work completed.

(e) Maintenance during Establishment Period.

The maintenance of plants shall include straightening plants, tightening stakes and guying material, repairing tree wrap, protecting plant areas from erosion, maintaining erosion material, supplementing mulch, accomplishing wound dressing, removing dead or broken tip growth by pruning, maintaining edging of beds, checking for girdling of plants and maintaining plant labels, watering, weeding, removing and replacing unhealthy plants.

(f) Unhealthy Tree.

A tree shall be considered unhealthy or dead when the main leader has died back, or 25 percent of the crown is dead. Determine the cause for an unhealthy plant. Unhealthy or dead plants shall be removed immediately and shall be replaced as soon as seasonal conditions permit in accordance with the following warranty paragraph.

(g) Warranty.

Furnished plant material shall be guaranteed to be in a vigorous growing condition for a period of 12 months regardless of the contract time period. A plant shall be replaced one time under this guarantee. Transplanting existing plants requires no guarantee.

6.4.12. Turf:

(a) Seed.

State approved seed of the latest season's crop shall be provided in the original sealed packages bearing the producer's guaranteed analysis for percentages of mixture, purity, germination, hard seed, weed seed content, and inert material. Labels shall be in conformance with applicable State seed laws. Seed mixtures shall be proportioned by weight. Weed seed shall not exceed one percent by weight of the total mixture.

(b) Sod.

State approved sod shall be provided as classified by applicable State laws. Each individual sod section shall be of a size to permit rolling and lifting without breaking. The sod shall be relatively free of thatch, diseases, nematodes, soil-borne insects, weeds or undesirable plants, stones larger than two (2) inches in any dimension, woody plant roots, and other material detrimental to a healthy stand of turf. Sod that has become dry, moldy, or yellow from heating, or has irregular shaped pieces of sod and torn or uneven ends shall be rejected. Sod shall be machine cut to a uniform thickness of 1-1/4 inches within a tolerance of 1/4 inch excluding top growth and thatch. Measurement for thickness shall exclude top growth and thatch. The limitation of time between harvesting and placing sod shall be 36 hours.

(c) Sprig Quality.

The cultivar shall be provided as healthy living stems, stolons, or rhizomes with attached roots, including two (2) or three (3) nodes, and shall be from four (4) to (6) inches long, without adhering soil. Sprigs shall be provided which have been grown under climatic conditions similar to those in the locality of the project. Sprigs shall be obtained from heavy and dense sod, free from weeds or other material detrimental to a healthy stand of turf. Sprigs that have been exposed to heat or excessive drying shall be rejected. The time limitation between harvesting and placing sprigs shall be 24 hours.

(d) Temporary Turf Cover.

When there are contract delays in the turfing operation or a quick cover is required to prevent erosion, the areas designated for turf shall be seeded with a temporary seed. When no other turfing materials have been applied, the quantity of one-half of the required soil amendments shall be applied and the area tilled.

(e) Final Turf.

The turf shall be installed during appropriate planting times and conditions recommended by the trade for the type and variety of turf specified. The turf operations shall be performed only during periods when beneficial results can be obtained. Drainage patterns shall be maintained. The turf shall be installed by using the methods as recommended by the trade for the type and variety of turf specified. Immediately after turfing, the area shall be protected against traffic or other use by erecting barricades and providing signage as required. The turf establishment period for establishing a healthy stand of turf shall begin on the first day of work under the turfing contract and shall end three (3) months after the last day of the turfing operation. An unsatisfactory stand of turf shall be repaired as soon as turfing conditions permit.

6.4.12.1. Satisfactory Stand of Turf:

(a) Seeded Lawn & Field Area.

A satisfactory stand of turf from the seeding operation is defined as a minimum of 150 grass plants per square foot. The total bare spots shall not exceed 2 percent of the total seeded area.

(b) Sodded Area.

A satisfactory stand of turf from the sodding operation is defined as living sod uniform in color and texture. Bare spots shall be no larger than two (2) inches square. Sod shall be placed in all ditch flow lines and slopes, around each building, and a 10 foot strip adjacent to all structures such as curbs, sidewalks, roads, catch basins, etc.

(c) Sprigged Area.

A satisfactory stand of turf from the sprigging operation is defined as a minimum of 20 sprigs per square meter (2 sprigs per square foot). Bare spots shall be no larger than 9 inches square. The total bare spots shall not exceed two (2) percent of the total sprigged area.

6.4.12.2. Maintenance During Establishment Period:

(a) The maintenance of the turfed areas shall include eradicating weeds, eradicating insects and diseases, protecting embankments and ditches from erosion, maintaining erosion control materials and mulch, protecting turf areas from traffic, mowing, watering, post-fertilization, and replacing unsatisfactory turf areas.

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 and shall conform with the Fort's Campbell Real Property Master Plan. 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 Campbell'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 Campbell'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 indentified 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:

Design the SOF Language Sustainment Training Facility as a 'signature' building to serve as an anchor for the future expansion of the SOF complex in this area. Situated on the corner of Kentucky Avenue and 42nd Street, the new building will establish a prominent presence as a learning center to promote foreign language proficiency. Design the facility so that it is immediately identifiable through a distinctive accessible entryway that directs visitors to its primary educational and multi-purpose assembly features. Design the interior circulation to expedite immediate access to utility rooms, equipment, and loading areas, as well as to facilitate life safety and egress during emergencies. The facility shall express the character of a professional center that is secure while being generous in its promotion of vital foreign language learning capabilities.

The overall architectural goal is to provide a functional, visually appealing facility that is a source of pride for the Installation and the SOF community. The design shall exemplify heightened sustainable awareness that is visually apparent while increasing well being, comfort, and attentiveness for effective learning.

The facility shall distinguish its component parts through overall massing and positioning of the larger multi-purpose assembly room and the lower height elevations of the learning center, service areas, and entry vestibules. Since the building's multiple functions may operate independently from one another throughout the day, evening, and weekends, visitors must be able to find their way to their specific destinations easily.

Interior design shall consider spatial volumes, daylighting, room finishes, room adjacencies, and circulation routes to operate efficiently with an emphasis on well-lit orientation, way finding and natural acoustical sensitivity for acute sensory learning. Specific professionally designed audio-visual and telecommunication systems will also be incorporated from both a functional and aesthetic focus that expresses future oriented technological innovation in communication.

Provide appropriate locations in the lobby and along hallways for user-provided displays of promotional military information and historical artifacts. The incorporation of such displays will enhance the educational theme of foreign language learning as well as the goals of global military service.

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 Campbell. 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

(b) Exterior Skin. If the Offerors proposal consists of brick, split faced or scored CMU, which will be exposed to weathering, provide efflorescence testing and prevention measures. Schedule tests far enough in advance of starting masonry work to permit retesting. Apply water repellant primer and stain to all exterior architectural CMU walls after completion of exterior work and when the masonry is not subject to damage by construction activities.

(c) Window & Doors Fenestrations.

(d) Provide a removable Small Format Interchangeable Core (SFIC) "*I/C - 7 pin Insta-Key"* integrated master keying system for all doors. SFIC's shall be compatible with the existing "*I/C - 7 pin Insta- Key*" system used at Fort Campbell. Combination locks used in secured areas shall be Mass Hamilton X09 type. Electric locks shall be stand alone Best BASIS "G" system with encoders and Kiosh. Installation shall be coordinated with the DPW Locksmith Shop. Point of contact is Bob Ayers, (270) 431-2015.

(e) COMM Closet locks shall be compatible with the Mortise lock - Schlage Model CL5594-MGK-SFS-626-ATR or Cylindrical Lock - Schlage Model CL5196-MGK-SFS-626-ELB-ATR.

(f) Mechanical Rooms shall have an exterior building access only for maintenance personnel and accessible to maintenance vehicles.

(g) Telecommunications Rooms shall have an interior access point unless otherwise specified or indicated. In the case of exterior access, install equipment cabinet(s) instead of racks in the Telecommunications Rooms. Cabinet(s) shall be dust rated with glass front door and accessible rear panel.

6.5.3. Programmable Electronic Key Card Access Systems:

All exterior doors at entry vestibules shall be provided with card access readers for administrative personnel, educational staff, and students. Keys to exterior and interior doors and to the utility rooms shall be provided for appropriate engineering maintenance personnel. The D-B Contractor shall provide a card access system compatible with the 5th Special Forces Group's new Phase 1 card access system.

6.5.4. INTERIOR DESIGN

6.5.4.1. Interior building signage requirements:

See Paragraph 5.3.5.5 for Interior Building Signage requirements. Provide signage with Braille and appropriate dimensions and mounting heights as APPLICABLE CRITERIA.

6.5.4.2. Interior Design Considerations:

(a) Interior Partitions and Walls.

Where moisture or moisture infiltration from the wall cavity cannot be eliminated or sufficiently reduced, the use of wall coverings with higher permeability ratings should be considered. The use of wall coverings that do not breathe such as vinyl wall coverings is not permitted due to the tendency for mold to develop.

(b) Interior Glass and Glazing: Coordinate the arrangement of fenestrations with the proposed furniture layout.

6.5.4.3. Furniture, Fixtures and Equipment Design Development:

Coordinate with USACE and DPW during design development. Point of contact for DPW, Master Plans is Sharon (Davis) Presley at (270) 956-2926 or email sharron.davis@us.army.mil.

6.6. STRUCTURAL DESIGN

6.6.1. Site Specific Loading Requirements

6.6.1.1 Structural Loading. Design building structures for the following types of minimum site specific loads per most recent versions of ASCE-7 and IBC.
6.6.1.1. Roof Live Load – 20 psf
6.6.1.2. Snow Load – 15 psf (pg, ground snow load)
6.6.1.3. Wind Load – 90 mph, 3-second gust
6.6.1.4. Seismic Criteria - As determined from a site specific geotechnical investigation, but not less than the following values:

Ss = 0.59g
S1 = 0.19g

6.6.2 The structural design shall meet all of the seismic requirements of the Applicable Codes and Standards including a continuous load path and interconnection, consideration of plan irregularities and effects due to inherent and accidental torsion, and consideration of building expansion joints. Seismic design also includes the bracing of various systems, piping, hangars, etc.
6.6.3. Note that areas of Fort Campbell contain Karst geology and are subject to potential sinkholes.
6.6.4. The structural system shall be compatible with building use. For example, do not locate columns in rooms requiring visibility or open space, such as entries, common areas, etc.
6.6.5. Extend bearing portions of substructure to levels below the frost line. Frost penetration is 22 inches below grade.
6.6.6. Treat subgrades under all facility foundations to resist subterranean and other wood destroying insects known to exist in the vicinity of the site. Treat in accordance with the environmental criteria referenced in this document.
6.6.7. Radon Mitigation: Ensure that the building prevents/mitigates the accumulation of radon gas. Fort Campbell requires the installation of radon mitigation features be included in all new construction as shown in the applicable Appendix of this document. The design and construction of foundation walls, slabs, and crawl spaces shall include provisions for the reduction of radon entry and facilitate its removal. For additional information, contact the TSCA Program Manager of the Fort Campbell Environmental Division at (270) 298-9637.
6.6.8. Water Barrier: A capillary water barrier is required under all interior slabs-on-grade. The capillary water barrier shall, as a minimum, prevent the mitigation of termites, radon, and moisture.
6.6.9. Equipment Pads: Elevate interior floor or slab-on-grade mounted equipment on minimum 4 inch thick concrete pads to prevent accumulation of water and metal corrosion. Elevate exterior on-grade mounted equipment on minimum 6 inch thick concrete pads. Turn down perimeter of exterior pads to a level below the frost line.

6.7. THERMAL PERFORMANCE

There are no additional requirements other than those previously stated/referenced.

6.8. PLUMBING

There are no additional requirements other than those previously stated/referenced.

6.9. SITE ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.9.1. Primary Electrical Distribution.

The point of connection for the primary feed to the site shall be

provided to the SOF-LSTF building via underground service from the overhead electric service along 42nd Street. Provide underground primary service lines from existing power pole B1202 on the south side of 42nd Street.

Concrete ductbank shall be provided up to the edge of the road, on both sides. Provide 4-inch conduit for service lines under roadways, connecting the ductbanks. Cutting roadway surface for new utilities is prohibited.

Coordinate connections with PWBC, Electrical Utility Section.

6.9.2. Underground secondary distribution

System shall consist of direct buried conduit and conductors.

6.9.3. Transformers.

Transformers shall be pad-mounted type, 12.47 kV delta primary and secondary voltage as appropriate for load(s) to be served. Service transformers, for all 15kV and below, 3-phase underground fed installations, shall be of the pad-mounted type. The high-voltage compartment shall be dead-front construction. Primary switching and protective devices shall include loadbreak switching, fuse protection, medium-voltage separable load-break connectors, universal bushing wells and inserts or integral one piece bushings and surge arresters. The nameplate rating for the transformer shall not be less than 90 percent of the KVA demand load calculated for the transformer. Provide copper windings, not aluminum. The enclosure shall include a hasp and pad lock.

6.9.4. Street and Area Lighting.

6.9.4.1 Provide lighting for the project site, at existing and new roadway intersections, and at intervals not exceeding 60.9 m (200 ft) between intersections. Area lighting shall be provided at intervals not exceeding 60.9 m (200 ft) along area walkways not otherwise illuminated; common area walks, and at all steps in area walkways. Exterior lighting (parking lot, street, building, etc) shall be Metal Halide. "Dark Sky" Lighting is a mandatory requirement for the numerous flight paths over the installation to insure the safety of the flight crews and equipment. Parking lot and security lighting will be provided at a maintained level of 0.5 to 1.0 footcandles and shall have a uniformity ratio, maximum to minimum, of 20:1 or less. All building entrances will be illuminated to 10 footcandles. Parking lot lighting shall be individually fused and mounted on aluminum poles. Fuses for the pole-mounted fixtures will be installed in the pole base and shall be photocell controlled. This control shall be by means of one photocell per fixture or one photocell per pole. Direct burial is acceptable for street light circuits. All exterior lighting (parking lot, street, building, etc.) shall be either 120, 208, or 277 Volt. 480-Volt lighting is not permitted..

6.9.4.2 Select and locate lighting fixtures to maintain the minimum foot-candle requirements for safety and security purposes. Beyond that, aesthetic considerations should take precedence. Light poles should be consistent and provide uniformity throughout the installation. Determine the pole height by their intended function. Size light fixtures proportionally to the intended pole height. Coordinate final fixture selection with the Contracting Officer for approval.

6.9.5. Telecommunications:

6.9.5.1. General.

6.9.5.2. The NEC will remark cables upon justifiable request by the Contractor. Contractor is not responsible to maintain locates, except to use reasonable care. For NEC contact information, refer to paragraph 6.4.6.5.

6.9.5.3. Entrance conduits in all buildings shall be a minimum of two-way, 4 inch ducts.

6.9.5.4. Do not implement Free Space Optic (FSO) systems unless approved by the NEC.

6.9.5.5. Coordinate with the NEC for a list of areas where 48” of cover is required above the top of the duct. Duct bank encasements shall be in accordance with I3A requirements.

6.9.5.6. Rotary trenchers or plowing are not allowed during trenching or excavation, except in rear areas. NEC prefers the method of open trenching, using bucket type equipment, i.e., backhoe and track hoe. The maximum width of the trench is in accordance with the type of equipment used to dig.

6.9.5.7. Splice cable either in manholes or pedestals. Do not make buried splices unless NEC approves in writing.

6.9.5.8. Aerial cable shall not be engineered.

6.9.5.9. Provide stainless steel splice cases for all copper cable splices, or an equivalent which shall be approved by the lead planner or the Service Management Division Chief. NEC requires submittals for splice cases and splice modules prior to work beginning. Specify splice cases for the particular environment in which they shall be placed and size to accommodate the cable count spliced. Design end plates for the number and size of the cables served by the splice and design to seal around each cable individually. All splice cases shall be re-enterable and shall contain all necessary equipment to be installed properly, adhering to all appropriate electrical codes.

6.9.5.10. Install warning signs in accordance with the following:

- Sign mounted to steel PSP stake; orange in color
- 4' below ground in concrete; rising 5' above ground
- No closer than 2 feet from the center of the ditch
- If there is a change in direction, position a sign immediately at the turn showing the line
- Although I3A states every 250' for those areas that end up being less than 250' provide sign(s) accordingly, even if an additional sign is necessary.

6.9.5.11 Provide a minimum copper cable size 25 pair.

6.10. FACILITY ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

Coordinate with Fort Campbell NEC during the design process. Submit all requested deviations from the mandatory design criteria in writing for approval at the discretion of the Government.

6.10.1. Provide dual jacks in lieu of single jacks. Dual jacks shall be two CAT 6 RJ45 type with green inserts.

6.10.2. Provide Copper Voice and Data jacks in new facilities or in facilities with no existing building cabling system in accordance with the I3A Guide Section 2.4.1.1 (TIA/EIA T568A configuration). If the existing building cabling is of type TIA/EIA T568B, then install TIA/EIA T568B.

6.10.3. Voice and Data drops shall conform to the following wire color scheme:

- Green – Voice and NIPRnet data
- Red – SIPRnet (Secret) data
- Orange – JWICS (Top Secret) data
- All faceplates shall be neutral in color. Inserts shall be the same color as the wiring used for that particular jack.

6.10.4. Install Fiber Optic patch panels in cabinets or racks that house the LAN equipment. Do not install fiber optic patch panels on backboards.

6.10.5. Terminate copper distribution on 110 type rack mounted patch panels only. Do not install 110 type patch panels on backboards.

6.10.6. Make all new fiber optic terminations using LC connectors. Terminate any connectors already in place in renovated buildings or additional fiber connections in existing buildings with the identical type of existing fiber optic connectors.

6.10.7 Key telecommunication Room doors separate from other locks in the building IAW DPW standards. Provide two copies of the key to the NEC Supply Section. Reference section 6.5.2.6, (b) for additional lock requirements.

6.11. HEATING, VENTILATING, AND AIR CONDITIONING

Integrate the control system to the installation's existing UMCS. The existing UMCS is FMCS at Fort Campbell, and shall be as described in Paragraph 6.2.1. Coordinate with Installation Energy Manager during the design process. Point of contact for Fort Campbell FMCS's is Neal Dewayne Smith at (270) 798-5652 or email neal.d.smith@us.army.mil.

6.12. ENERGY CONSERVATION

6.12.1. General: The Government has determined that 30% domestic solar hot water heating is not life cycle cost effective, therefore is not required. There is no need for proposers or the Contractor to perform life cycle cost analysis to justify including or excluding this feature.

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:

No additional requirements.

6.13. FIRE PROTECTION

6.13.1. The Fire Alarm Control Panel shall be fully compatible with the existing King-Fisher Industrial Radio Alarm Control System (IRACS) presently in use at Fort Campbell. The fire alarm AM transmitter shall be Government furnished, contractor installed. Mass Notification: The required mass notification system shall be in a separate cabinet from the fire alarm system and O&M: Mass Notification Systems. Provide a LOC (local operating console) for the mass notification system and locate per the building users requirements.

6.13.2. Provide a Knox-box located within 10 feet of front entrance to the building at a mounting height of six feet. Knox-Box shall be 3200 Series, black in color.

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: None.

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.

Project site is five feet or more above 100-year flood elevation.

Project site contains no habitat for threatened or endangered species.

No portion of project site lies within 100 feet of any water, wetlands or areas of special concern.

Project site WAS NOT previously used as public parkland.

SS Credit 2 Development Density & Community Connectivity.

Project site DOES 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 will 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 has an on-post recycling facility. Contact Mr. Dick Hoosier, (270) 798-9773 for information about materials accepted.

Regional Priority Credits (Version 3 only)

The project zip code is 42223-5130.

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

No additional Requirements.

6.15. ENVIRONMENTAL

6.15.1. Solid Waste Disposal/Diversion Practices:

6.15.1.1. Solid Waste Disposal/Diversion Practices shall be in accordance with Appendix E, Environmental information. All construction activities at Fort Campbell shall require at least a 50% diversion of construction materials such as excess lumber, roofing, drywall, carpet, piping, cardboard, etc to be diverted from the landfill. Reference Appendix J, for Borrow/Disposal Area Plan.

6.15.1.2. Government policy shall apply to sound environmental principles in the design, construction and use of facilities. As part of the implementation of that policy, the Contractor shall: (1) Practice efficient waste management when sizing, cutting, and installing products and materials, (2) use all reasonable means to divert construction, and demolition waste from landfills and incinerators and to facilitate their recycling or reuse.

6.15.1.3. Submit a waste management plan within 15 days after Notice to Proceed (NTP) and prior to initiating any site preparation work. Include the following:

(a) Name of individuals on the Contractor's staff responsible for waste prevention and management.

(b) Actions that will be taken to reduce solid waste generation.

(c) Description of the specific approaches to be used in recycling/reuse of the various materials generated, including the areas and equipment to be used for processing, sorting, and temporary storage of wastes.

(d) Characterization, including estimated types and quantities, of the waste to be generated.

(e) Name of landfill and/or incinerator to be used and the estimated costs for use, assuming that there would be no salvage or recycling on the project.

(f) Identification of local and regional reuse programs, including non-profit organizations such as schools, local housing agencies, and organizations and accept used materials such as materials exchange networks and Habitat for Humanity.

(g) List of specific waste materials that will be salvaged for resale, salvaged and reused, or recycled. Recycling facilities that will be used shall be identified.

(h) Identification of materials that cannot be recycled / reused with an explanation or justification.

(i) Anticipated net cost savings determined by subtracting Contractor program management costs and the cost of disposal from the revenue generated by sale of the materials and the incineration and/or landfill cost avoidance.

6.15.2. Sediment and Erosion Control:

All projects at Fort Campbell are to be designed and constructed in accordance with the Fort Campbell Sediment and Erosion Control Policy for construction sites. This policy can be found on the Fort Campbell Environmental Web Site: (http://www.campbell.army.mil/envdiv/en1.htm)

6.15.3. Ban on use of asbestos containing materials, lead based paint and PCB's..

6.15.3.1 Do not use asbestos containing materials (ACMs), lead based paint (LBP), or PCBs.

6.15.3.2 Provide the required No Asbestos – Containing Material (ACM) Certification in accordance with the following.

(a) Design Phase. Before final payment of the project design fee, the designer of record (DOR) shall submit to the government, on their firm's letterhead, a signed, stamped and dated copy of the following statement:

"I hereby certify that no asbestos-containing material (ACM) was specified as a building material in any construction document for this project. Furthermore, I certify that no product containing mineral fibers was specified as a building material in any construction document for this project unless I either

-'Have on file and have submitted to the Government, the manufacturer's certification that the material does not contain asbestos,' or

- 'Have supplied to the Government documentation to show that the material has been microscopically examined by an AIHA- or NVLAP-certified laboratory and the lab has determine that it does not contain asbestos.' "

(b) Construction Phase. Before final payment to the Contractor, the Contractor's project engineer/manager will sign and submit to the Government, on the Contractor's letterhead, a dated copy of the following statement:

"I hereby certify that to the best of my knowledge no asbestos-containing material (ACM) was used as a building material during this project. I understand that the building Owner presumes that all materials marked 'May contain mineral fibers' are asbestos unless I either:

- 'Have on file and have submitted to the Government the manufacturer's certification that the material does not contain asbestos,' or

- 'Have supplied to the Government documentation to show that the material has been microscopically examined by an AIHA- or NVLAP-certified laboratory and the lab has determine that it that it does not contain asbestos.' "

6.15.4. Air pollution restrictions applicable to this project do not allow materials to be burned on Government premises.

6.15.5. The Installation Forrester must complete a survey before any trees with diameters greater than 6 inches are removed. This is in addition to Section 3.1 Land Resources under Section 01 57 20.00 10.

6.15.6. Wetlands.

There are no jurisdictional non-tidal wetlands present at the site. A Record of Environmental Consideration (REC #10-057, Appendix E) prepared by the Installation DPW-Environmental Division indicates that that this site has been reviewed and is categorically excluded from “extraordinary circumstances” of environmental concern or contamination. If environmental contamination is discovered during excavation or construction, the Contractor shall stop work immediately and notify the Contracting Officer. If contaminated substances are encountered, they will need to be addressed by the D-B Contractor and an appropriate modification will be made to the construction contract.

The categorical exclusion does not relieve the D-B Contractor from complying with current applicable environmental standards such as air pollution, storm water management/stream protection, demolition waste management, radon mitigation, and other NEPA requirements. These requirements are identified in the Mitigation Action Plan associated with the REC (see Appendix E). The REC indicates the following status for environmental site conditions, as well as additional environmental information and project requirements.

(a) Solid Waste: There is no record of remaining landfill or solid waste management areas present at the site in the recorded past. The existing on-site structure (Building 3217), to be removed, has been associated with a documented Solid Waste Management Unit (SWMU) by the Installation in the past, but the State has now classified the building as being in a ‘no-further-action’ status. The building was once used to clean weapons and the incidental storage of cleaning solvent was once present in the building. All of that material has been removed and the affected areas cleaned and mitigated. There are no known monitoring devices at the site or the building.

(b) Hazardous Waste: There is no record of hazardous material spills at the site. The building to be removed from the site (prior to construction) currently has asbestos and lead-based paint that will be mitigated as a part of the demolition process, but the D-B Contractor will not be responsible for demolition of this building. The Post will contract separately for this demolition/disposal to be completed prior to the D-B Contractor starting construction for the new facility.

(c) Underground Storage Tanks: No known remaining underground storage tanks are present at the site.

(d) Noise: Noise impacts form aircraft or other military operations are not present at the site at levels that would require mitigation or extraordinary design requirements.

(e) Cultural Resources: There are no historic sites or known archeological resources at the site that would require mitigation or special design requirements.

6.16. PERMITS

6.16.1. Permits.

The Contractor shall obtain all permits (local, state and federal) required for design and construction of all site features and utilities. The Contractor shall be responsible for providing information to obtain all necessary permits. Provide Information as described below.

6.16.2. Air Permits.

Provide air permit information to Fort Campbell Environmental Division. Two types of permits are required: (1) A construction permit; and (2) An operating permit. A construction permit is based on the design and shall be obtained prior to construction. Obtain an operating permit when the equipment is installed. Provide information for both types of permits to Fort Campbell using the Checklist for Non-Process Source and the Vent Stack Checklist. Each checklist is available from the Fort Campbell Environmental Division and shall be completed for each piece of fuel-burning equipment. The lead time for these permits is approximately 30 days, thus submit all information as soon as possible. Point of contact for these items is Patty Lockard, Fort Campbell Environmental Division, and (270) 798-9603.

6.16.2.1. Christian (KY) and Montgomery (TN) Counties have been designated as nonattainment with the National Ambient Air Quality Standards (NAAQS) for ozone. The nonattainment designation results in Fort Campbell being subject to the general conformity rule (40 CFR 93, Subpart B, Determining Conformity of General Federal Actions to State or Federal Implementation Plans); the Tennessee Division for Air Quality rule, 401 KAR

50:065, (Conformity of general federal actions); and the Tennessee Division for Air Quality Control rule, 1200-3-34 (Conformity). The general conformity rule (GCR) is a rule required by the Clean Air Act as amended in 1990.

6.16.2.2. Review is required for all proposed construction activity which will result in the emission of surface ozone precursors (volatile organic compounds and nitrogen oxides) to ensure the action does not impede Tennessee air pollution control efforts to gain attainment of the NAAQS for ozone. Non attainment designations for particulate matter (PM) are based on 3-year averages of either each years' annual average concentration (annual average) or on a 24 hour average basis (rolling 24 hour avg.).

(a) PM2.5. Exceedance of either standard can result in an area being classified as non-attainment for PM2.5. If that should occur, PM2.5 will be considered and added to the GCR process as stated above.

6.16.2.3. Data is required to enable the Air Quality Program of the Fort Campbell Environmental Division to calculate the estimated emissions of ozone precursors resulting from construction equipment (mobile and stationary) burning fossil fuels and other Contractor vehicles (Contractor or private owned) operated on Fort Campbell as a result of the construction contract. To obtain this data representatives of the Fort Campbell Air Quality Program will need to contact either a Contractor representative and/or the Resident Office project manager, as designated by the Fort Campbell Resident Office. See 6.16.2.6 for examples of construction equipment and activities, which need to be identified as to their usage.

6.16.2.4. The primary source of the ozone precursors at Fort Campbell during construction activities is the burning of fossil fuels by mobile non-road construction equipment and other vehicles, including privately owned vehicles operated by construction Contractor personnel and Government supervising personnel (this applies only to that portion of usage directly applicable to the construction activity, which includes the commute to the construction site). In addition, stationary and/or portable units such as fossil fuel fired boilers, space heaters, and electric generators must be considered. Additional sources of concern that may be part of major construction activities include, but are not limited to, coating operations (spray booths), solvent cleaning operations, volatile organic fluids (fuels, etc.) dispensing and storage operations, and site remediation activities.

6.16.2.5. In addition to the data concerning ozone precursor emissions during the construction phase, data are also required to estimate what the emissions will be after the completion of the construction project. This includes evaluations to determine emission increases of ozone precursors resulting from any new permanent stationary sources; any potential increase in vehicle miles traveled by fossil fueled tactical, other federal Government owned, and private owned vehicles; and any increase in demands on current utility services (boiler plants, water plants, etc.). This data will be compiled from review of construction plans, drawings, and by interviews of points of contact other than the Contractor or the Fort Campbell Resident Office.

6.16.2.6. The analysis must be completed prior to commencement of any of the construction project activities. This applies to any construction activities commenced on or after 15 June 2005.

(a) Construction Equipment Listing.

The list is not purported to be a complete list. It is based on some of the operations conducted during past major construction activities at Fort Campbell.

- Bulldozers
- Graders
- Excavators
- Backhoes
- Dump Trucks
- Fuel/Service Trucks
- Tractors
- Pug Mills (on site Fort Campbell)
- Concrete Batch Plant fossil fuel usage (on site Fort Campbell)
- Scrapers
- Ready-Mix Trucks
- Screed, Concrete, (if fossil fuel powered)
- Portable paint sprayers and any associated fossil fuel powered air compressors
- Fossil fuel fired powered air compressors used for activities other than powering paint applicators
- Fossil fuel powered electric generators,
- Lay Down Machines used in paving activities

- Rollers
- Compactors
- Water Trucks
- Pavement Stripping Machines
- Traffic road striping (vehicle and product applied)
- Loaders
- Compactors
- Curb and Gutter Pavers

6.16.3. Water Permits.

Any change to the water distribution system requires an Approval from the State Government. The utility owner, CH2M Hill, is responsible for coordinating the application for permit for work involving the water distribution system. The contractor shall provide information as necessary during the design of the project to CH2M Hill for preparation of the permit application. Point of Contact for CH2M Hill at Fort Campbell is Chris Semler, (931) 431-2015. Alternate contact for CH2M HILL is Robert Neath (314) 421-0313.

6.16.4. Sanitary Sewer Permits.

Any change to the sanitary sewer system requires State approval. The utility owner, CH2M Hill, is responsible for coordinating the application for permit for work involving the sanitary sewer system. The contractor shall provide information as necessary during the design of the project to CH2M Hill for preparation of the permit application. Point of Contact for CH2M Hill at Fort Campbell is Chris Semler, (931) 431-2015. Alternate contact for CH2M HILL is Robert Neath (314) 421-0313.

6.16.5. Erosion and Sediment Control Permits.

Fort Campbell's Erosion and Sediment Control Permit should be amended to read as follows:

The contractor shall coordinate with the Fort Campbell Environmental Division to obtain the latest guidance on the Erosion and Sediment Control Permits. The point of contact is Mr. Nate Reynolds at phone number (270) 798-9639. No ground disturbing activities shall be made without first securing a National Pollution Discharge Elimination System (NPDES) Permit and secondly ensuring all storm water controls are in place. DPW-Environmental maintains a blanket storm water discharge permit for all projects constructed during a calendar year. The contractor will be issued the permit from DPW-Environmental once all required environmental submittals have been reviewed and approved by the Storm Water Manager. All required submittal documents must be submitted thirty (30) days prior to start of the project.

6.16.6. Fort Campbell Permits.

No electric equipment shall be installed within or on any Fort Campbell building, structure, or premises, nor shall any alteration or addition be made in any such existing equipment without first securing an Electrical Permit from the Fort Campbell Electrical Inspector in accordance with CAM Regulation 420-4 (Quality Assurance "Electrical" Inspection Standards). An Electrical Contractor Registration Form shall be completed. This form will be attached to the back of the copy of the CAM Regulation. The Contractor's license shall be validated against the Fort Campbell Review Board list of State Electrical Licenses valid on Fort Campbell KY before a permit can be obtained. Copies of CAM Regulation 420-4 and permits shall be obtained at DPW, Utilities Maintenance Building 868, Bastogne & 16th Street, Fort Campbell, Kentucky.

6.17. DEMOLITION

No additional requirements.

6.18. ADDITIONAL FACILITIES

No additional facilities.

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 http://www.usace.army.mil/publications/eng-regs/er1-1-11/entire.pdf
- Army Corps of Engineers ECB No. 2005-10, (31 August 2005) Scheduling Requirements for Testing of Mechanical Systems in Construction http://www.wbdg.org/ccb/ARMYCOE/COEECB/ecb_2005_10.pdf

1.2. QUALIFICATIONS

The Contractor shall 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

Design and permit activities, including necessary conferences and follow-up actions and design package submission activities shall be included. The Contractor shall 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. The schedule shall include review and correction periods associated with each item.

3.3.2.3. Procurement Activities

The schedule must 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, procure, fabricate, and deliver.

3.3.2.4. Mandatory Tasks

The following tasks must be included and properly scheduled:

3.3.2.4.1. Submission, review and acceptance of design packages

3.3.2.4.2. Submission of mechanical/electrical/information systems layout drawings

3.3.2.4.3. Submission and approval of O & M manuals

3.3.2.4.4. Submission and approval of as-built drawings

3.3.2.4.5. Submission and approval of 1354 data and installed equipment lists

3.3.2.4.6. Submission and approval of testing and air balance (TAB)

3.3.2.4.7. Submission of TAB specialist design review report

3.3.2.4.8. Submission and approval of fire protection specialist

3.3.2.4.9. 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 Engineering and Construction Bulletin (ECB) No. 2005-10 dated 31 August 2005.

3.3.2.4.10. Air and water balancing

3.3.2.4.11. HVAC commissioning

3.3.2.4.12. Controls testing plan submission

3.3.2.4.13. Controls testing

3.3.2.4.14. Performance Verification testing

3.3.2.4.15. Other systems testing, if required

3.3.2.4.16. Contractor's pre-final inspection

3.3.2.4.17. Correction of punch list from Contractor's pre-final inspection

3.3.2.4.18. Government's pre-final inspection

3.3.2.4.19. Correction of punch list from Government's pre-final inspection

3.3.2.4.20. Final Inspection

3.3.2.5. 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.

3.3.2.6. 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.

3.3.2.7. 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

3.3.2.8. 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.

3.3.2.9. 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.

3.3.2.10. 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, Construction Submittal, Approval, 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.

3.3.2.11. 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 in the accepted contract proposal, 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. Correct out of sequence progress that continues for more than two update cycles by logic revision, as approved by the Contracting Officer.

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

The schedule must 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.

3.4. 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. The schedule shall 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 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: www.rmssupport.com. 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. The network diagram shall 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

Diagrams shall 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. Activity Statusing

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 statused 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

The Contractor shall 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 Ris 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 montly 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 two (2) copies of the submittal and return one (1) 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 one (1) 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

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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 ten (10) 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 shall be accounted for by a listed. 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. 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.

3.5.3. 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 90.1-2004 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 (use only one source) such as MASTERSPEC from the American Institute of Architects, SPECTEXT from Construction Specification Institute or Unified Facility Guide Specifications (UFGS using MASTERFORMAT 2004 numbering system), etc. (including specifications from these sources). 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).

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

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. Information Systems including the following responsibilities:

(a) Telecommunications Cabling

(b) Supporting Infrastructure

(a) Outside Plant (OSP) Cabling - Campus or Site Plans - Exterior Pathways and Inter-Building Backbones

(a) 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.

(b) Layout of complete building per floor - Serving Zone Boundaries, Backbone Systems, and Horizontal Pathways including Serving Zones Drawings - Drop Locations and Cable ID's

(c) 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.

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 CADD 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. Drawing files with external references or special fonts are not acceptable. 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) **ANSI D** Full Sets/ *Partial Sets	Design Analyses & Specs Full Sets/ *Partial Sets	Drawing Size (Half Size) **11 x 17** Full Sets/ *Partial Sets	Non-BIM Data CD-ROM or DVD as Necessary (PDF& **.dgn**)	Furniture Submittal (FFE)	Structural Interior Design Submittal	BIM Data DVD (Per Attach F)
Commander, U.S.Army Engineer District **USACE Louisville District**	1/0	8/0	8/0	2	2	2	1
Commander, U.S.Army Engineer District, Center of Standardization **Not Applicable**	0/0	0/0	0/0	0	0	0	0
Installation	0/0	0/0	2/0	18	2	2	0
U.S.Army Corps of Engineers Construction Area Office	1/0	3/0	3/0	2	2	2	1
Information Systems Engineering Command (ISEC)	0/0	0/0	0/0	1	1 (Electronic only)	N/A	1
Other Offices	0/0	0/0	0/0	0	0	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

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 two (2) 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 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 three 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) Manufacturer, Product name and Product model number or National Stock Number (NSN)

(f) Finish name and number (code to finish samples)

(g) Fabric name and number, minimum Wyzenbeek Abrasion Test double rubs (code to fabric samples)

(h) Dimensions

(i) Item location by room number and room name

(j) Quantity per room

(k) Total quantity

(l) Special instructions for procurement ordering and/or installation (if applicable)

(m) 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. Alternate Manufacturer List

Provide a table consisting of major furniture items that lists the manufacturers products specified on the Order Form and two alternate manufacturers. Major furniture items include, but are not limited to, casegoods, furniture systems, seating, and tables. Organize matrix by item code and item name. Supply alternates that are available on GSA Schedule and meet the requirements of the Furniture Order Form. One of the two alternates must be from UNICOR if possible. Provide manufacturer name address, telephone number, product series and product name for each alternate manufacturer.

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.

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 use 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.

1.2.2. Workstation Plans

Show each typical workstation configuration in plan view, elevations or 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, elevation or 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.

1.3. 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 provide desks, storage and tables with leveling devices to compensate for uneven floors.

1.4.2. Provide worksurface tops constructed to prevent warpage. 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, specify lockable desks and workstations and storage of steel construction. Use tempered glass glazing when glazing is required.

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 industrial shelving, workbenches, 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 industrial shelving, workbenches, 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 (except worksurfaces) with mitered solid wood edge of same wood type. Provide worksurface plastic laminate that closely matches adjacent wood veneer. 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. Universal casters that are appropriate for both hard surface flooring and carpet are preferred. All seating shall support up to a minimum of 250 lbs.

1.11.2. Desk and Guest Seating

Select ergonomic desk chairs with casters, non-upholstered adjustable arms, 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.

1.11.6. Lounge, Waiting and Reception Furniture.

Design for end and coffee tables with plastic laminate tops that are compatible in style finish and color with the seating.

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.

Don't use plastic laminate self edge. Training tables shall be reconfigurable, moveable and storable; lighter weight folding with dollies or castered as necessary. Specify dollies if 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
Desks - 10 year minimum
Seating, unless otherwise noted - 10 year minimum
Seating Mechanisms and Pneumatic Cylinders - 10 years
Fabric - 3 years minimum
Filing and Storage - 10 year minimum
Tables, unless otherwise noted - 10 year minimum
Table Mechanisms – 5 year
Table Ganging Device - 1 year
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 reviewers enter design review comments into DrChecks. Designers of Record shall annotate comments timely and specifically to indicate exactly what action will be taken or why the action is not required. 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 agreed to by the designers and reviewers prior to the next submittal. The DrChecks comments and responses shall be printed and included in the design analysis for record.

2.1. 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.

2.2. The Designers of Record shall answer each comment in DrChecks with a formal response prior to the next submittal, clearly indicating what action will be taken and what drawing/spec will change. 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 design conference, reviewers will back-check answers to the comments against the submittal, in addition to reviewing additional design work.

2.3. Comments that, in the DB Contractor's opinion, require effort outside the scope of the contract shall be clearly indicated as such in DrChecks. The DB Contractor shall 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 designers 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

The role of the designers of record is to evaluate and respond to the comments entered by the Government reviewers and by the DB Contractor. 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 (concur, non-concur, for information only, or check and resolve) and add the response.

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 Back-check

At the following design conference, participants will back-check comment annotations against newly presented documents to verify that the designers' responses are acceptable and completed. The Contractor and Government reviewers shall either enter additional back-check comments, as necessary or close those that are resolved as a result of the design conferences:

6.1. Log into DrChecks.

6.2. Click on the appropriate project.

6.3. Under “My Backcheck” click on the number under “Pending”.

6.4. If you agree with the designer’s response select “Close Comment” and add a closing response if desired.

6.5. 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.

6.6. Click on the Add button. The back-check will be added to the database and a fresh screen will appear with the next comment.

6.7. 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 Accessiblity 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.		CIV

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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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			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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PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
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							

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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 ANSI D 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 [Not Supplied - SubmittalReqCADDSystem : BENTLEY_VERSION] 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 USACE Louisville 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 USACE Louisville 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 USACE Louisville 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).	

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 responsible for the overall construction activities at the site, including 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.

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.

3.2.3. 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). 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 To Be Determined (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:

  To Be Determined (TBD)

  TBD

  TBD

  TBD
- For other deliveries:

  To Be Determined (TBD)

TBD

TBD

TBD

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

1.0 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 http://www.usace.army.mil/publications/eng-pamphlets/ep310-1-6a/s-16.pdf.

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.

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 that 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 200-5 Pest Management, Chapter 2, Section III "Pest Management Records and Reports" 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 and a blank checklist (fill-able) in ADOBE (PDF) may be obtained at the following web site:
http://www.wbdg.org/ccb/DOD/UFC/ufc_1_300_08.pdf

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		

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
Preliminary Geotechnical Report

PRELIMINARY CHARACTERIZATION REPORT

Ft. Campbell Language Sustainment Facility

FT. CAMPBELL, KENTUCKY

ECS PROJECT NO. 26-1472

FOR

GOVERNMENT SERVICES IPT, LLC

MARCH 29, 2010

ECS SOUTHEAST, LLC

Geotechnical • Construction Materials Testing • Environmental • Facilities

March 29, 2010

Mr. Frank Lin
Government Services IPT, LLC
4221 Forbes Blvd.
Suite 250
Lanham, Maryland 20706

ECS Project No. 26:1472

Reference: Preliminary Characterization Report, Ft. Campbell SOF Language Sustainment Facility, Ft. Campbell, Christian County, KY

Dear Mr. Lin:

ECS Southeast, LLC has completed a preliminary characterization report based on our subsurface exploration for the property located east of the intersection of Kentucky Ave. and 42nd St. in Ft. Campbell, Kentucky.

The enclosed report describes the subsurface exploration procedures, laboratory testing, and preliminary findings related to geotechnical design and site development. A Site Vicinity Map and Boring Location Plan are included in the Appendix along with the Boring Logs and Laboratory Test Sheets.

We appreciate this opportunity to be of service to you during the design phase of this project. If you have any questions with regard to the information and recommendations presented in this report, please do not hesitate to contact us.

Respectfully,

ECS SOUTHEAST, LLC

Caleb Nelson
Project Engineer

STATE OF KENTUCKY
PHILLIP J. COLLINS
20119
LICENSED PROFESSIONAL ENGINEER

Philip J. Collins, P.E.
Principal Engineer

I:\Geotechnical D3\D3 Projects\1401-1500\26-1472 Ft. Campbell SOF Language Sustainment Facility\Final Report\26-1472 Ft. Campbell SOF Language Sustainment Facility Characterization Report Final-Revised.doc

PRELIMINARY GEOTECHNICAL REPORT

PROJECT

Preliminary Characterization Report
Ft. Campbell SOF Language Sustainment Facility
Ft. Campbell, KY

CLIENT

Government Services IPT, LLC
4221 Forbes Blvd.
Suite 250
Lanham, Maryland 20706

SUBMITTED BY

ECS Southeast, LLC
441 Donelson Pike
Suite 330
Nashville, TN 37214

PROJECT 26:1472

DATE March 29, 2010

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PROJECT OVERVIEW

Introduction

This report presents the results of our subsurface exploration and geotechnical engineering services for property located northeast of the intersection of Kentucky Ave. and 42nd St., in Ft. Campbell, Kentucky. A Site Vicinity Map – Figure 1, included in the Appendix, shows the approximate location of this property.

Scope of Services

The conclusions contained in this report are based on the soil borings on the property and associated laboratory tests of selected soil samples.

The scope of services included drilling 4 soil test borings to identify the general characteristics of the subsurface. Soil test borings were planned at depths of 5 to 25 feet or auger refusal. The results of the soil borings, along with a Boring Location Plan – Figure 2 showing the approximate boring, are included in the Appendix. Laboratory testing was accomplished on select soil samples obtained during the drilling process. Laboratory testing on the selected samples included natural moisture content, CBR testing, modified proctor testing, soil plasticity testing and #200 washed sieve tests. The laboratory test results are included in the Appendix.

This report presents recommendations for foundation design and site preparation for the intended construction. The report provides construction considerations based upon the results of the soil borings, laboratory testing and ECS' previous experience.

Project Information

The property is bound on the north by a grass area and athletic courts, on the south by a 42nd St., on the east by a building and to the west by Kentucky Ave. The property lies within the Ft. Campbell Military Facility. The proposed project will consist of a Language Sustainment Facility and associated parking and drive areas. We have not been provided any information on structural loads. However, we have assumed the maximum loads will be 200 kips for columns and 5 klf for walls. We anticipate that cut and fill operations will be less than 5 feet each.

EXPLORATION PROCEDURES

Subsurface Exploration Procedures

Prior to drilling, underground utilities were cleared through the Tennessee One-Call system. Tennessee One-Call handles all utility locations at Ft. Campbell. The soil borings were located in the field by an ECS professional. The Boring Location Plan attached in the Appendix indicates the approximate locations of the borings.

The soil borings were drilled using an articulated rubber-tire carrier with a mounted CME 75 rotary drill rig, which utilized 2¼ inch hollow stem augers to advance the boreholes. Representative soil samples were secured by means of conventional split-barrel sampling procedures (ASTM D1586). In this procedure, a 2-inch O.D., split-barrel sampler is driven into the soil a distance of 18 inches by a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler through the final 12-inch interval, after initial setting of 6 inches, is termed the Standard Penetration Test (SPT) value or N-value, and is indicated for each sample on the boring logs.

The SPT values can be used as a qualitative indication of the in-place relative density of cohesionless soils, and as a relative indication of consistency in cohesive soils. This indication is qualitative, since many factors can significantly affect the standard penetration resistance value and prevent a direct correlation between drill crews, drill rigs, drilling procedures, and hammer-rod-sampler assemblies. The drill rig utilized a cathead and drop hammer to drive the sampler.

A field log of the soil encountered at each boring was maintained by the drilling crew. After recovery, each geotechnical sample was removed from the sampler and visually classified by the driller. Representative portions of each soil sample were then sealed in plastic bags and transported to our laboratory in Nashville, Tennessee for further visual examination and laboratory testing. After completion of the drilling operations, the boreholes were backfilled with auger cuttings and excess soil was mounded at the surface.

Laboratory Testing Program

Representative soil samples were selected and tested in our laboratory to check field classifications and to determine pertinent engineering properties. The laboratory testing program included visual soil classifications, natural moisture content determinations, soil plasticity testing, CBR testing, modified proctor testing and #200 washed sieve testing.

An experienced engineer classified each soil sample on the basis of texture and plasticity in accordance with the Unified Soil Classification System. The group symbols for each soil type are indicated in parentheses following the soil descriptions on the boring logs. A brief explanation of the Unified System is included with this report. The engineer grouped the various

soil types into the major zones noted on the boring logs. The stratification lines designating the interfaces between materials on the boring logs are approximate; in situ, the transitions may be gradual.

The soil samples will be retained in our laboratory for a period of 60 days, after which, they will be discarded unless other instructions are received as to their disposition.

EXPLORATION RESULTS

Site Conditions

The site is currently developed with a two-story CMU building. A parking area is located on the east side of the building. Concrete sidewalks, grass, trees and some landscaping were present along the perimeter of the building. The property is bound on the north by a grass area and athletic courts, on the south by a grass area and 42nd St., on the east by a parking lot and buildings and to the west by a grass and tree covered area and Kentucky Ave. The property lies within the Ft. Campbell Military Facility. Elevations within the property range from 540 feet to 545 feet.

Site Geology

The USGS Geologic Map of the Oak Grove Quadrangle (1966) indicates this particular site is underlain predominately by the Ste. Genevieve Limestone Formation. This formation is typically an oolitic, medium to Iight-gray, medium to thick-bedded, fossiliferous limestone containing numerous chert stringers. Native soil (residuum) formed by the solution weathering of this parent limestone formation typically consists of reddish-brown silty clay of low to moderate plasticity.

The site is located within karst geology, which is susceptible to sinkhole development. Although our exploration did not indicate obvious sinkhole activity, it is important to note that there are still risks associated with developing karst areas. The risk level can be difficult to determine since the risks are partially controlled by nature. However, implementing proper site drainage can reduce the risks significantly. If desired, detailed investigations, such as geophysical studies, can be performed to better identify the risks associated with developing on this site.

Subsurface Conditions

The site subsurface conditions were explored with 4 soil borings drilled to 5 to 25 feet or auger refusal. The subsurface conditions discussed in the following paragraphs, and those shown on the boring logs, represent an estimate of the subsurface conditions based on interpretation of the boring data using normally accepted geotechnical engineering judgments. We note that the transition between different soil strata is usually less distinct than those shown on the boring logs.

In most of the borings, surface material consisted of 8 to 10 inches of topsoil. The surface material in boring SB-3 consisted of 6 inches of asphalt underlain by 12 inches of gravel. Fill material was encountered from 1 to 8 feet in the borings. The fill material consisted of brown silty clay (CL) and reddish brown silty clay (CL). The soil consistency of the fill material was soft to very stiff. Residual soil consisted of red clay (CL) with varying amounts of chert. The borings generally sampled brown to red silty clay (CL) of moderate plasticity with varying amounts of chert. Standard penetration sampling indicated that the site soil exhibited N-values ranging from 3 to 24 blows per foot (bpf), suggesting a cohesive soil consistency of soft to very stiff. The natural moisture content of the samples ranged from 16% to 34% in most of the borings. Selected samples for Atterberg Limits tests indicated liquid limits of 32 and 37, and plasticity indices of 13 and 15, respectively. Selected samples for washed sieve tests indicated 85% and 96% of the material passing a No. 200 sieve. One CBR test indicated laboratory CBR value of 6.1, with a modified proctor test indicating a maximum dry density of 121.2 pcf and optimum moisture of 11.1%.

Groundwater Observations

The borings were dry during and at completion of soil drilling with the exception of boring SB-2, which encountered water at 18.5 feet. However, it is possible for perched water to exist within the depths explored during other times of the year depending upon climatic and rainfall conditions. Additionally, discontinuous zones of perched water may exist within the overburden materials and/or at the contact with bedrock. The highest groundwater observations are normally encountered in the late winter and early spring, and our current groundwater observations should not be near seasonal highs. Variations in the location of the long-term water table may occur as a result of change in precipitation, evaporation, surface water runoff, and other factors not immediately apparent at the time of this exploration.

Seismic Site Class

Based on our interpretation of IBC 2006 and our experience at Ft. Campbell, it is our preliminary opinion that a Seismic Site Class C is appropriate for this site. From local experience, it is our opinion that this site has a relatively low potential for liquefaction and that tying of adjacent foundations together with grade beams or other methods should not be needed from a seismic standpoint. If desired, ECS can perform shear wave velocity testing to further evaluate the subsurface profile and possibly assign a better seismic site class.

CLOSING

This report has been prepared in order to aid in the evaluation of this property and to assist the architect and/or engineer in the preliminary design of this project. The scope is limited to the specific project and locations described herein and our description of the project represents our understanding of the significant aspects relative to soil and foundation characteristics. In the event that any change in the nature or location of the proposed construction outlined in this report occur, we should be informed so that the changes can be reviewed and the conclusions of this report modified or approved in writing by the geotechnical engineer. We recommend that a final geotechnical evaluation report be prepared during the final design phase. It is recommended that all construction operations dealing with earthwork and foundations be reviewed by an experienced geotechnical engineer to provide information on which to base a decision as to whether the design requirements are fulfilled in the actual construction. We welcome the opportunity to provide field construction services for you during construction.

The analysis and recommendations submitted in this report are based upon the data obtained from the soil borings. Laboratory tests performed at the locations as indicated on the Boring

Location Plan and other information referenced in this report. This report does not reflect any variations which may occur between the borings or test pits. In the performance of the subsurface exploration, specific information is obtained at specific locations at specific times. However, it is a well known fact that variations in soil conditions exist on most sites between boring locations and also such situations as groundwater levels vary from time to time. The nature and extent of variations may not become evident until the course of construction. If variations then appear evident, after performing on-site observations during the construction period and noting characteristics and variations, a re-evaluation of the recommendations for this report will be necessary.

APPENDICES

Site Vicinity Map

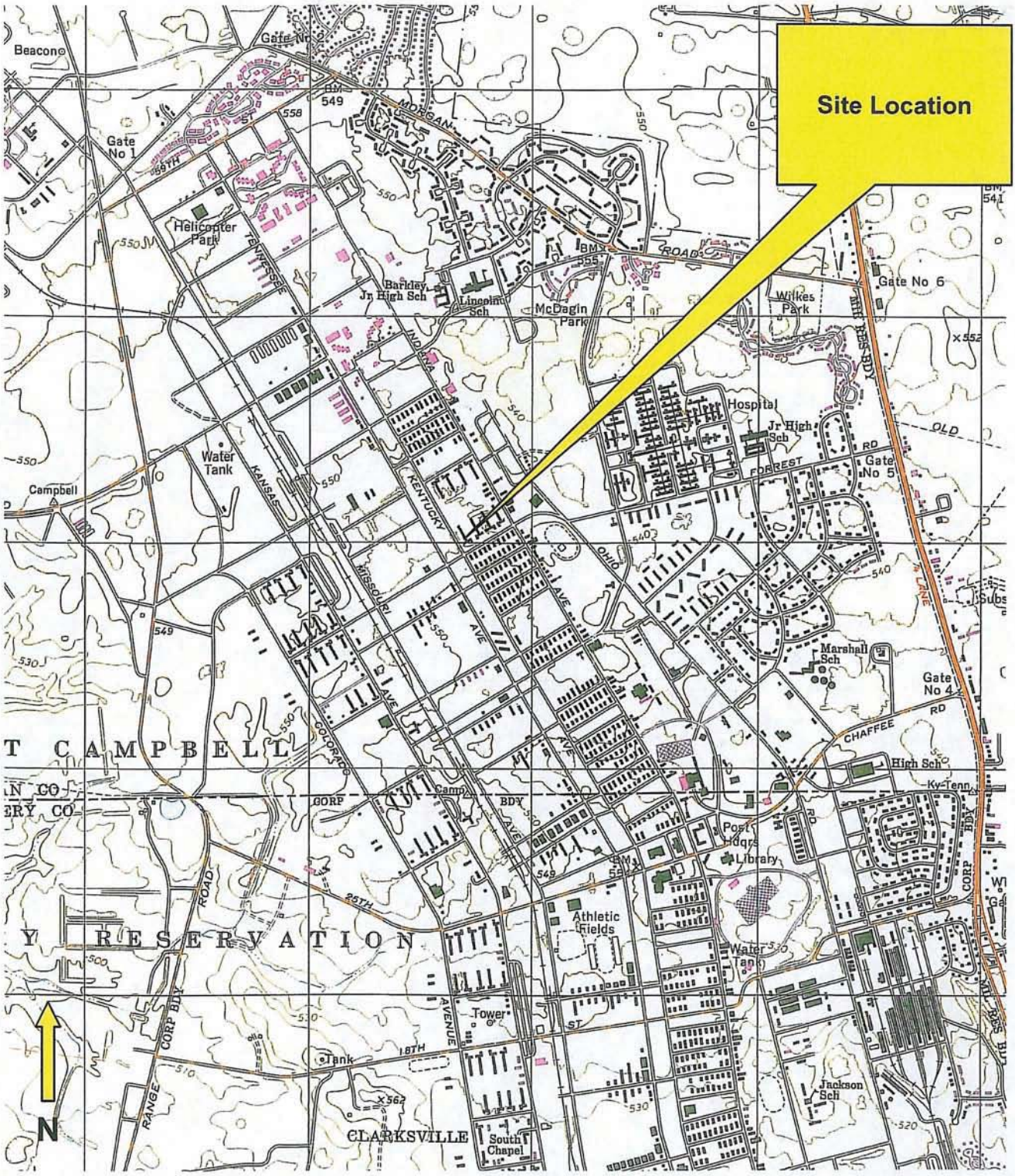
Boring Location Plan

Boring Logs

Unified Soil Classification System

Reference Notes for Boring Logs

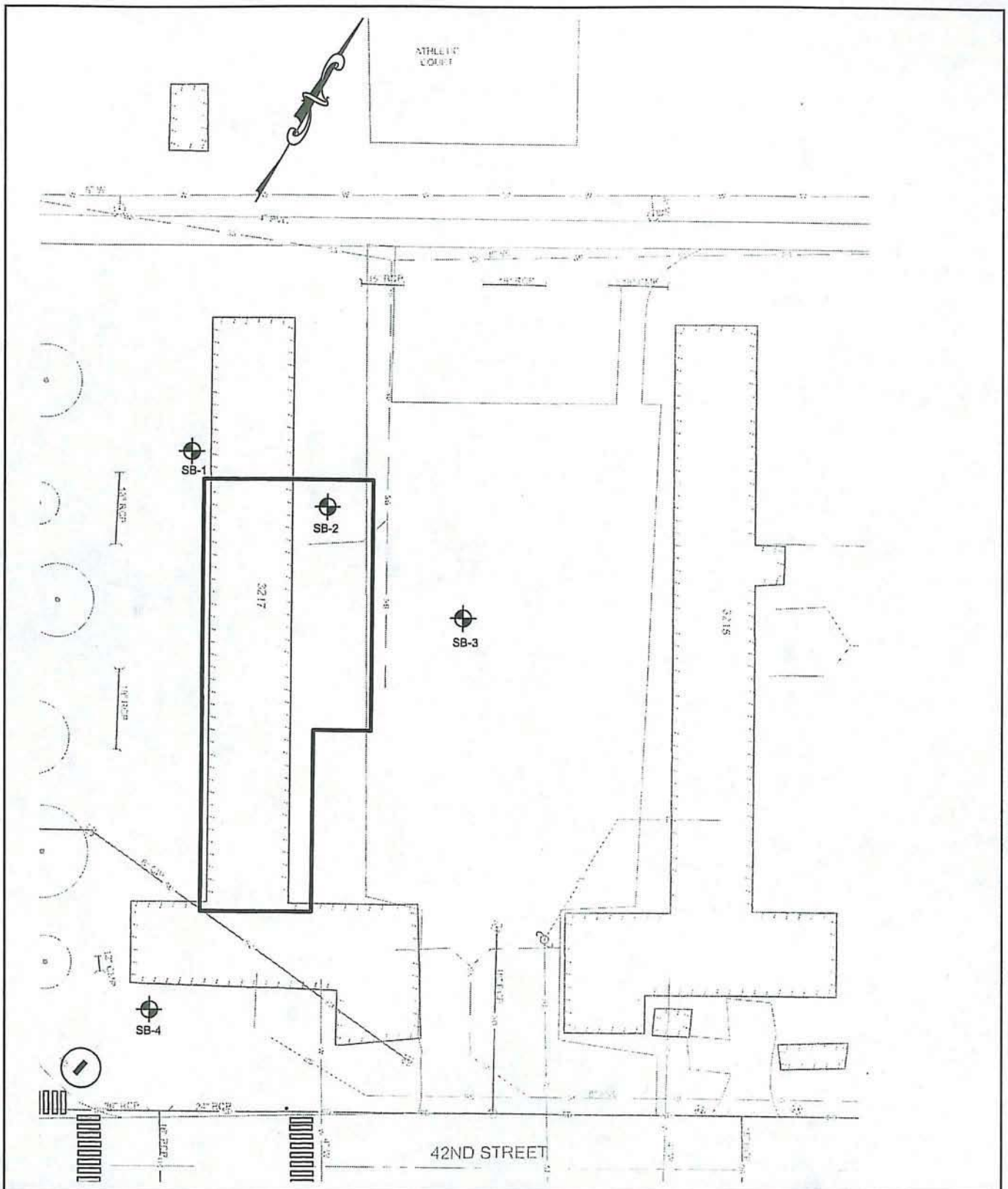
Laboratory Test Summaries



Ft. Campbell SOF Language Facility
Kentucky Ave. & 42nd St.
Ft. Campbell, Kentucky
ECS Project No.: 26-1472

ECS LLC SOUTHEAST

Figure 1: Site Location
Source:USGS Oak Grove, KY/ TN
Topographic Quadrangle, 1972
(photorevised 1982)
Scale: approximately 1:24000



Ft. Campbell SOF Language Facility
Kentucky Ave. & 42nd St.
Ft. Campbell, Kentucky
ECS Project No.: 26-1472

ECS LLC SOUTHEAST

Figure 2: Boring Locations

Scale: No Scale

CLIENT	JOB #	BORING #	SHEET
Government Services IPT, LLC	26-1472	SB-1	1 OF 1

PROJECT NAME: Ft. Campbell SOF Language Sustainment Facility

ARCHITECT-ENGINEER:

SITE LOCATION: Ft. Campbell, KY

ECS LLC SOUTHEAST

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— (20%, 40%, 60%, 80%, 100%)

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50+)

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	STANDARD PENETRATION BLOWS/FT.
0					TOPSOIL DEPTH 8"	
	1	SS	18	18	Brown Silty Clay (CL), stiff consistency, fill	10 (2-4-6)
	2	SS	18	18	Red/Brown Silty Clay (CL), stiff consistency, fill	10 (2-4-6)
5	3	SS	18	18		11 (3-5-6)
	4	SS	18	18		15 (4-6-9)
10						
	5	SS	18	18	Red Clay (CL) w/chert, stiff consistency	16 (4-5-11)
15						
	6	SS	18	18		10 (3-4-6)
20						
	7	SS	18	18		11 (5-6-5)
25					END OF BORING @ 25.00'	
30						

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL Dry — WS OR WD	BORING STARTED 3/12/10	
WL(BCR) — WL(ACR)	BORING COMPLETED 3/12/10	CAVE IN DEPTH @
WL	RIG CME 75 FOREMAN Tri-State	DRILLING METHOD HSA/Cathead

CN (03-17-10) CN (03-29-10)

CLIENT	JOB #	BORING #	SHEET
Government Services IPT, LLC	26-1472	SB-2	1 OF 1

PROJECT NAME: Ft. Campbell SOF Language Sustainment Facility

ARCHITECT-ENGINEER:

SITE LOCATION: Ft. Campbell, KY

ECS LLC SOUTHEAST

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— (20%, 40%, 60%, 80%, 100%)

⊗ STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50+)

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	STANDARD PENETRATION BLOWS/FT.
0					TOPSOIL DEPTH 10"	
	1	SS	18	18	Brown Silty Clay (CL) w/ topsoil, soft consistency, fill	3 (3-2-1)
	2	SS	18	18		6 (6-3-3)
5						
	3	SS	18	18	Red Brown Silty Clay (CL), medium stiff consistency, fill	8 (3-4-4)
	4	SS	18	18	Red Clay (CL), stiff consistency	12 (4-6-6)
10						
	5	SS	18	18		12 (5-6-6)
15						
	6	SS	18	18	Red Clay (CL) w/ chert, very stiff consistency	21 (5-12-9)
20						
	7	SS	18	18		18 (6-9-9)
25					END OF BORING @ 25.00'	
30						

WATER LEVELS — ELEVATION (FT)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL — WS OR WD	BORING STARTED 3/12/10	
▽ WL(BCR) 18.5 ▽ WL(ACR) 17.0	BORING COMPLETED 3/12/10	CAVE IN DEPTH @
▽ WL	RIG CME 75 FOREMAN Tri-State	DRILLING METHOD HSA/Cathead

CN (03-17-10) CN (03-29-10)

CLIENT	JOB #	BORING #	SHEET
Government Services IPT, LLC	26-1472	SB-3	1 OF 1

PROJECT NAME: Ft. Campbell SOF Language Sustainment Facility

ARCHITECT-ENGINEER:

SITE LOCATION: Ft. Campbell, KY

ECS LLC SOUTHEAST

CALIBRATED PENETROMETER TONS/FT.^{2}: 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— 20% 40% 60% 80% 100%

STANDARD PENETRATION BLOWS/FT.: 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	STANDARD PENETRATION BLOWS/FT.
0					ASPHALT DEPTH 6"	
	1	SS	18	18	GRAVEL DEPTH 12"	18 (5-7-11)
	2	SS	30	30	Brown Silty Clay (CL) w/ gravel pieces, very stiff consistency, fill	15 (6-7-8)
5					Brown Clay (CL), stiff consistency, fill	
					END OF BORING @ 5.00'	
10						
15						
20						
25						
30						

WATER LEVELS — ELEVATION (FT)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL Dry — WS OR WD	BORING STARTED 3/12/10	
WL(BCR) — WL(ACR)	BORING COMPLETED 3/12/10	CAVE IN DEPTH @
WL	RIG CME 75 FOREMAN Tri-State	DRILLING METHOD HSA/Cathead

CN (03-17-10) CN (03-29-10)

CLIENT	JOB #	BORING #	SHEET
Government Services IPT, LLC	26-1472	SB-4	1 OF 1

PROJECT NAME: Ft. Campbell SOF Language Sustainment Facility

ARCHITECT-ENGINEER:

SITE LOCATION: Ft. Campbell, KY

ECS LLC SOUTHEAST

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— (20%, 40%, 60%, 80%, 100%)

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50+)

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	STANDARD PENETRATION BLOWS/FT.
0					TOPSOIL DEPTH 10"	
	1	SS	18	18	Brown Silty Clay (CL) w/ topsoil, stiff consistency, fill	12 (5-6-6)
	2	SS	18	18	Brown Silty Clay (CL), medium stiff consistency, fill	7 (3-3-4)
5	3	SS	18	18	Brown Gray Silty Clay (CL), very stiff consistency, fill	20 (5-10-10)
	4	SS	18	18	Brown Tan Clay (CL), stiff consistency	12 (5-6-6)
10	5	SS	18	18		14 (4-6-8)
15	6	SS	18	18	Red Cherty Clay (CL), stiff to very stiff consistency	24 (12-12-12)
20	7	SS	18	18		14 (4-5-9)
25					END OF BORING @ 25.00'	
30						

WATER LEVELS — ELEVATION (FT)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL Dry — WS OR WD	BORING STARTED 3/12/10	
WL(BCR) — WL(ACR)	BORING COMPLETED 3/12/10	CAVE IN DEPTH @
WL	RIG CME 75 FOREMAN Tri-State	DRILLING METHOD HSA/Cathead

CN (03-17-10) CN (03-29-10)

REFERENCE NOTES FOR BORING LOGS

I. Drilling and Sampling Symbols:

SS	Split Spoon Sampler	PM	Pressuremeter	PA	Power Auger (no sample)
ST	Shelby Tube Sampler	RB	Rock Bit Drilling	HSA	Hollow Stem Auger
RC	Rock Core: NX, BX, AX	BS	Bulk Sample of Cuttings	WS	Wash Sample
WOH	Sample Advanced w/ Wt. of Hammer & Rods				

Standard Penetration Test Blow Count (Blows/Ft) refers to the blows per foot of a 140lb. hammer falling 30 inches on a 2 inch O.D. split spoon sampler, as specified in ASTM D-1586. The blow count is commonly referred to as the N-value.

II. Correlation of Penetration Resistance to Soil Consistency:

Sands		Cohesive Soils -Silts and Clays		
SPT N Value	Consistency	SPT N Value	Consistency	Unconfined Compressive Strength, Qp, tsf
0 - 3	Very Loose	0 - 2	Very Soft	0 - 0.25
4 - 9	Loose	3 - 4	Soft	0.25 - 0.5
10 - 29	Medium Dense	5 - 8	Medium Stiff	0.5 - 1.0
30 - 49	Dense	9 - 16	Stiff	1.0 - 2.0
50 - 100	Very Dense	17 - 29	Very Stiff	2.0 - 4.0
100+	Partially Weathered Rock	30 - 50	Hard	4.0 - 8.0
		50 - 100	Very Hard	>8.0
		100+	Partially Weathered Rock	

III. Unified Soil Classification Symbols:

GP	Poorly Graded Gravel	SW	Well Graded Sand	CL	Low Plasticity Clay
GW	Well Graded Gravel	SM	Silty Sand	CH	High Plasticity Clay
GM	Silty Gravel	SC	Clayey Sand	OL	Low Plasticity Organics
GC	Clayey Gravel	ML	Low Plasticity Silt	OH	High Plasticity Organics
SP	Poorly Graded Sand	MH	High Plasticity Silt	CL-ML	Dual Classification (Typical)

Modifiers: "trace" = 0% to 10%, "with"= 15% to 25%, "clayey, silty or sandy" = 30% to 50%

IV. Water Level Measurement Symbols:

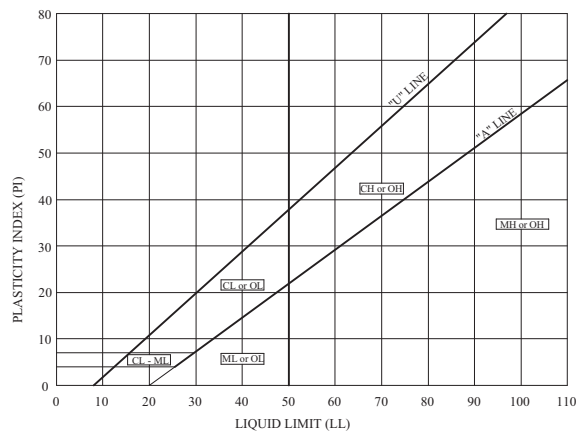
WL	Water Level	BCR	Before Casing Removal
WS	While Sampling	ACR	After Casing Removal
WD	While Drilling	WCI	Wet Cave In
		DCI	Dry Cave In

The water levels are those water levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in a granular soil. In clays and plastic silts, the accurate determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally applied.

Unified Soil Classification System
(ASTM Designation D-2487)

Major Division			Group Symbol	Typical Names			Classification Criteria
Coarse-grained soils More than 50% retaining on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve		GW	Well-graded gravels and gravel-sand mixtures, little or no fines	Classification on basis of percentage of fines	GW, GP, SW, SP, GM, GC, SM, SC Borderline classification requiring use of dual symbol	$C_U = D_{60}/D_{10}$ Greater than 4 $C_Z = (D_{30})^2/(D_{10} x D_{60})$ Between 1 and 3
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines			Not meeting both criteria for GW
			GM	Silty gravels, gravel-sand-silt mixtures			Atterberg limits plot below "A" line or plasticity index less than 4
			GC	Clayey gravels, gravel-sand-clay mixtures			Atterberg limits plot above "A" line and plasticity index greater than 7
	Sands More than 50% of coarse fraction passes No. 4 sieve		SW	Well-graded sands and gravelly sands, little or no fines		Less than 5% Pass No. 200 sieve More than 12% Pass No. 200 sieve 5% to 12% Pass No. 200 sieve	$C_U = D_{60}/D_{10}$ Greater than 6 $C_Z = (D_{30})^2/(D_{10} x D_{60})$ Between 1 and 3
			SP	Poorly graded sands and gravelly sands, little or no fines			Not meeting both criteria for SW
			SM	Silty sands, sand-silt mixtures			Atterberg limits plot below "A" line or plasticity index less than 4
			SC	Clayey sands, sand-clay mixtures			Atterberg limits plot above "A" line and plasticity index greater than 7
Fine grained soils 50% or more passing No. 200 sieve	Silts or Clays Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands			
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays			
			OL	Organic silts and organic silty clays of low plasticity			
	Silts or Clays Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts			
			CH	Inorganic clays of high plasticity, fat clays			
			OH	Organic clays of medium to high plasticity			
Highly organic soils			Pt	Peat, muck and other highly organic soils			Fibrous organic matter; will char, burn, or glow

Note: U-line represents approximate upper limit of LL and PI combinations for natural soils (empirically determined). ASTM-D2487



Plasticity chart for the classification of fine-grained soils.
Tests made on fraction finer than No. 40 sieve.

UNIFIED SOIL CLASSIFICATION SYSTEM

ECS SOUTHEAST, LLC

Nashville, Tennessee

Laboratory Testing Summary

Date: 30-Mar-10

Project Number: 26-1472

Project Name: Ft. Campbell SOF Language Sustainment Facility

Project Engineer: TCN

Principal Engineer: PJC

Summary By: TCN

Boring Number	Sample Number	Depth (feet)	Moisture Content (%)	Soil Description	LL	PL	PI	Percent Passing No. 200 Sieve	Maximum Dry Density (pcf)	Optimum Moisture Content (%)	CBR	Other
SB-1	1	1-2.5	23.0	Brown Silty Clay (CL)								
SB-1	2	3.5-5	28.1	Red Brown Silty Clay (CL)								
SB-1	3	6-7.5	27.4	Red Brown Silty Clay (CL)					121.2	11.1	6.1	
SB-1	4	8.5-10	32.2	Red Brown Silty Clay (CL)								
SB-1	5	13.5-15	30.9	Red Clay (CL)								
SB-1	6	18.5-20	28.9	Red Clay (CL)								
SB-1	7	23.5-25	31.2	Red Clay (CL)								
SB-2	1	1-2.5	27.5	Brown Silty Clay (CL) w/ topsoil								
SB-2	2	3.5-5	25.3	Brown Silty Clay (CL)	37	22	15	84.7				
SB-2	3	6-7.5	25.6	Red Brown Silty Clay (CL)								

Summary Key:

SA = See Attached
S = Standard Proctor
M= Modified Proctor
V = Virginia Test Method
OC = Organic Content

LL= Liquid Limit
PL= Plastic Limit
PI= Plasticity Index

Hyd = Hydrometer
Con = Consolidation
DS = Direct Shear
GS = Specific Gravity

UCS = Unconfined Compression Soil
UCR = Unconfined Compression Rock
LS = Lime Stabilization
CS = Cement Stabilization

ECS SOUTHEAST, LLC

Nashville, Tennessee

Laboratory Testing Summary

Date: 30-Mar-10

Project Number: 26-1472

Project Name: Ft. Campbell SOF Language Sustainment Facility

Project Engineer: TCN

Principal Engineer: PJC

Summary By: TCN

Boring Number	Sample Number	Depth (feet)	Moisture Content (%)	Soil Description	LL	PL	PI	Percent Passing No. 200 Sieve	Maximum Dry Density (pcf)	Optimum Moisture Content (%)	CBR	Other
SB-2	4	8.5-10	25.9	Red Brown Silty Clay (CL)								
SB-2	5	13.5-15	31.0	Red Brown Silty Clay (CL)								
SB-2	6	18.5-20	34.1	Red Clay (CL) w/ chert								
SB-2	7	23.5-25	33.8	Red Clay (CL) w/ chert								
SB-3	1	1-2.5	16.8	Brown Silty Clay (CL) w/ gravel pieces								
SB-3	2	3.5-5	24.4	Brown Clay (CL)								
SB-4	1	1-2.5	24.9	Brown Silty Clay (CL) w/ topsoil								
SB-4	2	3.5-5	26.5	Brown Silty Clay (CL)								
SB-4	3	6-7.5	18.9	Brown Gray Silty Clay (CL)								
SB-4	4	8.5-10	22.6	Brown Tan Silty Clay (CL)	32	19	13	96.2				

Summary Key:

SA = See Attached
S = Standard Proctor
M= Modified Proctor
V = Virginia Test Method
OC = Organic Content

LL= Liquid Limit
PL= Plastic Limit
PI= Plasticity Index

Hyd = Hydrometer
Con = Consolidation
DS = Direct Shear
GS = Specific Gravity

UCS = Unconfined Compression Soil
UCR = Unconfined Compression Rock
LS = Lime Stabilization
CS = Cement Stabilization

ECS SOUTHEAST, LLC

Nashville, Tennessee

Laboratory Testing Summary

Date: 30-Mar-10

Project Number: 26-1472

Project Name: Ft. Campbell SOF Language Sustainment Facility

Project Engineer: TCN

Principal Engineer: PJC

Summary By: TCN

Boring Number	Sample Number	Depth (feet)	Moisture Content (%)	Soil Description	LL	PL	PI	Percent Passing No. 200 Sieve	Maximum Dry Density (pcf)	Optimum Moisture Content (%)	CBR	Other
SB-4	5	13.5-15	24.4	Brown Tan Silty Clay (CL)								
SB-4	6	18.5-20	27.4	Red Chert Clay (CL)								
SB-4	7	23.5-25	31.8	Red Chert Clay (CL)								

Summary Key:

SA = See Attached
S = Standard Proctor
M= Modified Proctor
V = Virginia Test Method
OC = Organic Content

Hyd = Hydrometer
Con = Consolidation
DS = Direct Shear
GS = Specific Gravity

UCS = Unconfined Compression Soil
UCR = Unconfined Compression Rock
LS = Lime Stabilization

Important Information About Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

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Appendix B

List of Drawings
(See Appendix-J for Plans)

SITE DRAWINGS

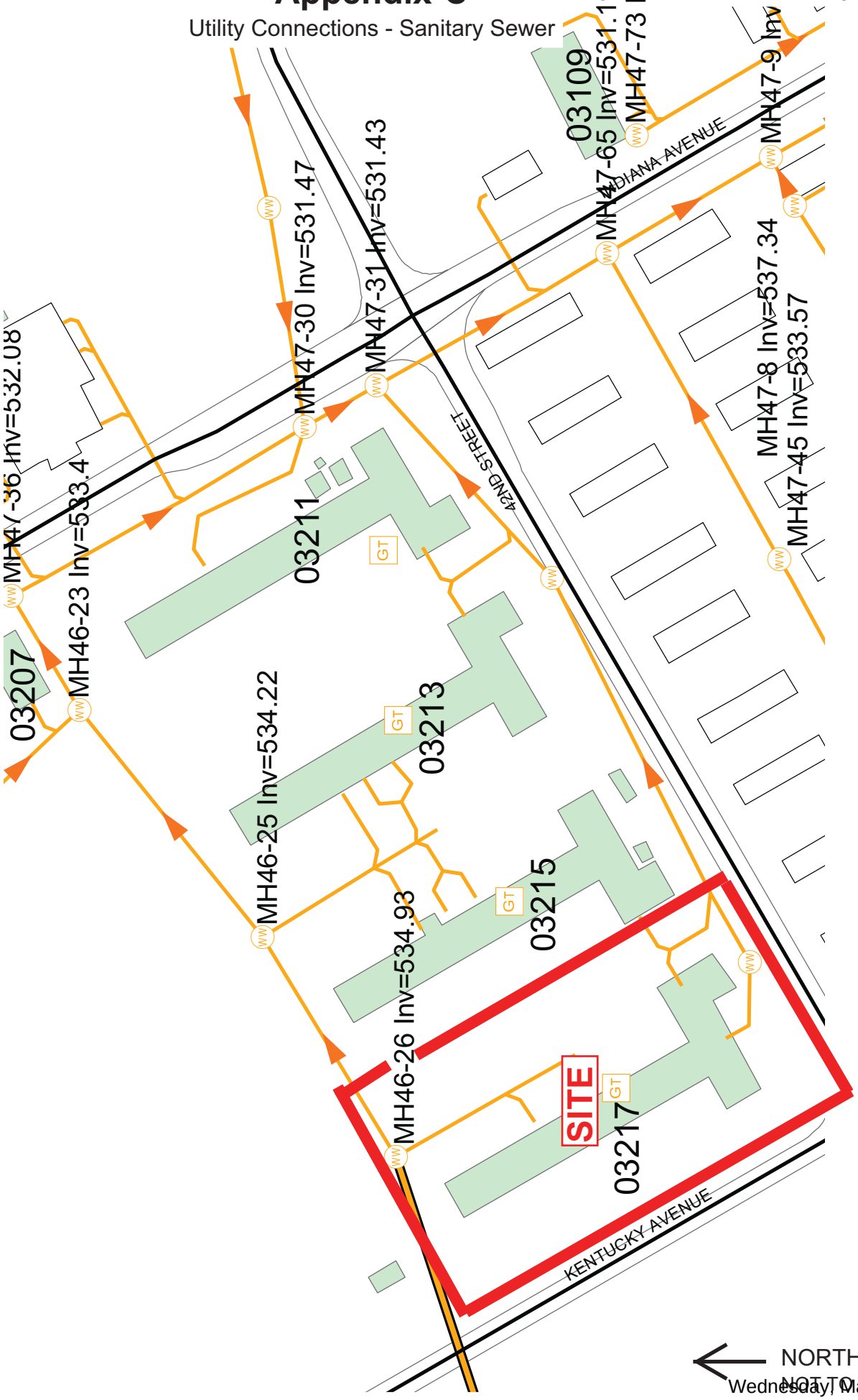
DRAWING NAME	DRAWING NUMBER
1) EXISTING CONDITIONS and CONCEPT DEMOLITION PLAN	CD-100
2) CONCEPT SITE and UTILITY PLAN	CS-100

BUILDING DRAWINGS

DRAWING NAME	DRAWING NUMBER
3) CONCEPT FLOOR PLAN	FP-100

Appendix-C

Utility Connections - Sanitary Sewer



Appendix-C

Utility Connections - Telecommunications

Fort Campbell

Hydraulic Model Calibration Hydrant Flow Test Data Sheet

Test Location	42nd Ky.
Date of Test	3/1/10
Time of Test	1030
CH2M HILL Staff	Hill - Richardson

System Information

Tank Elevations

WTP Clearwell	_____	ft	Destiny Tank	_____	ft
ET2	_____	ft	Sabre Tank	_____	ft
ET3	_____	ft			
ET4	_____	ft			

Pump Stations	Time	ON/ OFF	Pressure (psi)	How Many Pumps Are Running?	Flow (gpm)
WTP Pumps					
Morgan Road PS					
Destiny PS					
Sabre PS					

Flow - H4615
test - H46-13
12" water line

Flow Test Information

Flow Hydrant Information

Size of Hydrant Opening	2.5
No. of Openings Flowed	2
Hydrant Opening Coefficient	.90

Flow Hydrant Test Data

Static Pressure (psi)	N/A
Flow Pressure (psi)	N/A
Post Flow Static Pressure (psi)	N/A
Discharge Flow Rate (gpm)	~~260~~ 2060

Residual Hydrant Test Data

Static Pressure (psi)	60
Flow Pressure (psi)	56
Post Flow Static Pressure (psi)	60

Theoretical Calculated Hydrant Flow at 20 psi

$$Q_R = Q_F \times (h_R\text{^}0.54)/h_F\text{^}0.54$$

Q_R = flow at 20 psi

Q_F = observed flow at measured residual pressure.

h_R = difference between the normal pressure and 20 psi

h_F = difference between normal pressure and observed residual pressure during test

Notes:

The information provided on this Data Sheet represents performance for the referenced fire hydrant at the date and time of day, and under the conditions indicated. Guarantees of fire hydrant performance at other times and conditions are not stated or implied.

Fort Campbell
Hydraulic Model Calibration Hydrant Flow Test Data Sheet

Test Location	42nd and Ky.
Date of Test	3/1/10
Time of Test	1000
CH2M HILL Staff	Hill - Richardson

System Information

Tank Elevations

WTP Clearwell	_____	ft	Destiny Tank	_____	ft
ET2	_____	ft	Sabre Tank	_____	ft
ET3	_____	ft			
ET4	_____	ft			

Pump Stations	Time	ON/ OFF	Pressure (psi)	How Many Pumps Are Running?	Flow (gpm)
WTP Pumps					
Morgan Road PS					
Destiny PS					
Sabre PS					

Flow- H46-13
test- H46-15
16" waterline

Flow Test Information

Flow Hydrant Information

Size of Hydrant Opening	2.5
No. of Openings Flowed	2
Hydrant Opening Coefficient	.90

Flow Hydrant Test Data

Static Pressure (psi)	N/A
Flow Pressure (psi)	N/A
Post Flow Static Pressure (psi)	N/A
Discharge Flow Rate (gpm)	2060

Residual Hydrant Test Data

Static Pressure (psi)	56
Flow Pressure (psi)	52
Post Flow Static Pressure (psi)	56

Theoretical Calculated Hydrant Flow at 20 psi

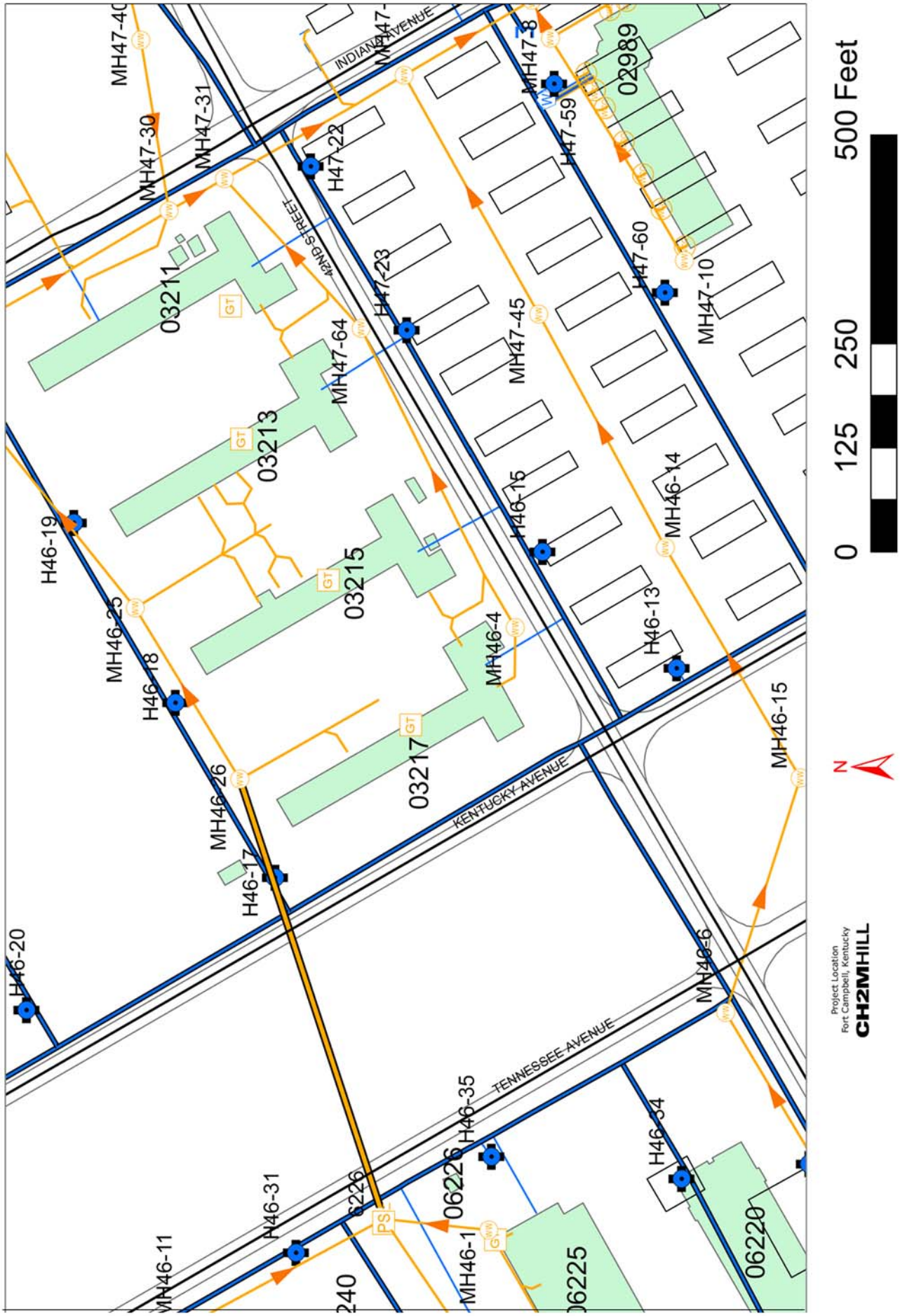
$$Q_R = Q_F \times (h_R\text{^}0.54)/h_F\text{^}0.54$$

Q_R = flow at 20 psi
Q_F = observed flow at measured residual pressure.

h_R = difference between the normal pressure and 20 psi
h_F = difference between normal pressure and observed residual pressure during test

Notes:

The information provided on this Data Sheet represents performance for the referenced fire hydrant at the date and time of day, and under the conditions indicated. Guarantees of fire hydrant performance at other times and conditions are not stated or implied.


0
125
250
500 Feet
N
Project Location
Fort Campbell, Kentucky
CH2MHILL
INDIANA AVENUE
42ND STREET
KENTUCKY AVENUE
TENNESSEE AVENUE
03211
03213
03215
03217
02989
06225
06220
06226
MH47-40
MH47-30
MH47-31
H47-22
H47-23
MH47-64
MH47-45
H47-59
MH47-8
H47-60
MH47-10
H46-19
MH46-25
H46-18
MH46-26
H46-17
H46-20
H46-15
MH46-4
MH46-14
H46-13
MH46-15
MH46-6
H46-35
H46-34
H46-31
MH46-11
MH46-1

REC # 10-057

RECORD OF ENVIRONMENTAL CONSIDERATION

To: DPW - Environmental Division
Building 2182, 13 ½ Street
Fort Campbell, KY 42223

From: DPW - Master Plans Division
Building 865, 16th Street
Fort Campbell, KY 42223

Project Title: Construct 5th SFG Language Lab--MOD (PN 66812)

Brief Description: Construct 5th SFG Language Laboratory to include classrooms, administrative and instructor preparation space, an audio and visual storage area, an information management office and a computer laboratory and distance learning room. Facility will be pre-engineered steel construction with HVAC, electrical, plumbing, and communications. Sidewalks, storm drainage, landscaping, and other site improvements are planned. Access for the handicapped will be provided. Two locations have been proposed (see map below). In Alternate Site 1, building 3217 will be demolished and the parking lot across the street will be repaved. In Alternate Site 2, building 3218 will be demolished.

Anticipated date and/or duration of the proposed action: FY 2010

Reason for using record of environmental consideration: The proposed action is considered categorically excluded under the provisions of CX-C-1 and CX-C-2, 32 CFR part 651, Appendix B, and no extraordinary circumstances exist as defined in 651.29, and because the action is adequately covered in an EA entitled "Standard Practices for Construction Projects in the Cantonment Area", dated 3 May 2004. The EA may be reviewed at DPW, Environmental Division, Building 2182, 13½ Street, Fort Campbell, Kentucky. However, the mitigation/minimization measures, as developed while using the attached REC checklist, must be implemented while this project is being accomplished.

Any change to the footprint of this project may result in a re-evaluation of its environmental impacts.

This document ***DOES NOT*** relieve the proponent of compliance with applicable Federal, State and Local laws and regulations. ***Compliance with the following federal, state, and local laws and regulations is required before the project can be implemented:***

1. Clean Air Act - The contractor must coordinate with the Air Program for GCR Analysis before beginning any activity. GCR checklist must be submitted.
2. Clean Water Act - Coverage under a Storm Water Discharge General Permit. A SW pollution prevention plan is required. Area drains to Dry Fork Creek-east, a 303d listed stream; impairment, sediment. Storm water and sediment must not leave the site; storm water quality/quantity must not exceed preconstruction levels.
3. Solid Waste - Coordinate with SW/R Program for approval of Construction and Demolition Waste Management Plan (WMP). Minimum 50% waste diversion is required. Actual waste diversion must be reported to the Solid Waste Program upon project completion.
4. Forestry – Contact Forestry Program for appraisal prior to beginning construction per AR 200-1. Trees remaining on site must have protection fences per ANSI A300 (Part 5).
5. Hazardous Materials - The Contractor will account for the quantity of HM brought onto the post, the quantity used or expended during the job, and the leftover quantity, which (1) may have additional useful life as HM and shall be removed by the Contractor, or (2) may be hazardous waste.
6. Toxic Substances Control Act - This project covers buildings which contain known asbestos, lead-based paint and lead containing paint materials. Coordination is required prior to implementing action.
7. Cultural Resources – Both buildings, 3217 and 3218, are covered by a Department of Defense Program Comment. No further cultural resources requirements apply to either location.

This REC is valid for up to 1 year from date of Installation Environmental Coordinator's signature.

Sally Castleman, Chief, Master Plans Division — 12 Mar 2010
Project Proponent — Date

Jeffrey J. Atkins, Chief, Environmental Division — 19 MAR 10
Installation Environmental Coordinator — Date

Project Title: Construct 5th SFG Language Lab--MOD (PN 66812)

Project Coordination Sheet

Program	Further Coordination Required		Requirements
	YES	NO	
Air Pollution Program 798-9603	X		The contractor must coordinate with the Air Program for GCR Analysis before beginning any activity. GCR checklist must be submitted. Refer to Section r, 4f(2) of this document.
Stormwater Program 798-9784	X		Coordinate with the Storm Water Program for approval of a storm water pollution prevention plan prior to beginning any action. Area drains to Dry Fork Creek East, a 303(d) listed stream. Dry Fork Creek East drains to Noah's Spring Branch, which drains to Little West Fork Creek. All are 303 (d) listed streams. Per the TDEC SWPPP general permit, measures need to be installed to control pollutants (to include sediment) and the increased volume of storm water discharges from the construction site. BMPs must be in place prior to construction and operational until disturbed areas stabilize. Temporary BMPs must be removed upon stabilization. Suggest basins to capture and store storm water runoff to dissipate energy and capture the increased amount of storm water from impervious surfaces or install rain gardens with native vegetation that does not require mowing. Refer to Section r, 4e(6) of this document.
Solid Waste 798-9769	X		Coordinate with SW/R Program for approval of Construction and Demolition Waste Management Plan (WMP). Minimum 50% waste diversion is required. All military construction, renovation, and demolition project contracts shall include requirements for 50% minimum diversion of C&D waste, by ***WEIGHT***, from landfill disposal. Contract specifications must also require submission of the contractor's C&D Waste Management Plan prior to the start of land disturbance operations. Actual waste diversion must be reported to the Solid Waste Program upon project completion. Refer to Section r, 4j(1) of this document.
SWMU 798-9768		X	
Storage Tanks 798-9637		X	
Spill Response Program 798-9641		X	

Hazardous Material 798-9771	X		Per 49 CFR 171-177, Contractor must ensure all hazardous materials (HM) transported to Fort Campbell are properly containerized and labeled. The contractor must submit the FTCKY HAZMAT INVENTORY FORM to account for the quantity of HM brought onto the post, the quantity used or expended during the job, and the leftover quantity, which (1) may have additional useful life as HM and shall be removed by the Contractor, or (2) may be hazardous waste, which shall then be removed per Fort Campbell requirements. Refer to Section r, 4m(1) of this document.
Hazardous Waste 798-9786		X	
Wetlands 798-9854		X	
Noise 798-9854		X	
Ag. Lease 798-9856		X	
Forestry 798-2616	X		Per AR 200-1, coordination with the Post Forester for tree appraisals prior to removal is required before construction begins. Proponent must flag the site boundary prior to tree appraisal. Trees remaining on site must have protection fences. Fencing must meet ANSI A300 (Part 5) Management of trees and shrubs during site planning, site development, and construction standards. Contact if questions regarding tree protection fences arise. Refer to Section r, 4b(1) of this document.
Lead/Asbestos 798-9604	X		This project covers buildings which contain known asbestos, lead-based paint and lead containing paint materials. Contact the TSCA office for any questions or concerns. Refer to Section r, 4l(2) of this document.
Wildlife/Endangered Species 798-9855		X	
Cultural Resources 798-7437		X	Both buildings, 3217 and 3218, are covered by a Department of Defense Program Comment. No further cultural resources requirements apply to either location. There are no cultural resources issues with respect to the laydown area or parking lot repavement.
NEPA Program 798-9854		X	

RECORD OF ENVIRONMENTAL CONSIDERATION (REC) CHECKLIST

1. TO: DPW - Environmental Division
Building 2182, 13 ½ Street
Fort Campbell, KY 42223

2. FROM: DPW - Master Plans Division
Building 865, 16th Street
Fort Campbell, KY 42223

3. PROJECT IDENTIFICATION

a. Project Number: 66812

b. Project Title: Construct 5th SFG Language Lab--MOD

c. Project Description: Construct 5th SFG Language Laboratory to include classrooms, administrative and instructor preparation space, an audio and visual storage area, an information management office and a computer laboratory and distance learning room. Facility will be pre-engineered steel construction with HVAC, electrical, plumbing, and communications. Sidewalks, storm drainage, landscaping, and other site improvements are planned. Access for the handicapped will be provided. Two locations have been proposed (see map below). In Alternate Site 1, building 3217 will be demolished and the parking lot across the street will be repaved. In Alternate Site 2, building 3218 will be demolished.

d. Anticipated start date and duration of project: FY 2010

4. ENVIRONMENTAL CHECKLIST

a. NEPA

(1) Does this action involve controversy or uncertainty over the nature or extent of environmental impact? **NO**

(2) Is this action the subject of extraordinary circumstance which require an EA or EIS? **NO**

b. Forestry

(1) Will it result in the removal of Hardwood trees or any tree over 6" in diameter? **YES**

c. Wildlife/Threatened and Endangered Species

(1) May this action affect a state and/or federally listed species? **NO**

(2) May it adversely modify a federally listed species' critical habitat? **NO**

(3) Does this action affect any Migratory bird species of concern or their habitat? **NO**

d. Cultural Resources

(1) Are cultural resource inventories required for the affected area? **NO**

(2) Will this action result in an effect on:

(a) A historic property listed or eligible for listing on the National Register of Historic Places? **NO**

(b) A property designated as a National Historic Landmark? **NO**

(3) Will the action affect the performance of ceremonial rites or access to sites important in traditional Native American religions? **NO**

(4) Will the action affect human remains or funerary objects from Native American graves? **NO**

(5) Will the action result in the removal of items of archaeological interest or excavations that will require an ARPA permit? **NO**

e. Water Resources

(1) Will this action take place in a floodplain or have an impact on a floodplain? **NO**

(2) Does the proposed action impact a blue line or intermittent stream bank or channel? **NO**

(3) Will this action take place in a wetland or result in a net loss of wetlands? **NO**

(4) Is this action affected by water standards promulgated under one or more of these water programs: (a) discharge of oil or hazardous substances; (b) National Pollutant Discharge Elimination System; and (c) State water Quality Standards? **NO**

(5) Is this action affected by the drinking water standards of: (a) EPA, or a state which has assumed primacy in enforcing drinking water standards, or (b) affects groundwater or sole source aquifers? **NO**

(6) Does this action have a potential impact on storm water quality and/or quantity? **YES**

f. Air Quality

(1) Is there a significant impact resulting from the review of relevant Clean Air Act related Federal, State, and local regulations concerning this action? **NO**

(2) Is there potential that the action will result in other than minimal or no individual or cumulative negative impact on ambient air quality? **YES**

g. Agriculture Outlease

(1) Will this action have an affect on a current or future Agricultural Lease field? **NO**

h. Noise

(1) Is this action affected by noise standards? **NO**

i. Pesticides

(1) Is this action affected by purchase, use, storage, or disposal of pesticides? **NO**

j. Solid Waste

(1) Is this action affected by solid waste disposal standards under one or more of these waste programs: (a) procurement of recycled and recyclable products; (b) source separation of recyclable products; (c) solid waste storage; (d) solid waste transport; (e) solid waste disposal? **YES**

k. Restoration

(1) Is the site on a RCRA Solid Waste Management Unit or Area of Concern (SWMU/AOC) or are there any SWMUs/AOCs on the site in consideration? **NO**

l. Lead Based Paint / Radon / Asbestos

(1) Is this action affected by the Radon Gas and Indoor Air Quality Research Act of 1986? **NO**

(2) Is this action affected by EPA Regulation on Asbestos? **YES**

m. Hazardous Materials

(1) Does this action involve the use or disposal of hazardous materials? **YES**

n. Hazardous Waste

(1) Does this action include the procurement of goods, services, or materials from a facility on the EPA's list of violating facilities? **NO**

(2) Is this action affected by EPA regulations on hazardous waste: (a) identification; (b) generation; (c) treatment, storage or disposal facility; or (d) permits? **NO**

(3) Is this action affected by DOT regulations on hazardous material transportation? **NO**

o. Storage Tanks

(1) Does this action affect any known underground or above ground storage tank? **NO**

p. Real Estate

(1) Does this action involve the lease or disposal of real property? **NO**

(2) Will this action involve the selling or transfer of Real Property where any type of activity relating to hazardous substances has ever occurred? **NO**

q. Construction

(1) Will it result in construction and/or a construction contract? **YES**

(2) Does this action include direct federal development, the planning or construction of public works, physical facilities and installations or real property development (including the acquisition, use and disposal of real property) undertaken by or for the use of the Federal Government or any of its agencies; or the leasing of real property for federal use where the use of such property will be substantially altered? **NO**

(3) Does this action include the maintenance or retrofit of an existing federal building or construction of or lease of a new federal building? **NO**

r. Minimization

If you answered **YES** to any of the above questions then explain below how the problem or concern will be minimized or mitigated.

ITEM NO.	MINIMIZED BY

4b(1) Project described will require appraisal of trees being removed (Army Regulation 200-1) contact Urban Forester Bruce Franklin, 956-2452 to arrange time prior to construction start. Forest products must be appraised prior to removal. The proponent is responsible for flagging the site boundary. Per AR 200-1, Environmental Protection and Enhancement, Section 4-3 (7) Land Resources, Forest management: all forest products must be accounted for before starting any construction that may impact them; forest products may not be given away, abandoned, carelessly destroyed, used to offset contract costs or traded for services, supplies or products. Proponent must flag the boundary of the site and contact forestry office for professional timber appraisal. If an appraisal determines merchantable timber is on site, forestry will coordinate an appropriate, commercial timber sale. If timber is disposed of by any means other than a commercial sale, the fair market dollar value will be used in the determination. This amount will be required from the proponent and deposited in the appropriate Budget account.

Protective fencing for trees to be saved on site must be placed at or beyond the tree's crown. It will also meet ANSI 300A standards part 5: Management of Trees and Shrubs during Site Planning, Site Development, and Construction. This is required by the Urban Forestry Management Plan in section 14.3 Industry Standards and Safe Working Conditions (page 49). Contact the Urban Forester, Bruce Franklin at 956-2452 if questions about fencing come up.

4e(6) The project requires coordination with the Water Quality Program of the Fort Campbell Environmental Division prior to any land disturbance operations taking place. TN General Permit No. TNR-1—0000 Storm Water Discharges from Construction Activities as well as the Kentucky Division of Water KPDES Permit for Construction establishes requirements to ensure compliance of Fort Campbell's commitment to water quality sustainability and the future establishment of state mandated Total Maximum Daily Loads (TMDLs). A copy of the Fort Campbell Policy for Storm Water Erosion and Sediment Control at Construction Projects can be accessed through the Environmental Division's internet website, http://www.campbell.army.mil/campbell/directorates/DPW/envdiv/Pages/default.aspx.

Storm water from this area drains to Dry Fork Creek East, a 303(d) listed stream. It is impaired due to loss of biological integrity owing to sediment/siltation. Dry Fork Creek East drains to Noah's Spring Branch which drains to Little West Fork Creek. All are 303 (d) listed streams. Per the state of Kentucky surface water standards, 401 KAR 10:029 and 10:031, surface waters shall not be degraded below their designated uses, "surface waters shall not be degraded by substances that form objectionable deposits, produce undesirable aquatic life or result in the dominance of nuisance species and flow shall not be altered to a degree that will adversely affect the aquatic community." Additionally, Tennessee Department of Environment and Conservation, TDEC, rule 1200-4-3 states, "In unavailable conditions, new or increased discharges of a substance that would cause or contribute to a condition of impairment will not be allowed." Unavailable conditions are defined as, "where water quality is at, or fails to meet, the criterion for one or more parameters. " Per the State of TN NPDES permit, "Discharges that would add loadings of a pollutant that is identified as causing or contributing to an impairment of a water body on the list of impaired waters or which would cause degradation to waters designated by TDEC as high quality waters are not authorized." The Storm water pollution prevention plan, SWPPP, must certify that erosion prevention and sediment controls used at the site are designed to control storm runoff generated by a 5-year, 24-hour storm event. Per the TDEC SWPPP general permit, measures need to be installed to control pollutants (to include sediment) and the increased volume of storm water discharges from the construction site. Best Management Practices (BMPs) must be in place prior to construction and operational until disturbed areas stabilize. Temporary BMPs must be removed upon stabilization. Suggest basins to capture and store storm water runoff to dissipate energy and capture the increased amount of storm water from impervious surfaces. Another suggestion would be rain gardens planted in native vegetation that does not require mowing.

BMPs to reduce the potential impact on storm water quality and/or quantity must be adhered to throughout the construction process. Construction design must include structures to reduce the quantity of runoff as well as improve

the quality of runoff. Structures must be maintained throughout the life of the project. Bi-weekly inspections and inspections following ½ inch rainfall are required and must be documented. The Storm Water Program must approve of a storm water pollution prevention plan prior to beginning any action, (270) 798-9784.

4f(2) The project, as described, requires coordination with the Air Quality program prior to construction. Fort Campbell was re-designated as an ozone attainment "maintenance" area in 2005. Section 176(c)(1) of the Clean Air Act (CAA) mandates the General Conformity Rule (GCR) analysis be completed by Fort Campbell to establish that any construction activity will not impede the continuation of the attainment status and ensure the action does not impede Kentucky or Tennessee air pollution control efforts in ozone "attainment maintenance areas". The rule requires that an analysis and other procedures (if required as a result of the analysis) be completed prior to the commencement of any of the project activities. In order to make the determination, the contractor will need to acquire the General Conformity Rule Checklist from the Air Quality Program. The checklist concerns equipment types, hours of operation, number of personnel, etc. and is used to calculate estimated emissions. Please contact the Air Quality office at (270) 798-9598 for the checklist or with any questions.

4j(1) All military construction, renovation, and demolition project contracts shall include requirements for 50% minimum diversion of C&D waste, by ***WEIGHT***, from landfill disposal. Also, contract specifications must include submission of the contractor's C&D Waste Management Plan, prior to the start of land disturbance operations. Actual waste diversion must be reported to the Solid Waste Program upon project completion.

Per EO 13423, Strengthening Federal Environmental, Energy and Transportation Management, it is the responsibility of the initiator to include Affirmative Procurement (e.g. environmentally preferable, recycled – content products) during the acquisition process of goods and services and maintain effective waste prevention and recycling programs.

A Waste Management Plan (WMP) as required by the Assistant Chief of Staff for Installation Management (ACSIM) policy, Subject: Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities, dated 11 July 2006, requires construction, and demolition debris management on federally funded projects. This plan shall describe and document each of the following diversion and non-diversion activities: Salvage, Reuse, Source Separation Construction and Demolition Debris Recycling, Co-mingled Construction and Demolition Debris Recycling, and Landfill Disposal. Diversion specifications require at least 50% of construction, renovation, and demolition materials, by ***WEIGHT***, including wood, plumbing materials, electrical fixtures and materials, windows, doors, toilet partitions, HVAC equipment, scrap metals, etc. to be diverted from the landfill. See UFGS Section 01 74 19, CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT for more detail. Actual waste diversion must be reported to the Fort Campbell Environmental Division, Solid Waste Program upon project completion.

Construction projects requiring soil borrow material or projects having excess soil should be coordinated through DPW Engineering Division, at 270-798-3113.

4l(2) This project covers buildings which contain known asbestos, lead-based paint (LBP) and lead-containing paint materials. This project may also encounter materials that are unknown because destructive sampling methods were not used during initial inspections. Please contact the TSCA office for any questions or concerns – Wayne Bricker (Program Manager) 270-798-9604 or Daniel Black (TSCA Support-contractor) 270-798-9635. The following regulations may be applicable to this project: AR200-1, 29CFR1926, and 29CFR1910; as well as 40CFRParts 61 (NESHAP reporting), and 745 (LBP activity requirements). The following Kentucky laws and regulations may also apply for LBP (KRS Chapter 211 and KAR title 902) and Asbestos (401KAR58). The following TN laws and regulations may also apply for LBP (1200-01-18 & 0400-13-01) and Asbestos (1200-01-03).

Any asbestos removal requires trained and certified personnel in accordance with the Toxic Substances Control Act.

4m(1) Per 49 CFR 171-177, Contractor must ensure all hazardous materials (HM) transported to Fort Campbell is properly containerized and labeled. The Fort Campbell Installation Technical Design Guide specifies requirements for HM brought onto post. As required by EPCRA, the Contractor will account for the quantity of HM brought onto the post, the

quantity used or expended during the job, and the leftover quantity, which (1) may have additional useful life as HM and shall be removed by the Contractor, or (2) may be hazardous waste, which shall then be removed as per Fort Campbell requirements, and manifested and disposed of through the Fort Campbell Environmental Division, Pollution Prevention Branch, Hazardous Waste Management Program.

The Fort Campbell Technical Design Guide is available on the Directorate of Public Works website: http://www.campbell.army.mil/campbell/directorates/DPW/Documents/Docs/FTC_Tech_Design_Guide.pdf
The following sections should be reviewed:

- pp. 42-46, 65
- FTCKY HAZMAT INVENTORY FORM

4q(1) Construction activity impacts will be mitigated by utilizing the following:

1. A Site-specific Storm Water Pollution Prevention Plan (SWPPP) as required by Fort Campbell's Policy for Storm Water Erosion and Sediment Control at Construction Projects and developed to include site description, description of storm water runoff controls, erosion prevention and sediment controls, storm water management, description of items needing control, approved local sediment and erosion control requirements, maintenance, inspections, and pollution prevention measures for non-storm water discharges. A SWPPP will be in place before soil disturbance or vegetation removal. Storm water best management practices (BMPs) will be in place and properly installed before soil disturbance or vegetation removal. Included in Fort Campbell's policy are Fort Campbell's Guidance for Low Impact Development and Permanent Storm Drainage Systems and Fort Campbell Construction Site Final Stabilization Specifications. (Technical References "Tennessee Erosion and Sediment Control Handbook" and the "Kentucky Erosion Prevention and Sediment Control Field Guide".)

2. Forestry must survey the area to ensure that no marketable trees will be removed.

3. Clearing and grubbing will be phased and held to a minimum necessary for grading and equipment operation.

4. Threatened and Endangered Species and Cultural sites will be avoided and areas marked prior to remediation to prevent damage and violations.

5. Grading activities will be avoided during periods of highly erosive rainfall or other wet periods.

6. All topsoil will be yarded to the side of the project area and will be re-distributed and seeded once final grade is obtained.

7. Equipment will be used that present the least amount of soil impact - disturbance as possible. Final grade, equipment shall be operated up and down the slope to prevent rills and other erosion on the face of the slope.

8. Conservation buffer strips will be established between construction sites and all streams or natural drainage ways.

9. Conservation buffer strips will also be maintained between the main training sites and sloped areas to maintain any sediment runoff on the actual site. Rip-rap (rock) checks will be placed within the grassed waterways. Road ditch lines will be improved and grassed with rock checks on as needed basis.

10. Vehicle ruts, rills, and gullies from erosion will be land smoothed and ground cover will be seeded.

11. Fertilizer and other soil enhancement products will be limited or avoided by using mulch as a soil application.

12. Gravel and other rock will be limited or avoided by constructing mulch roads and pads. The mulch will later be graded out and added into soil composition.

13. Gravel roads will follow the contour on the up slope or flat areas as much as possible. Drainage ditches and natural drains will be cleaned out and maintained to facilitate water drainage as much as possible and with as minimum impact as possible.

14. Some gravel will be used in drainage areas to build low water crossings to access/service areas. Geotextile will be placed under low water crossings.

15. Trees, shrubs and other vegetation will be maintained to erosion control and enhance tactical concealment of the objectives.

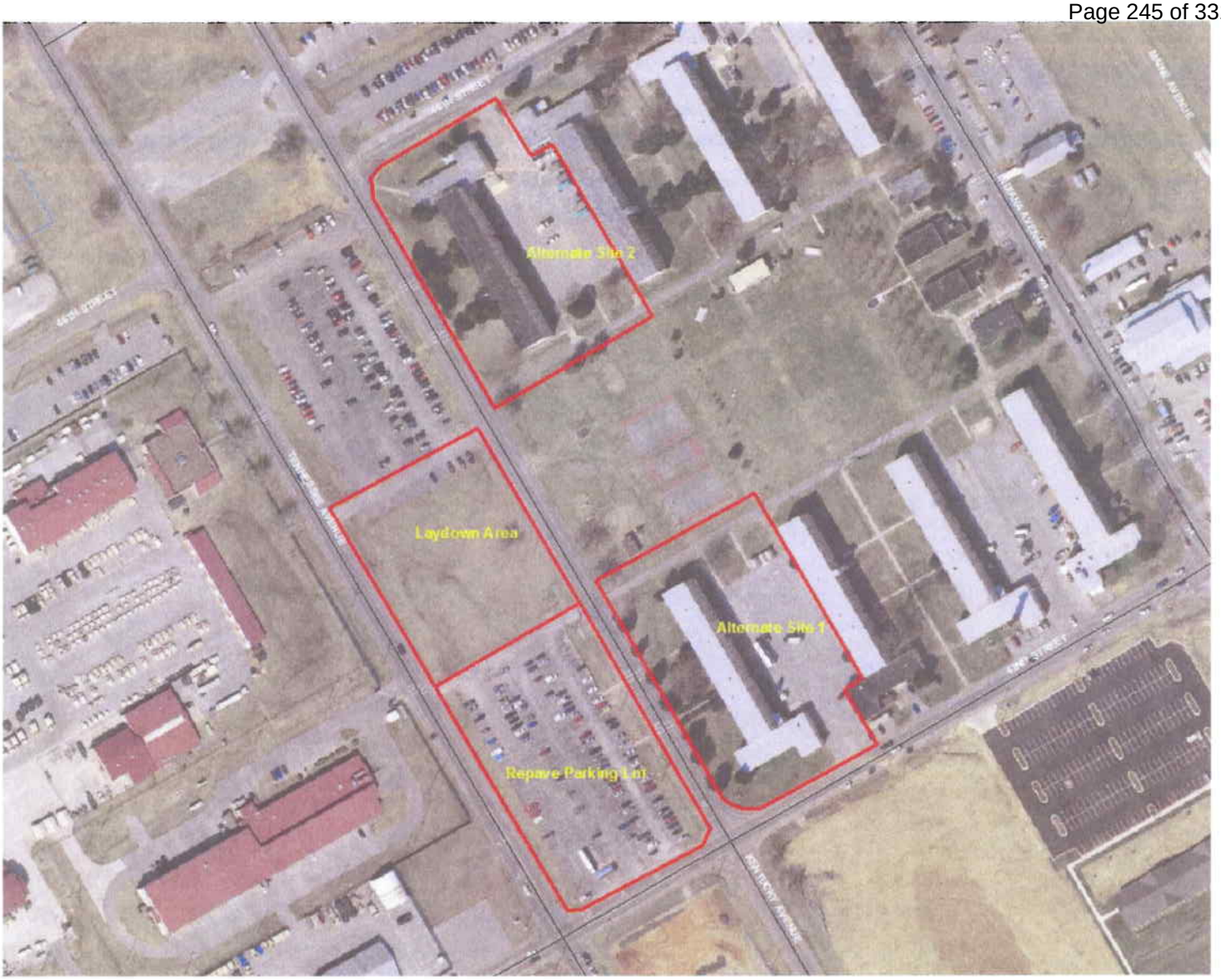
16. Combat trails (gravel, hardened roads) will be upgraded and maintained on an as needed basis to facilitate military maneuvers. Service roads will be built to a 11' width including ditch lines, and driving surface. Service road driving surface will be constructed above ground and from fill material from local borrow pit. Fill material shall be inspected and approved. Borrow pit(s) area shall be re-graded to allow drainage and re-seeded (see above directive # 4). Silt fence shall be placed around borrow pit(s) as needed to maintain erosion control – storm water compliance standards.

17. On banks of low water crossings and other severe slopes, surface erosion control mats will be staked into place to protect bare ground, and grass seeding will be used to reduce erosion problems. Silt fence will also be in place throughout the project duration. Check dams will be placed in waterways and in road ditches to prevent headcutting on an as needed basis.

18. Rip-rap will be placed on the banks of low water crossings and in waterways (lined ditches and rock checks) on an as needed basis. The back slopes of road ditches will be lined with rip-rap to protect the slopes (from vehicle damage) on an as needed basis.

PREPARED BY: Peggy Lu DATE: 1 March 2010
Peggy Luehsmann, NEPA Coordinator

REVIEWED BY: DATE: 3/1/10
Gene Zirkle, NEPA Program Manager


Alternate Site 2
Laydown Area
Alternate Site 1
Repave Parking Lot

National Environmental Policy Act (NEPA)
Mitigation Action Plan (MAP)

Project Title: Construct 5th SFG Language Lab--MOD (PN 66812) REC #: 10-057

Project POC: Laura Yates, 798-7427

Analysis of the project produced the following Environmental Media POC comments. All Environmental Media comments must be addressed by the proponent in the Mitigation/Minimization Measures column and returned via e-mail to the NEPA Program. The NEPA Program will route for Environmental Media POC mitigation/Minimization Measure concurrence and signatures. Once concurrences are obtained, a completed REC will be returned to the project proponent. It is the ***project proponent's*** responsibility (32 CFR 651.4(q) to ensure all mitigation/minimization measures are included in all contracts, project scopes, etc. and are completed or maintained during the life of the project. A REC, once signed by the Installation Environmental Coordinator, is a compliance document and is subject to compliance review anytime during the life of the project.

Environmental Media	Environmental Media POC	Environmental Media POC Comments	Mitigation/Minimization Measure	Environmental Media POC Initials and Date
Air Quality	Beth Moore 798-9598	The contractor must coordinate with the Air Program for GCR Analysis before beginning any activity. GCR checklist must be submitted. The project, as described, requires coordination with the Air Quality program prior to construction. Fort Campbell was re-designated as an ozone attainment "maintenance" area in 2005. Section 176(c)(1) of the Clean Air Act (CAA) mandates the General Conformity Rule (GCR) analysis be completed by Fort Campbell to establish that any construction activity will not impede the continuation of the attainment status and ensure the action does not impede Kentucky or Tennessee air pollution control efforts in ozone "attainment maintenance areas". The rule requires that an analysis and other procedures (if required as a result of the analysis) be completed prior to the commencement of any of the project activities. In order to make the determination, the contractor will need to acquire the General Conformity Rule Checklist from the Air Quality Program. The checklist concerns equipment types, hours of operation, number of personnel, etc. and is used to calculate estimated emissions. Please contact the Air Quality office at (270) 798-9598 for the checklist or with any questions.	Contractor shall provide the info required to complete the GCR prior to commencement of work and throughout the life of the project. Requirement will be included in RFP.	BM/16 February 2010

Storm Water	Richard Blackston 798-7470	Coordinate with the Storm Water Program for approval of a storm water pollution prevention plan prior to beginning action. The project requires coordination with the Water Quality Program of the Fort Campbell Environmental Division prior to any land disturbance operations taking place. TN General Permit No. TNR-1—0000 Storm Water Discharges from Construction Activities as well as the Kentucky Division of Water KPDES Permit for Construction establishes requirements to ensure compliance of Fort Campbell's commitment to water quality sustainability and the future establishment of state mandated Total Maximum Daily Loads. (TMDLs). A copy of the Fort Campbell Policy for Storm Water Erosion and Sediment Control at Construction Projects can be accessed through the Environmental Division's internet website.	Site-specific SWPP's will be developed by the contractor and submitted for approval prior to beginning earthwork. Only approved BMP's will be used on construction site. The contractor shall abide by the approved SWPP. Requirement will be included in RFP.	RAB/11 Feb 2010
Water Resources	Dawn York 798-9824	Storm water from this area drains to Dry Fork Creek East, a 303(d) listed stream. It is impaired due to loss of biological integrity owing to sediment/siltation. Dry Fork Creek East drains to Noah's Spring Branch which drains to Little West Fork Creek. All are 303 (d) listed streams. Per the state of Kentucky surface water standards, 401 KAR 10:029 and 10:031, surface waters shall not be degraded below their designated uses, "surface waters shall not be degraded by substances that form objectionable deposits, produce undesirable aquatic life or result in the dominance of nuisance species and flow shall not be altered to a degree that will adversely affect the aquatic community." Additionally, Tennessee Department of Environment and Conservation, TDEC, rule 1200-4-3 states, "In unavailable conditions, new or increased discharges of a substance that would cause or contribute to a condition of impairment will not be allowed." Unavailable conditions are defined as, "where water quality is at, or fails to meet, the criterion for one or more parameters. " Per the State of TN NPDES permit, "Discharges that would add loadings of a pollutant that is identified as causing or contributing to an impairment of a water body on the list of impaired waters or which would cause degradation to waters designated by TDEC as high quality waters are not authorized." The Storm water pollution prevention plan, SWPPP, must certify that erosion prevention and sediment controls used at the site are designed to control storm runoff generated by a 5-year, 24-hour storm event.	The contractor shall provide detention basins to store storm water. Site-specific SWPP's will be developed and submitted for approval. BMPs will be erected and maintained prior to construction, during construction and until site reaches stabilization. The Storm water pollution prevention plan, SWPPP, will certify that erosion prevention and sediment controls used at the site are designed to control storm runoff generated by a 5-year, **24-**hour storm event. Requirement will be included in RFP.	DT/ 11 Feb 10

		Per the TDEC SWPPP general permit, measures need to be installed to control pollutants (to include sediment) and the increased volume of storm water discharges from the construction site. Best Management Practices (BMPs) must be in place prior to construction and operational until disturbed areas stabilize. Temporary BMPs must be removed upon stabilization. Suggest basins to capture and store storm water runoff to dissipate energy and capture the increased amount of storm water from impervious surfaces. Another suggestion would be rain gardens planted in native vegetation that does not require mowing.		
Solid Waste	Dick Huser 798-9773	Coordinate with SW/R Program for approval of Construction and Demolition Waste Management Plan (WMP). A waste management plan is required. Minimum 50% waste diversion is required. Actual waste diversion must be reported upon project completion. The diversion requirements are per ACSIM policy Subject: Sustainable Management of Waste in Military Construction, Renovation, and Demolition, dated 11 July 2006.	A construction and demolition waste management plan will be prepared by the contractor and approved by the government prior to beginning work. It will then be abided by. Requirement will be included in the RFP.	RCH/11 Feb 2010
Urban Forestry	Bruce Franklin 956-2452	Project described will require appraisal of trees being removed (Army Regulation 200-1) contact Urban Forester Bruce Franklin, 956-2452 to arrange time prior to construction start. Protective fencing for trees to be saved on site must be placed at or beyond the tree's crown. It will also meet ANSI 300A standards part 5: Management of Trees and Shrubs During Site Planning, Site Development, and Construction. This is required by the Urban Forestry Management Plan in section 14.3 Industry Standards and Safe Working Conditions (pg. 49). Contact the Urban Forester, Bruce Franklin at 956-2452 if questions about fencing come up.	The contractor shall coordinate with the post forester prior to tree removal. Trees to remain will be protected in accordance with ANSI A300 (Part 5). Planting of trees shall be in accordance with landscaping plans in contract. Requirement will be included in RFP.	BWF/ 12 February 2010

TSCA	Dan Black 798-9635	This project covers buildings which contain known asbestos, lead-based paint and lead containing paint materials. This project may also encounter materials that are unknown because destructive sampling methods were not used during initial inspections. Please contact the TSCA office for any questions or concerns – Wayne Bricker (Program Manager) 270-798-9604 or Daniel Black TSCA Support-contractor) 270-798-9635. The following regulations may be applicable to this project: AR200-1, 29CFR1926, and 29CFR1910; as well as 40CFRParts 61(NESHAP reporting), & 745(LBP activity requirements). The following KY laws and regulations may also apply for LBP (KRS Chapter 211 and KAR title 902) & Asbestos (401KAR58).	The building will be remediated of hazardous or toxic materials prior to the demolition. This work will be performed by Ft Campbell or as an Option to the Contract.	DB / 11Feb2010
HazMat	Laura Macpherson 798-9771	Per 49 CFR 171-177, Contractor should ensure all hazardous materials (HM) transported to Fort Campbell is properly containerized and labeled. The Fort Campbell Installation Technical Design Guide specifies requirements for HM brought onto post: See pp. 42-46, 65. Also, see FTCKY HAZMAT INVENTORY FORM. As required by EPCRA, the Contractor will account for the quantity of HM brought onto the post, the quantity used or expended during the job, and the leftover quantity, which (1) may have additional useful life as HM and shall be removed by the Contractor, or (2) may be hazardous waste, which shall then be removed as per Fort Campbell requirements, and manifested and disposed of through the Fort Campbell Environmental Division, Pollution Prevention Branch, Hazardous Waste Management Program. Contact Laura Macpherson, 270.798.9771, for coordination of hazmat deliveries and MSDS submittals prior to construction commencement (see Fort Campbell Technical Design Guide). Any HM transported to Fort Campbell will be properly containerized and labeled.	Any HM transported to Fort Campbell, used or expended during the job, or removed from the installation shall be properly accounted for, containerized and labeled by t he contractor. Requirement will be included in RFP	LM / 11 Feb 10

NEPA Form 2.2

Signatures verified
Peggy [illegible]
3/2/10

Appendix F

Photos of Surrounding Buildings and Conceptual Aesthetic Considerations
(FOR INFORMATION ONLY)

The following images are provided for guidance on the desired exterior architectural character for the proposed Special Forces Language Sustainment Training Facility (SOF-LSTF) building. The SOF-LSTF is programmed to be the 'signature' building in this location anchoring the expansion of the SOF Complex at Fort Campbell to this block in the cantonment area. The balance of the block in this area is planned for redevelopment as a part of the SOF Complex, and the remaining barracks buildings in this location are scheduled for future demolition.

The following images of the Soldiers Family Assistance Center (SFAC) have been provided as an example of another such 'signature' building designed to anchor the Warrior in Transition (WT) Complex currently under construction at Fort Campbell. The architectural character of the SFAC is offered as an example that is appropriate for the SOF-LSTF as a 'signature' building for the expansion of the SOF Complex in terms of the general appearance, massing, colors and materials.

***SFAC** (under construction**)** front elevation facing Indiana Avenue at 20th Street functions as a 'signature' building for the WT complex shown in the rear (ADG - WT Complex)*

SFAC *(under construction**)** front elevation facing Indiana Avenue at 20th Street functions as a 'signature' building for the WT complex shown in the rear (ADG - WT Complex)*

SFAC *(under construction**)** Rendering of WT complex by Design-Build Contractor showing proposed architectural character of the 'signature' SFAC building.*

The following images of the existing Special Operations Forces (SOF) complex at Fort Campbell are provided for guidance on the desired exterior architectural character for the proposed SOF Language Sustainment Training Facility with regard to color, and materials appearance (only). This portion of the SOF complex along Tennessee Avenue is not immediately adjacent to the proposed SOF-LSTF building and it does not represent the desired 'signature' building character needed to anchor the future expansion with the proposed SOF-LSTF building. However, the general architectural character of the buildings shown below is a good example of the type of buildings expected to surround the SOF-LSTF upon expansion of the complex into the new area.

SOF Complex - *Group Headquarters Facility, 5th Special Forces Group,Tenn. Ave.*

SOF Complex - *Battalion Headquarters Facility, 5th Special Forces Group,Tenn. Ave*

SOF Complex - *Group Headquarters Facility, 5th Special Forces Group,Tenn. Ave*

SOF Complex – *Typical support facilities, 5th Special Forces Group,Tenn. Ave*

SOF Language Sustainment Training Facility
Fort Campbell, KY
Site Constraints/Existing Utilities

Legend

- Project Boundary
- Cantonment_Heating_Oil_Tanks
- E_Lighting_point
- E_Switch_point
- E_Transclosure_point
- E_Transformer_point
- Natural_Gas_Meters
- Natural_Gas_Regulators
- Natural_Gas_Valves
- Spills
- Surveyed_Sinkholes
- SW_Structures
- SWMU_Points
- Water_Valves
- Utility_Poles
- WasteWater_Fitting_Point
- WasteWater_Grease_Traps
- WasteWater_Points
- WasteWater_Pump_Ejector_Station
- Water_Fitting_Points
- Water_Hydrants
- Water_Meters
- Water_Regulators_and_Reducers
- Water_Valves
- E_Cable_line
- Elevation_Contours_2ft
- Natural_Gas_Pipes
- Rd_Centerlines
- SW_Pipes
- SW_Trench_Drains
- Trench_Drains
- WasteWater_Lines
- Water_Lines
- Building_for_Demolition
- Buildings
- Athletic_Courts
- Building_Use
- Sinkholes
- Driveways
- Installation_Boundary
- Parking_Lots
- RCI_Lease_Zone_Areas
- Roads
- SW_Drainage_Basins
- SWMUS_Areas

Appendix H
Exterior Signage

11.4 SIGNS
Signs are used to visually communicate information. They are highly visible features that should be attractive and compatible with their surroundings. Careful consideration must be given to what a sign says, how it is said, its visual appearance and organization, its location, structural support system, and relation to other signs within the installation. Standardized signage systems facilitate movement, provide a sense of orientation, and reinforce standards of excellence. Signage creates a unifying element throughout the installation that visually ties the installation themes together and builds a reference and continuity that translates into confidence and reassurance when traveling throughout the installation. The standards to apply for signage color, type, and sizing is found in Technical Manual (TM) 5-807-10, Signage.

11.4.1 Sign System Characteristics
There are several basic design characteristics that, by serving to convey necessary information clearly and attractively, are an integral part of any successful signage system.

11.4.2 Simplicity
An effective strategy provides only needed information, avoids redundancy, and eliminates over-signing with resultant clutter and visual confusion. Sign messages must be clear, simple, and easy for motorists to process quickly.

11.4.3 Continuity
It is essential that the system be applied uniformly and consistently throughout the entire installation. The importance of consistent implementation extends from the larger issues of sign type and size down to accurate color continuity and matching typestyles.

11.4.4 Visibility
Sign location is a very important ingredient within the system. Signs must be located at significant decision points and oriented to provide clear sight lines for the intended user. Close coordination of locations with respect to landscaping, utilities, adjacent signage, and various other street design elements is important to ensure long-term maximum visibility.

11.4.5 Visual Hierarchy
The entire signing system must communicate, through a range of sign and typestyle sizes, the relative importance of the individual activity that the sign identifies. The system should follow a logical progression from a point

of origin to the desired destination.
A stated ranking method supports the visual standard of hierarchy within the signing system. Signs can be organized within assigned classes with emphasis on the function and image of the installation.
Within each class, the level of architectural influence evokes the importance of the sign to the installation. This is also critical to the idea of progression. The importance of a sign must be presented in its size and level of detail.
As individuals move closer to their destination on the installation, the scale of the sign becomes progressively smaller and the level of the message more detailed.

11.4.6 Types of Signs
Information / Identification Signs
These are signs that identify entrances to the installation, areas within the installation, major tenants, buildings, and organizational or functional components. They identify a location, and greet the visitor to that location. They should be compatible in scale and character with the architecture and also blend with the natural surroundings. These signs are designed to include the following:

Typeface

Lettering:	Lettering is self-adhesive backing material.
Building Title:	Helvetica Medium, Upper and lower case
Building Numbers:	Helvetica Medium, Upper and lower case
Building Addresses:	Helvetica Medium, Upper and lower case

Color

Panel:	Dark Brown
Lettering:	White
Post:	Dark Brown
Exposed panel backs and edges:	Dark Brown
All paint:	Semi gloss

Materials

Panel:	Double-face 1/8” thick aluminum
Lettering:	Steel Pipe
Post:	Concrete pier or direct burial

11.4.7 Building Identification
All Building Identification signage shall be consistent throughout the Installation. Please refer to The Fort Campbell Technical Design Guide, or TM-5-807-10 for specifications.

11.4.9 Installation Identification Signs
Installation identification signs name the installation and display the official US Army plaque. The designation "United States Army" must appear at the top of the sign in accordance with AR 420-70, para 2-7h. Every installation entrance shall have an installation identification sign displaying only the US Army plaque, with the words "United States Army, Fort (Name of Fort), and gate name. The placement of Senior Mission Commander logo, unit crest, and other installation identification signs, monuments, or displays shall be located inside the installation beyond the cleared area of the Access Control Point (ACP) of entry. When used service-wide, these signs convey a uniform image of strength and stability to the public. Emblems, branch colors, unit mottos, names, and titles of individuals are not to be displayed.

Installation identification signs consist of three types:

Sign type A1, main entrance sign, identifies the principal visitor entrance.
Sign type A2, secondary entrance sign, identifies entry points with relatively high volumes of visitor traffic.
Sign type A3, limited access entry gate signs, identifies entry points with limited public access.

See Technical Manual (TM) 5-807-10, Signage, paragraph 3-3, for sign specifications and paragraph 3-11 for sign placement guidelines.

11.4.10 Street Signs
Street name identification signs should be designed with the same lettering, color, and materials as other information signs.

11.4.11 Wheeled Electrical Signs
Wheeled electrical signs will have an attractive presentation. Temporary landscape elements should be used whenever possible. The siting of this type of sign will be approved by the RPPB. No sign of this type will be left in place for longer than six (6) months. After which time, the sign will be removed or turned into a permanent sign.

TECHNICAL DESIGN GUIDE
CHAPTER 3
Technical Requirements and Instructions
Division 10000

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SECTION 10430
Exterior Signage

Exterior signage is classified into three major categories:
Facility Identification Signage
Directional and Street Signage
Regulatory Signage

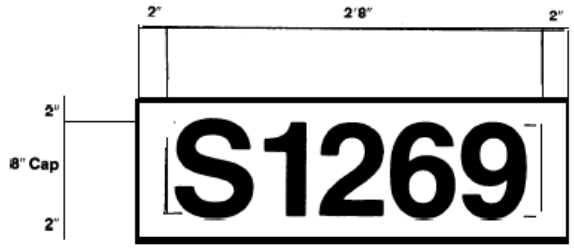
All Sign sizes and styles and locations shall be in accordance with TM-5-807-10.

Identification signage shall be metal post and panel type and will be included in the construction contract. Graphics and lettering will not be included in the construction contract, but will be furnished and installed by the Fort Campbell Sign Shop.

Signs applied to the facilities such as building number signage shall be shall be standard grade .080 aluminum. Other data for the sign is as follows:
(1) *Colors.* White reflective letters and numbers on premium 2 mil vinyl mahogany brown background.
(2) Dimensions. lft-0in. H x 3ft-0in. W.
(3) Number. Upper case helvetica medium,
8-inch capital letter height. Copy—centered. Average
line length-5 characters per line (See Attachment 1 below).

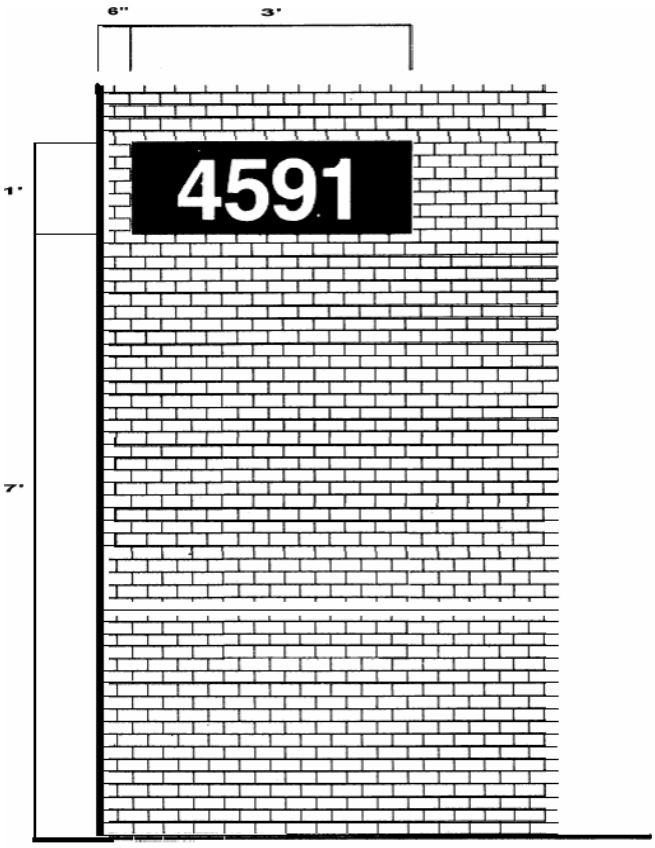
Building number signs are required at four corners of each facility. Signs should be located on the sides of the building where rapid identification is possible (See Attachment 2 below). Signs are wall-mounted. Numbers must appear in accordance with AR 420-70.

Signs identifying locations of each “Mechanical Room” is required.



Sign grid 2, 1'0" H x 3'0" W sign panel

Attachment 1



Attachment 2

Projects that include new roads, shall also include street signage in the construction contract.

Instructions to Designers:

1. Incorporate the above Fort Campbell requirements into the project specifications.

SECTION 10440
Interior Signage

Ft.Campbell Requirements:

If "addressable" fire alarm system is not used for a building, provide a building map identifying fire alarm zones and mount on wall next to fire alarm system panel.

Interior Designer shall (re)number building spaces for "wayfinding" and provide the information to signage subcontractor on construction drawings.

When interior signage is renumbered from the construction drawing room numbering sequence to accommodate “wayfinding”, provide original construction drawing room number in metal slot mounted above door of each room for fire and maintenance purposes when construction drawings typically would be referenced. This confusing problem can be overcome by having “wayfinding” numbering from the beginning of design.

Safety Performance Sign

EP 310-1-6a
01 Jun 06

Each contractor's safety record is to be posted on Corps managed or supervised construction projects and mounted with the Construction Project Identification sign specified on page 16-2.

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

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

Special applications or situations not covered in these guidelines should be referred to the district Sign Program Manager.

Legend Group 1: Standard two-line title "Safety is a Job Requirement" with 8" (outside diameter) Safety Green first aid logo.
Color: To match Pantone system 347
Typeface: 3" Helvetica Bold
Color: Black

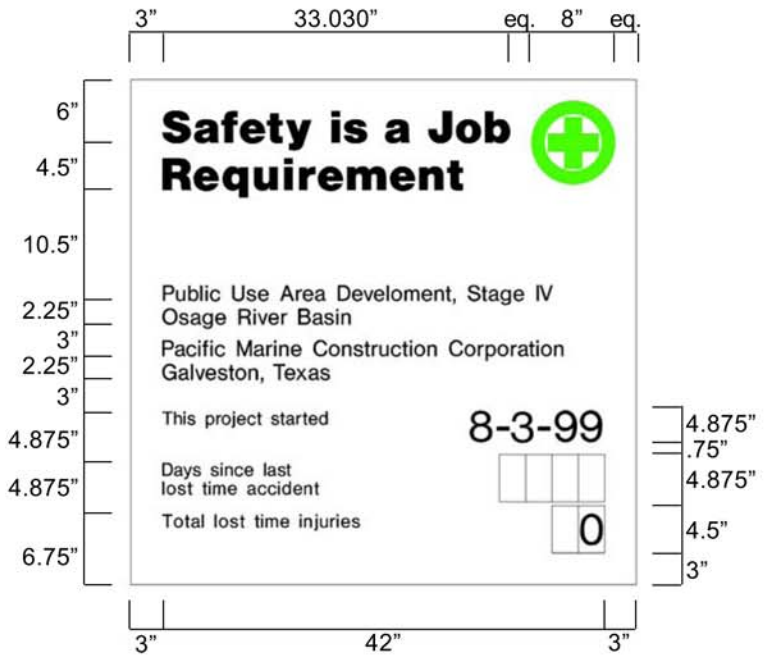
Legend Group 2: One- to two-line project title legend describes the work being done under this contract and name of host project.
Color: Black
Typeface: 1.5" Helvetica Regular
Maximum line length: 42"

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

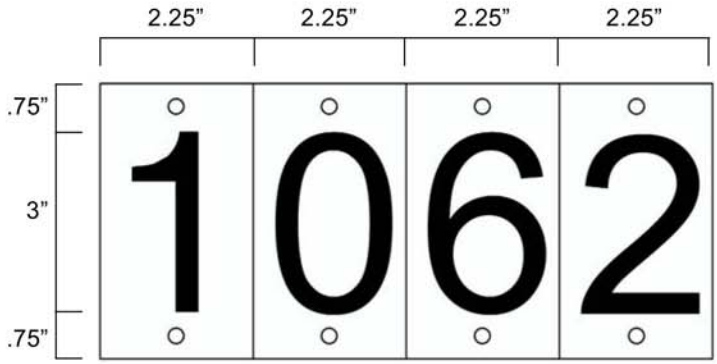
Legend Group 4: Standard safety record captions as shown.
Color: Black
Typeface: 1.25" Helvetica Regular

Replaceable numbers are to be mounted on white .060 aluminum plates and screw-mounted to background.
Color: Black
Typeface: 3" Helvetica Regular
Plate size: 2.5" x 4.5"

All typography is flush left and rag right, upper and lower case with initial capitals only as shown. Letter- and word-spacing to follow Corps standards as specified in Appendix D.



Sign Type	Legend Size (A)	Panel Size	Post Size	Specification Code	Mounting Height	Color Bkg/Lgd
CID-02	various	4'x4'	4"x4"	HDO-3	48"	WH/BK-SG



EP 310-1-6a
01 Jun 06

Construction Project Identification Sign

Below are two samples of the Construction Project Identification sign showing how this panel is adaptable for use to identify either military (top) or civil works projects (bottom). The graphic format for this 4'x 6' sign panel follows the legend guidelines and layout as specified below. The large 4'x 4' section of the panel on the right is to be white with black legend. The 2'x 4' section of the sign on the left with the full Corps Signature (reverse version) is to be screen-printed Communication Red on the white background The designation of a sponsor in the area indicated is optional with Military or Civil Works construction signs. Signs may list one sponsoring entity. If agreement on a sponsor designation cannot be achieved, the area should be left blank.

This sign is to be placed with the Safety Performance sign shown on the following page. Mounting and fabrication details are provided on page 16-4.

Special applications or situations not covered in these guidelines should be referred to the district Sign Program Manager.

Legend Group 1: One- to two-line description of Corps relationship to project.
Color: White
Typeface: 1.25" Helvetica Regular
Maximum line length: 19"

Legend Group 2: Division or District Name (optional). Placed below 10.5" reverse Signature (6" Castle).
Color: White
Typeface: 1.25" Helvetica Regular

Legend Group 2a: One- to three-line identification of Military or Civil Works sponsor (optional). Place below Corps Signature to cross-align with Group 5a-b.
Color: White
Typeface: 1.25" Helvetica Regular
Maximum line length: 19"

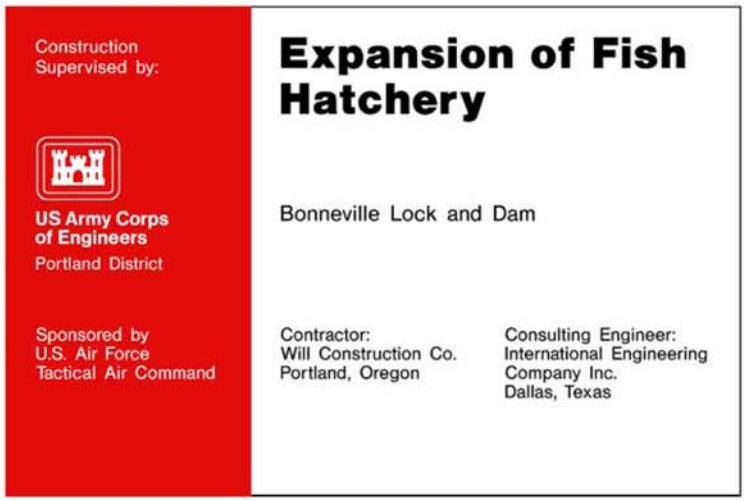
Legend Group 3: One- to three-line project title legend describes the work being done under this contract.
Color: Black
Typeface: 3" Helvetica Bold
Maximum line length: 42"

Legend Group 4: One- to two-line identification of project or facility (civil works) or name of sponsoring department (military).
Color: Black
Typeface: 1.5" Helvetica Regular
Maximum line length: 42"

Cross-align the first line of Legend Group 4 with the first line of the Corps Signature (US Army Corps) as shown.

Legend Groups 5a-b: One- to five-line identification of prime contractors including: type (architect, general contractor, etc.), corporate or firm name, city, state. Use of Legend Group 5 is optional.
Color: Black
Typeface: 1.25" Helvetica Regular
Maximum line length: 21"

All typography is flush left and rag right, upper and lower case with initial capitals only as shown. Letter- and word-spacing to follow Corps standards as specified in Appendix D.



Sign Type	Legend Size (A)	Panel Size	Post Size	Specification Code	Mounting Height	Color Bkg/Lgd
CID-01	various	4'x6'	4"x4"	HDO-3	48"	WH-RD/BK

Introduction: Construction Project Signs

EP 310-1-6a
01 Jun 06

The use of signs to identify Corps managed or supervised design, construction, and rehabilitation projects - both for military and civil works - is an important part of efforts to keep the public informed of Corps work. For this purpose, a construction project sign package has been adopted. This package consists of two signs: one for project identification and the other to show on-the-job safety performance of the contractor.

These two signs are to be displayed side by side and mounted for reading by passing viewers. Exact placement location will be designated by the contracting officer's representative.

The panel sizes and graphic formats have been standardized for visual consistency throughout all Corps operations.

Panels are fabricated using HDO plywood or aluminum with dimensional lumber uprights and bracing. The sign faces are nonreflective vinyl.

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 pages 16-2 and 16-3. The Communication Red panel on the left side of the construction project sign with Corps Signature (reverse version) is screen-printed onto the white background.

A display of these two signs is shown on the following two pages. Mounting and fabrication details are provided on page 16-4.

Special applications or situations not covered in these guidelines should be referred to the district Sign Program Manager.

Fabrication and Mounting Guidelines

All Construction Project Identification signs and Safety Performance signs are to be fabricated and installed as described below. The signs are to be erected at a location designated by the contracting officer representative and shall conform to the size, format, and typographic standards shown on pages16-2 and 16-3. Detailed specifications for HDO plywood panel preparation are provided in Appendix B.

Shown below the mounting diagram is a panel layout grid with spaces provided for project information. Photocopy this page and use as a worksheet when preparing sign legend orders.

For additional information on the proper method to prepare sign panel graphics, contact the district Sign Program Manager.

The sign panels are to be fabricated from .75" High Density Overlay Plywood. Panel preparation to follow HDO specifications provided in Appendix B.

Sign graphics to be prepared on a white nonreflective vinyl film with positionable adhesive backing.

All graphics except for the Communication Red background with Corps Signature on the project sign are to be die-cut or computer-cut nonreflective vinyl, prespaced legends prepared in the sizes and typefaces specified and applied to the background panel following the graphic formats shown on pages 16-2 and 16-3.

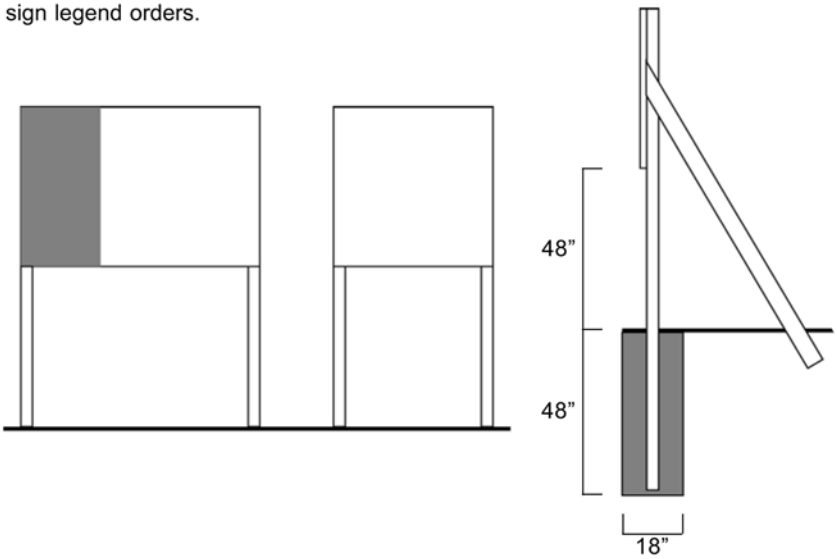
The 2'x 4' Communication Red panel (to match Pantone system 032) with full Corps Signature (reverse version) is to be screen-printed on the white background. Identification of the district or division may be applied under the signature with white cut vinyl letters prepared to Corps standards.

Drill and insert six (6) .375" T-nuts from the front face of the HDO sign panel. Position holes as shown. Flange of T-nut to be flush with sign face.

Apply graphic panel to prepared HDO plywood panel following manufacturers' instructions.

Sign uprights to be structural grade 4" x 4" treated Douglas Fir or Southern Yellow Pine, No.1 or better. Post to be 12' long. Drill six (6) .375" mounting holes in uprights to align with T-nuts in sign panel. Countersink (.5") back of hole to accept socket head cap screw (4" x .375").

Assemble sign panel and uprights. Imbed assembled sign panel and uprights in 4' hole. Local soil conditions and/or wind loading may require bolting additional 2" x 4" struts on inside face of uprights to reinforce installation as shown.



Construction Project Identification Sign
Legend Group 1: Corps Relationship

1. _____
2. _____

Legend Group 2: Division/District Name

1. _____
2. _____

Legend Group 2a: Military/Civil Works Sponsor

1. _____
2. _____

Legend Group 3: Project Title

1. _____
2. _____
3. _____

Legend Group 4: Facility Name

1. _____
2. _____

Legend Group 5: Contractor/A&E

1. _____
2. _____
3. _____
4. _____
5. _____

Legend Group 5b: Contractor/A&E

1. _____
2. _____
3. _____
4. _____
5. _____

Safety Performance Sign
Legend Group 2: Project Title

1. _____
2. _____

Legend Group 3: Contractor/A&E

1. _____
2. _____

APPENDIX - I

Fort Campbell Landscape Plant List

APPENDIX E
(Excerpt from Ft. Campbell Technical Design Guide)

Native Plant Material

(Native) Conifers/Evergreens:

Botanical Name	Common Name
(Native) Tall Trees – (trees over 50 ft. at maturity)	
Pinus echinata	Shortleaf Pine
Tsuga canadensis	Eastern Hemlock
Taxodium distichum	Bald Cypress
(Native) Medium Trees – (trees 25 to 50 ft. at maturity)	
Pinus virginiana	*Virginia Pine*
Juniperus virginiana	Eastern Red Cedar
(Native) Small Trees/Large Shrubs – (10 to 25 ft. at maturity)	
Juniperus virginiana	*Eastern Red Cedar*

(Native) Deciduous:

Botanical Name	Common Name
(Native) Tall Trees– (trees over 50 ft. at maturity)	
Liriodendron tulipifera	*Yellow or Tulip Poplar*
Sassafras albidum	Sassafras
Liquidambar styraciflua	Sweetgum
Ulmus thomasii	Rock Elm
Celtis occidentalis	Hackberry
Celtis laevigata	Sugarberry
Morus rubra	Red Mulberry
Juglans nigra	Black Walnut
Carya illinoensis	Pecan
Carya cordiformis	Bitternut Hickory
Carya tomentosa	Mockernut Hickory
Carya ovata	Shagbark Hickory
Carya glabra	Pignut Hickory
Fagus grandifolia	American Beech

Botanical Name	Common Name
(Native) Tall Trees– (trees over 50 ft. at maturity) continued	
Quercus alba	White Oak
Quercus stellata	Post Oak
Quercus bicolor	Swamp White Oak
Quercus michauxii	Swamp Chestnut Oak
Quercus prinus	*Chestnut Oak*
Quercus muehlenbergii	Chinkapin Oak
Quercus rubra	*Northern Red Oak*
Quercus palustris	Pin Oak
Quercus falcata	Southern Red Oak
Quercus velutina	Black Oak
Quercus shumardii	Shumard Oak
Quercus coccinia	Scarlet Oak
Quercus phellos	Willow Oak
Tilia americana	American Basswood
Populus deltoides	Eastern Cottonwood
Salix nigra	Black Willow
Diospyros virginiana	Common Persimmon
Prunus serotina	Black Cherry
Gleditsia tracanthos	Honeylocust
Gymnocladus dioica	Kentucky Coffeetree
Nyssa aquatica	Water Tupelo
Nyssa sylvatica	Black Tupelo
Aesculus octandra	Yellow Buckeye
Acer rubrum	Red Maple
Acer saccharinum	Silver Maple
Acer negundo	Box Elder
Fraxinus pennsylvanica	Green Ash
Fraxinus americana	White Ash
(Native) Medium Trees – (trees 25 to 50 ft. at maturity)	
Magnolia tripetala	Umbrella Magnolia
Magnolia macrophylla	Bigleaf Magnolia
Asimina triloba	Pawpaw
Ulmus alata	Winged Elm
Celtis occidentalis	Hackberry
Quercus stellata	Post Oak
Quercus marilandica	Blackjack Oak
Ostrya virginiana	Eastern Hop Hornbeam
Carpinus carolinia	American Hornbeam
Betula lenta	Sweet Birch
Betula nigra	River Birch
Salix nigra	Black Willow
Oxydendron arboreum	Sourwood
Diospyros virginiana	Common Persimmon
Halesia carolina	Carolina Silverbell

Botanical Name	Common Name
(Native) Medium Trees – (trees 25 to 50 ft. at maturity) continued	
Amelanchier arborea	Downey Serviceberry
Ilex opaca	American Holly
Rhamnus caroliniana	Carolina Buckthorn
Aesculus glabra	Ohio Buckeye
Acer negundo	Box Elder
(Native) Small Trees/Large Shrubs – (10 to 25 ft. at maturity)	
Hamamelis virginiana	Witch Hazel
Carpinus carolinia	American Hornbeam
Kalmia latifolia	Mountain Laurel
Prunus americana	American Plum
Crataegus spp.	Hawthorn
Cercis canadensis	Eastern Redbud
Cornus florida	Flowering Dogwood
Euonymus atropurpurens	Eastern Wahoo
Cephalanthus occidentalis	Buttonbush
Sambucus canadensis	American Elder

Introduced Species (Kentucky Extension Service List)

(Introduced) Evergreen:

Botanical Name	Common Name
(Introduced) Tall Trees– (trees over 50 ft. at maturity)	
Abies nordmanniana	Nordmann Fir
Cedrus libani var. stenocoma	Hardy Cedar of Lebanon
Picea abies	Norway Spruce
Picea glauca 'Densata'	Black Hills Spruce
Picea omorika	Serbian Spruce
Picea orientalis	Oriental Spruce
Picea pungens	Colorado Spruce
Pinus densiflora	Japanese Red Pine
Pinus flexilis	Limber Pine
Pinus resinosa	Red Pine
Pseudotsuga menziesii	Douglas Fir
Thuja occidentalis	American Arborvitae
(Introduced) Medium Trees – (trees 25 to 50 ft. at maturity)	
Abies concolor	White Fir
Chamaecyparis obtusa	Hinoki Cypress
Chamaecyparis pisifera	Thread Cypress
Ilex attenuata 'Fosteri'	Foster No. 2 Holly
Juniperus chinensis	Chinese Juniper
Osmanthus americanus	Devil Wood

Botanical Name	Common Name
(Introduced) Medium Trees – (trees 25 to 50 ft. at maturity) continued	
Pinus bungeana	Lacebark Pine
Pinus cembra	Swiss Stone Pine
Pinus densiflora 'Oculus-draconis'	Japanese Red Pine
Pinus strobus 'Fastigiata'	Columnar White Pine
Pinus strobus 'Pendula'	Weeping White Pine
Pinus sylvestris	Scotch Pine
Platycladus orientalis	Oriental Arborvitae
Taxus baccata	English Yew
Taxus cuspidata 'Capitata'	Upright Japanese Yew
(Introduced) Small Trees/Large Shrubs – (10 to 25 ft. at maturity)	
Abies koreana 'Prostrate Beauty'	Prostrate Korean Fir
Chamaecyparis obtusa 'Torulosa'	Contorted Hinoki Cypress
Ilex aquifolium	English Holly
Ilex crenata 'Noble's Upright'	Noble's Upright Japanese Holly
Ilex pedunculosa	Longstock Holly
Juniperus chinensis	Chinese Juniper
Juniperus scopulorum	Rocky Mountain Juniper
Picea glauca 'Conica'	Dwarf Albert Spruce
Pinus densiflora 'Umbraculifera'	Tanyosho Pine
Pinus mugo	Mugho Pine
Pinus strobus 'Contorta'	Curly White Pine
Pinus sylvestris 'Wateri'	Waterer's Scotch Pine
Rhododendron catawbiense	Rhododendron
Rhododendron azalea	Azalea
Rhododendron maximum	Rosebay Rhododendron
Sciadopitys verticillata	Umbrella Pine
Taxus cuspidata	Japanese Yew
Viburnum pragense	Fragrant Viburnum
(Introduced) Medium Shrubs – (6 to 8 ft. at maturity)	
Chamaecyparis obtusa 'Sanderi'	Sanderi Hinoki False Cypress
Chamaecyparis pisifera	Sawara Cypress
Ilex meserveae	Blue Holly
Juniperus chinensis 'Sea Green'	Sea Green Chinese Juniper
Mahonia aquifolium	Oregon Holly Grape
Pieris japonica	Japanese Pieris
Taxus cuspidata	Japanese Yew
Taxus media	Spreading Yew
(Introduced) Small Shrubs – (4 to 5 ft. at maturity)	
Buxus microphylla	Boxwood
Chamaecyparis pisifera	Gold Thread Cypress
Ilex glabra 'Compacta'	Compact Inkberry
Ilex opaca 'Maryland Dwarf'	Maryland Dwarf American Holly
Juniperus chinensis	Chinese Juniper

Botanical Name	Common Name
(Introduced) Small Shrubs – (4 to 5 ft. at maturity) continued	
Leucothoe fontanesiana	Drooping Leucothoe
Mahonia aquifolium	Oregon Holly Grape
Picea abies	Norway Spruce
Picea pungens	Colorado Spruce
Pinus mugo	Mugho Pine
Pinus strobus 'Nana'	Dwarf White Pine
Pinus sylvestris 'Beuvronensis'	Dwarf Scotch Pine
Rhododendron 'Starry Night'	Starry Night Rhododendron
Taxus baccata 'Repandens'	Spreading English Yew
Tsuga canadensis 'Gentsch'	Gentsch White Canadian Hemlock
(Introduced) Low Shrubs – (2 to 3 ft. at maturity)	
Abies balsamea 'Nana'	Dwarf Balsam Fir
Chamaecyparis obtusa 'Pygmae	Dwarf Hinoki False Cypress
Aurescens'	
Chamaecyparis pisifera	Moss Cypress
Juniperus horizontalis	Compact Juniper
Juniperus sabina	Savin Juniper
Juniperus squamata 'Blue Star'	Blue Star Juniper
Leucothoe fontanesiana	Drooping Leucothoe
Mahonia aquifolium 'Compactum'	Compact Oregon Holly Grape
Picea abies	Dwarf Norway Spruce
Pieris japonica 'Pygmaea'	Pygmy Andromeda
Pinus sylvestris 'Riverside Gem'	Riverside Gem Scotch Pine
Rhododendron obrtusum	Azalea (several varities)

(Introduced) Deciduous:

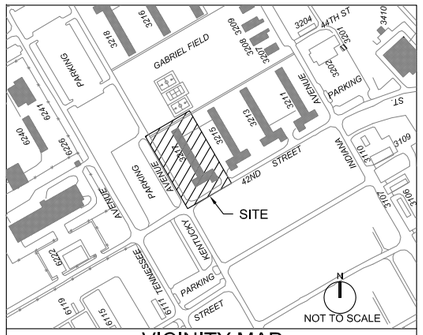
Botanical Name	Common Name
(Introduced) Tall Trees– (trees over 50 ft. at maturity)	
Acer platanoides	Norway Maple
Alnus glutinosa	European Alder
Cercidiphylium japonicum	Katusra Tree
Eucommia ulmoides	Hardy Rubber Tree
Fagus sylvatica	European Beech
Ginkgo biloba	Ginkgo or Maidenhair Tree
Larix kaempferi	Japanese Larch
Metasequoia glyptostroboides	Dawn Redwood
Platanus x acerfolia	London Planetree
Quercus acutissima	Sawtooth Oak
Quercus robur	English Oak
Tilia cordata	European Linden

Botanical Name	Common Name
(Introduced) Tall Trees– (trees over 50 ft. at maturity) continued	
Tilia tomentosa	Silver Linden
Ulmus parvifolia	Chinese Elm
Ulmus x	Hybrid Elms
Zelkova serrata	Japanese Zelkova
(Introduced) Medium Trees – (trees 25 to 50 ft. at maturity)	
Acer campestre	Hedge Maple
Acer griseum	Paperbark Maple
Aesculus x carnea	Red Horsechestnut
Aesculus pavia	Red Buckeye
Amelanchier grandiflora	Apple Serviceberry
Amelanchier laevis	Alleganey Serviceberry
Betula populifolia	Gray Birch
Betula maximowicziana	Monarch Birch
Carpinus betulus	European Hornbeam
Castanea mollissima	Chinese Chestnut
Corylus colurna	Turkish Filbert
Franklinia alatamaha	Franklin Tree
Ilex decidua	Possum Haw
Koeireuteria paniculata	Golden Raintree
Larix decidua ‘Pendula’	Weeping European Larch
Maackia amurensis	Amur Maackia
Magnolia virginiana	Sweet Bay Magnolia
Phellodendron amurense	Cork Tree
Prunus sargentii	Sargent Cherry
Prunus serrulata ‘Kwanzan’	Kwanzan Japanese Cherry
Pyrus fauriei	Korean Pear
Stewarti pseudocamellia	Japanese Stewartia
Syringa pekinensis	Pekin Lilac
Syringa reticulata	Japanese Tree Lilac
Prunus x yedoensis	Yoshino Cherry
Pyrus calleryana	Callery Pear
(Introduced) Small Trees/Large Shrubs – (10 to 25 ft. at maturity)	
Acer buergeranum	Trident Maple
Acer ginnala	Amur Maple
Acer japonicum	Fullmoon Maple
Acer maximowiczianum	Nikko Maple
Acer palmatum	Japanese Maple
Acer tegmentosum	Manchu Striped Maple
Aesculus parviflora	Bottlebrush Buckeye
Buddlela alternifolia	Fountain buddiela
Cercidiphyllum japonicum	Weeping Katsura Tree
Chionanthus retusus	Chinese Fringe Tree
Chionanthus virginicus	Fringe Tree
Cornus alternifolia	Pagoda Dogwood

Botanical Name	Common Name
(Introduced) Small Trees/Large Shrubs – (10 to 25 ft. at maturity) continued	
Cornus kousa	Kousa Dogwood
Cornus mas	Cornelian Cherry Dogwood
Cornus officinalis	Japanese Cornel Dogwood
Cornus racemosa	Gray Dogwood
Corylus avellana 'Cortorta'	Curly European Filbert
Corylus maxima 'Purpurea'	Purple Giant Filbert
Cotoneaster multiflorus	Many-flowered Cotoneaster
Crataegus crus-galli	Cockspur Hawthorn
Crataegus lavallei	Lavalle Hawthorn
Crataegus phaenopyrum	Washington Hawthorn
Crataegus viridis 'Winter King'	Winter King Hawthorn
Deutzia scabra 'Pride of Rochester'	Pride of Rochester Deutzia
Enkianthus campanulatus	Redvein Enkianthus
Euonymus alata	Burning Bush
Forsythia intermedia	Border Forsythia
Fothergilla major	Large Fothergilla
Ilex verticillata	Winterberry
Kolkwitzia amabilis	Beauty Bush
Ligustrum ibolium	Ibolium Privet
Ligustrum ovalifolium	California Privet
Ligustrum vicaryl	Vicary Golden Privet
Lindera benzoin	Spicebush
Lonicera morrowii	Fragrant Honeysuckle
Lonicera tatarica	Tatarian Honeysuckle
Magnolia x	Hybrid Magnolia (several varities)
Magnolia loebneri 'Merrill'	Dr. Merrill Magnolia
Magnolia soulanglana	Saucer Magnolia
Magnolia stellata	Star Magnolia
Malus x spp.	Crabapple
Malus floribunda	Flowering Crabapple
Malus sieboldii var. Zumi	Calocarpa Crabapple
Philadelphus virginalis	Mockorange
Physocarpus opulifolius	Eastern Ninebark
Prunus x 'Hally Jolivette'	Hally Jollivette Cherry
Prunus subhirtella	Higan Cherry
Rhamnus fragula 'Asplenifolia'	Cutleaf Buckthorn
Syringa vulgaris	Common Lilac
Ulmus glabra 'Camperdownii'	Camperdown Elm
Viburnum burkwoodii	Burkwood Viburnum
Viburnum carlcephalum	Fragrant Viburnum
Viburnum dentatum	Arrowwood Viburnum
Viburnum dilatum 'Iroquois'	Iroquois Linden Viburnum
Viburnum lantana	Wayfaring Tree
Viburnum lentago	Nannyberry Viburnum
Viburnum macrocephalum	Chinese Snowball Viburnum

Botanical Name	Common Name
(Introduced) Small Trees/Large Shrubs – (10 to 25 ft. at maturity) continued	
Viburnum opulus	Cranberry Bush Viburnum
Viburnum plicatum var. tomentosum'	Doublefile Viburnum
Viburnum prunifollum	Blackhaw
Viburnum rhytidophylioides	Lantanaphyllum Viburnum
Viburnum sargentii 'Onondaga'	Onondaga Viburnum
Viburnum sieboldii 'Seneca'	Seneca Viburnum
Viburnum setigerum	Tea Viburnum
Viburnum 'Sesquehana'	Sesquehanna Viburnum
(Introduced) Medium Shrubs – (6 to 8 ft. at maturity)	
Acanthopanax sieboldianus	Five-leaved Aralia
Acer palmatum	Japanese Maple
Aronia arbutifolia 'Brilliantissima'	Brilliant Red Chokeberry
Berberis mentorensis	Mentor Barberry
Berberis thunbergii	Japanese Barberry
Buddleia davidii	Orange-eyed Butterfly Bush
Calycanthus floridus	Carolina Allspice
Cercis chinensis	Chinese Redbud
Chaenomeies speciosa	Flowering Quince
Clethra ainifloia	Summer Sweet
Cornus alba	Tatarian Dogwood
Cornus baileyi	Bailey's Dogwood
Cornus florida 'Pygmaea'	Pygmy Dogwood
Cornus sericea 'Flaviramea'	Yellow-twig Dogwood
Cotoneaster divaricata	Spreading Cotoneaster
Deutzia lemoinei	Slender Deutzia
Forsythia intermedia 'Sunrise'	Border Forsythia
Hamamelis vernalis	Vernal Witchhazel
Hibiscus syriacus	Rose of Sharon
Hydrangea quercifolia	Oakleaf Hydrangea
Ilex verticillata	Winterberry
Kerria japonica	Japanese Kerria
Ligustrum vulgare 'Lodense'	Lodense Privet
Lonicera xyldosteum 'Claveyl'	Clavey's Honeysuckle
Malus sargentii	Sargent Crabapple
Morus alba 'Pendula'	Weeping Mulberry
Myrica pensylvanica	Northern Bayberry
Prunus x cistena	Purpleleaf Sand Cherry
Pyracantha coccinea	Scarlet Firethorn
Rhus aromatica	Fragrant Summac
Ribes alpinum	Alpine Currant
Spiraea nipponica 'Snowmound'	Snowmound Spirea
Spiraea x vanhouttei	Vanhoutte Spirea
Viburnum acerfolium	Mapleleaf Viburnum
Viburnum carlesli	Koreanspice
Viburnum juddii	Judd Viburnum

Botanical Name	Common Name
(Introduced) Medium Shrubs – (6 to 8 ft. at maturity) continued	
Viburnum x 'Mohawk'	Mohawk Viburnum
Viburnum x pragense	Prague Viburnum
Weigela florida	Weigela
(Introduced) Small Shrubs – (4 to 5 ft. at maturity)	
Abelia grandiflora	Glossy Abelia
Berberis thunbergii 'Aurea'	Golden Japanese Barberry
Cotoneaster horizontalis	Rockspray Cotoneaster
Deutzia gracilis	Slender Deutzia
Divervilla sessilifolia	Southern Bush Honeysuckle
Hydrangea arborescens	Hills-of-Snow
Hypericum kalm	Kalm St. Johnswort
Ilex verticillata	Winterberry
Itea japonica 'Beppu'	Beppu Sweetspire
Malus sargentii 'Tina'	Tina Crabapple
Physocarpus opulifolius	Eastern Ninebark
Potentilla fruticosa	Bush Cinquefoil
Pyracantha coccinea	Scarlet Firethorn
Syringa meyeri 'Palibin'	Meyer's Lilac
Syringa patula 'Miss Kim'	Littleleaf Lilac
Vibunum opulus 'Nana'	Dwarf Cranberrybush Viburnum
Viburnum trilobum 'Compactum'	Compact American Cranberry Bush
Viburnum utile 'Eskimo'	Eskimo Viburnum
(Introduced) Low Shrubs – (2 to 3 ft. at maturity)	
Berberis thunbergii	Japanese Barberry
Caryopteris clandonensis 'Blue	Blue Mist Bluebeard
Cornus sericea 'Kelseyi'	Kelsey's Dwarf Dogwood
Cotoneaster apiculatus	Cranberry Cotoneaster
Cotoneaster dammeri	Bearberry Cotoneaster
Cotoneaster horizontalis 'Perpusilla'	Perpusilla Rock Cotoneaster
Cotoneaster microphylla	Small Leaf Cotoneaster
Forsythia viridissima 'Bronxensis'	Bronx Forsythia
Forsythia 'Arnold's Dwarf'	Arnold's Dwarf Forsythia
Fothergilla gardenii	Dwarf Fothergilla
Hypericum 'Hidcote'	Hidcote St. Johnswort
Jasminum nudiflorum	Winter Jasmine
Kalmia cuseata 'White Wicky'	White Wicky Mountain Laurel
Kerria japonica 'Picta'	Variegated Japanese Kerria
Physocarpus opulifolius 'Nana'	Dwarf Eastern Ninebark
Rhus aromatica 'Gro-low'	Gro-low Fragrant Summac
Ribes alpinum 'Greenmound'	Greenmound Alpine Currant
Rosa wichuriana	Memorial Rose
Spiraea x bumalda	Bumald Spirea
Spiraea japonica 'Little Princess'	Little Princess Japanese Spirea
Symphoricarpos albus	Snowberry
var. laevigatus	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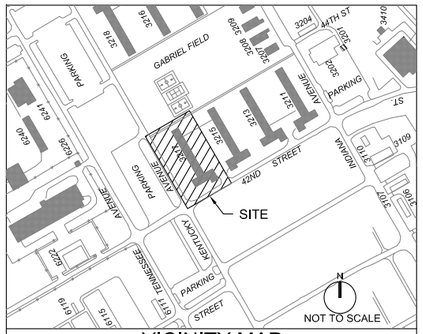


VICINITY MAP

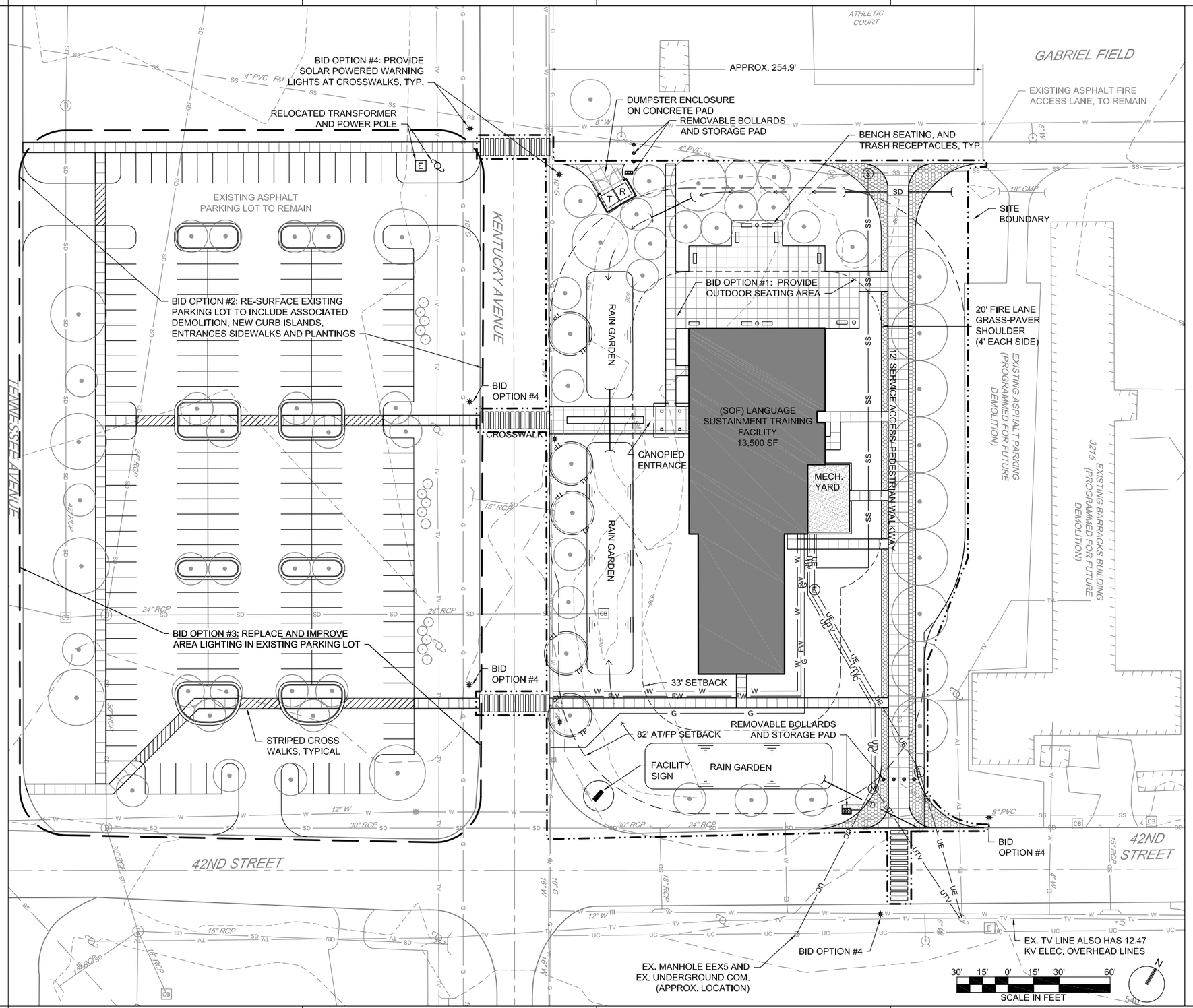
DESIGN-BUILD SOLICITATION. DRAWINGS ARE NOT APPROVED FOR CONSTRUCTION.

GENERAL NOTES

1. EXISTING INFORMATION PROVIDED IS BASED FROM GIS DATA AND IS FOR INFORMATION AND BIDDING PURPOSES ONLY. IT IS NOT INTENDED FOR DESIGN PURPOSES.
2. D-B CONTRACTOR SHALL CONDUCT TOPOGRAPHIC SURVEY FOR CONSTRUCTION.
3. SITE BOUNDARY AREA = APPROXIMATELY 2.25 ACRES±
4. TREES PRESENT AT THE SITE SHALL BE PRESERVED, IF POSSIBLE.
5. UTILITY CONNECTIONS UNDER STREETS, MUST BE MADE BY MEANS OF JACK AND BORE, NOT PAVEMENT CUTTING.
6. BID OPTION #5: PROVIDE SOD IN LIEU OF SEEDING FOR TURF ESTABLISHMENT.
7. RAIN GARDENS SHOWN ON THE PLAN PROVIDE FOR SURFACE SWM WATER QUALITY AND WATER QUANTITY CONTROL.
8. PROVIDE 8" WIDE CONCRETE GRADE BEAM AT OUTSIDE EDGE OF GRASS PAVERS ALONG FIRE LANE.
9. OPEN FOUNDATION EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY A LICENSED GEOTECHNICAL ENGINEER.

LEGEND

DESCRIPTION	EXISTING	PROPOSED
BUILDING		
ATFP SETBACK (33')		
ATFP SETBACK (82')		
ROADWAY		
SIDEWALK		
STORM SEWER	SD	
SWM AREA		
DRAINAGE SWALE		
SANITARY SEWER		SS
WATER MAIN	W	W
FIRE WATER		FW
GAS MAIN	G	G
OVERHEAD TELEVISION	TV	
UNDERGROUND TELEVISION		UTV
UNDERGROUND CABLE		UC
UNDERGROUND ELECTRIC		UE
SITE BOUNDARY		
TREE PROTECTION	TP	
TREE		



US Army Corps of Engineers
Louisville District

Revisions			
Symbol	Description	Date	Appr.
1	INTERIM FINAL RFP	03/28/10	
2	FINAL RFP	04/28/10	
3	CORRECTED FINAL RFP	05/26/10	
4	CERTIFIED FINAL RFP	05/28/10	

Designed by: G.WIMBERLY
Drawn by: J.LUMSDEN
Checked by: C.LIN
Date 04/28/10
Scale: AS SHOWN
Drawing code: n/a
Project Engineer/Architect
Date

W912QR-10-R-0046
PN66812 P2#:329375
CERTIFIED FINAL SUBMITTAL

GOVERNMENT SERVICES | IPT SERVICES
Integrated Process Team
4227 Fortress Blvd., Suite 250
Lawton, OK 73505
www.GSIpt.net
307.794.8797

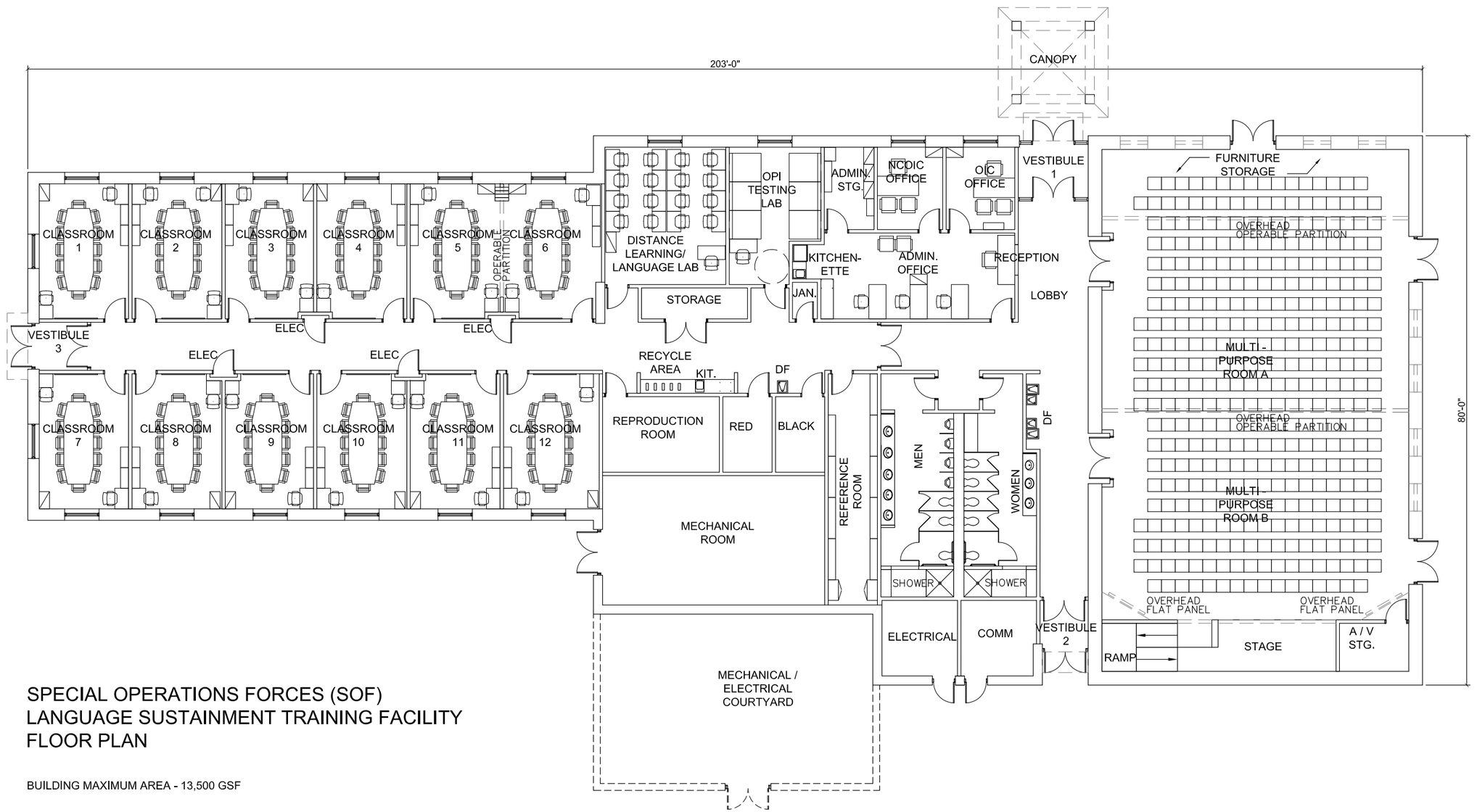
FY10 FORT CAMPBELL MILCON PROJECT
SOF Language Sustainment Training Facility
Request for Proposal

CONCEPT SITE AND UTILITY PLAN

Sheet reference number:
CS-100

Sheet 3 of 4

FILE NAME: Pz20 - USACE LOUISVILLE21 - FTC SOF LANG TRNG FACIG - WORKING DOCUMENTS\CAD\Sheet Files\PN66812CS100PLN.dwg LAYOUT NAME: Site Plan PLOTTED: May 26, 2010 11:25:14 AM USER: jlumsden



SPECIAL OPERATIONS FORCES (SOF) LANGUAGE SUSTAINMENT TRAINING FACILITY FLOOR PLAN

BUILDING MAXIMUM AREA - 13,500 GSF

DESIGN-BUILD SOLICITATION. DRAWINGS ARE NOT APPROVED FOR CONSTRUCTION.

0 4' 8' 16'

SCALE:1/8"=1'

US Army Corps of Engineers
Louisville District

Revisions

Symbol	Description	Date	Appr.
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3	CORRECTED FINAL RFP	05/26/10	
4	CERTIFIED FINAL RFP	05/28/10	

Date 04/28/10
Scale: AS SHOWN
Drawing code: n/a

Designed by: D.HENDERSON
Drawn by: M.HERNANDEZ
Checked by: A.WATANABE

Project Engineer/Architect Date

W912QR-10-R-0046
PN66812 P2# 329375
CERTIFIED FINAL SUBMITTAL

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301.794.8797

FY10 FORT CAMPBELL MILCON PROJECT
SOF Language Sustainment Training Facility
Request for Proposal

CONCEPT FLOOR PLAN

Sheet reference number:
FP-100

Sheet 4 of 4

FILE NAME: P:\20 - USACE LOUISVILLE\21 -FTC SOF LANG TRNG FAC\G - WORKING DOCUMENTS\CAD\Sheet Files\PN66812A-FP100KON.dwg LAYOUT NAME: Floor Plan PLOTTED: May 26, 2010 11:25:23 AM USER: jlumsden

APPENDIX K
Fuel Cost Information

The following utility rates for this installation are provided for design

Electrical:
Demand Charge - $18.24 per kilowatt

Energy Charge - $ 0.02729 per kilowatt-hour

Blended Rate - $ 0.0664 per kilowatt-hour (blended annual energy and demand cost)

Natural Gas:
Commodity Charge Rate - $ 8.94 per thousand cubic feet

Water:
Commodity Charge Rate - $3.00 per 1,000 gal

Sewer:
Commodity Charge Rate - $3.00 per 1,000 gal

SOF Language Sustainment Training Facility RFP

LEED Project Credit Guidance (OCT 09)

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 2009 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. Related to compliance with 40 CFR 122.26 (Clean Water Act)
SS1	Site Selection			Credit is determined by Installation's site selection.
SS2	Development Density & Community Connectivity - OPTION 1 DENSITY		X	Credit is determined by Installation's site selection. Selected site lacks density.

	Development Density & Community Connectivity - OPTION 2 CONNECTIVITY	Pref		Credit is determined by Installation's site selection.
SS3	Brownfield Redevelopment		X	Credit is determined by Installation's site selection. Selected site is not a previously remediated site.
SS4.1	Alternative Transportation: Public Transportation Access		X	Credit is determined by Installation's site selection.
SS4.2	Alternative Transportation: Bicycle Storage & Changing Rooms			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		X	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		X	Requires provision of vehicle refueling stations. Installation must support type of fuel and commit to maintaining/supporting refueling stations.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 3		1	Credit is easily earned at minimal first cost. Provide preferred parking for low emitting & fuel efficient vehicles.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 4		X	Provide a low emitting & fuel efficient vehicles sharing program. Assume Government will not provide vehicles unless indicated otherwise.
SS4.4	Alternative Transportation: Parking Capacity			Credit is easily earned at minimal first cost. Obtain minimum parking requirement from approved Army standard design or from Installation Design Guide.
SS5.1	Site Development: Protect or Restore Habitat		X	Ability to earn credit depends greatly on size of project site and land made available within site boundary (but outside development footprint) that is made available for habitat.
SS5.2	Site Development: Maximize Open Space			AT/FP Standoffs often creat open space required to earn this credit. Installation must commit to not develop the open space to support credit documentation. 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		1	Related to compliance with 40 CFR 122.26 (Clean Water Act).
SS6.2	Stormwater Design: Quality Control		1	

SS7.1	Heat Island Effect: Non-Roof		1	Shade Trees for walks and paving.
SS7.2	Heat Island Effect: Roof			Coordinate with nearby airfield requirements, which may preclude this credit.
SS8	Light Pollution Reduction	Pref		Credit is easily earned at minimal first cost. Installation design guide must support exterior fixture type requirements. Installation must coordinate requirement with privatized utility providing exterior lighting, if applicable.
WATER EFFICIENCY				
WEPR1	Water Use Reduction	Rqd	Rqd	All LEED prerequisites are required to be met.
WE1.1	Water Efficient Landscaping: Reduce by 50%			Installation Design Guide must support landscaping and irrigation requirements. Project must include landscaping to be eligible for this credit.
WE1.2	Water Efficient Landscaping: No Potable Water Use or No Irrigation	Pref		Installation Design Guide must support landscaping and irrigation requirements. Project must include landscaping to be eligible for this credit.
WE2	Innovative Wastewater Technologies - OPTION 1			Where on-site non-potable water is used for sewage conveyance, cost of collection systems must be identified and funded in programming.
WE2	Innovative Wastewater Technologies - OPTION 2			Space for on-site treatment must be considered in determination of site boundaries.
WE3	Water Use Reduction	Pref		Related to Army mandate for waterless urinals beginning FY10.
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	Pref	1	Points relate directly to required EPACT compliance. Earning at least 2 points is a LEED prerequisite.
EA2	On-Site Renewable Energy			Credit relates directly to EPACT compliance. Cost of renewable energy systems must be identified and funded in programming.

EA3	Enhanced 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			Availability issues must be addressed.
EA5	Measurement & Verification			Credit relates to EPACT metering requirements. Provider and funding of post-occupancy activities must be coordinated. Cost must be identified and funded in programming if provided by construction contractor. Installation provides coordination data on EMCS system, if available.
EA6	Green Power		X	Credit is determined by Installation's purchase of green power.
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			Initial project programming must address renovation versus new construction.
MR2.1	Construction Waste Management: Divert 50% From Disposal	Pref		Relates directly to Army waste diversion requirements and is required except where PDT can justify and document that 50% waste diversion is not economically feasible or significantly impacts required completion date.
MR2.2	Construction Waste Management: Divert 75% From Disposal	Pref		
MR3	Materials Reuse			See installation for any salvaged/refurbished materials available.
MR4.1	Recycled Content: 10% (post-consumer + 1/2 pre-consumer)			Relates directly to EPA Comprehensive Procurement Guidelines (CPG) compliance. Federal regulation require purchase of products that contribute to this credit.
MR4.2	Recycled Content: 20% (post-consumer + 1/2 pre-consumer)			Relates directly to EPA Comprehensive Procurement Guidelines (CPG) compliance. Federal regulation require purchase of products that contribute to this credit.

MR5.1	Regional Materials:10% Extracted, Processed & Manufactured Regionally			Earning this credit depends on project location relative to extraction locations or required materials.
MR5.2	Regional Materials:20% Extracted, Processed & Manufactured Regionally			Earning this credit depends on project location relative to extraction locations or required materials.
MR6	Rapidly Renewable Materials			Relates directly to the USDA Federal Biobased Products Preferred Procurement Program (FB4P) materials compliance.
MR7	Certified Wood	Pref		Credit is easily earned at minimal first cost in projects including very little wood. Can be cost prohibitive for projects with significant wood.
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).
EQ1	Outdoor Air Delivery Monitoring			
EQ2	Increased Ventilation			This credit will likely increase building overall energy consumption.
EQ3.1	Construction IAQ Management Plan: During Construction	Pref		Credit is easily earned at minimal first cost.
EQ3.2	Construction IAQ Management Plan: Before Occupancy	Pref		Credit is easily earned at minimal first cost. Flush out shall be prohibited where humidity/moisture introduction is an issue. Construction schedule must accommodate activities required for this credit.
EQ4.1	Low Emitting Materials: Adhesives & Sealants	Pref		Credit is easily earned at minimal first cost.
EQ4.2	Low Emitting Materials: Paints & Coatings	Pref		Credit is easily earned at minimal first cost.
EQ4.3	Low Emitting Materials: Carpet/Flooring Systems	Pref		Credit is easily earned at minimal first cost.
EQ4.4	Low Emitting Materials: Composite Wood & Agrifiber Products	Pref		Credit is easily earned at minimal first cost in projects including very little wood. Can be cost prohibitive for projects with significant wood.
EQ5	Indoor Chemical & Pollutant Source Control	Pref		Credit is easily earned at minimal first cost. 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			Feasibility and cost of provision of individual workstation comfort controls is highly dependent on project type.
EQ7.1	Thermal Comfort: Design			
EQ7.2	Thermal Comfort: Verification			Provider and funding of post-occupancy activities must be coordinated. Cost must be identified and funded in programming if provided by construction contractor.
EQ8.1	Daylight & Views: Daylight 75% of Spaces	Pref		Credit is easily earned at minimal first cost provided building design limitations do not preclude it.
EQ8.2	Daylight & Views: Views for 90% of Spaces	Pref		Credit is easily earned at minimal first cost provided building design limitations do not preclude it.
INNOVATION & DESIGN PROCESS				
IDc1.1	Innovation in Design			
IDc1.2	Innovation in Design			
IDc1.3	Innovation in Design			
IDc1.4	Innovation in Design			
IDc2	LEED Accredited Professional	Pref	Rqd	LEED AP during design and construction is required.
REGIONAL PRIORITY CREDITS				Refer to LEED Checklist.

Owner's Project Requirements Document for LEED Fundamental Commissioning

Project: Fort Campbell - SOF Language Sustainment Training Facility _____

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 Version 3.0 EA Prerequisite 1, Fundamental Commissioning of 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.

Use of this template is not required, nor are there any restrictions on editing of it. It is provided simply as a tool to assist project teams in meeting the documentation requirements for LEED Fundamental Commissioning.

The intent of the Owner's Project Requirements Document, per the LEED v3.0 Reference Guide, 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 v3.0 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 Building Energy Systems.

Owner's Project Requirements Document for LEED Fundamental Commissioning

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TABLE 1

1. *Owner and User Requirements*

What is the primary purpose, program and use of this project?

The objective of this solicitation is to obtain a facility in which the occupying units are able to learn language skills in speaking, writing and reading to enhance communication with foreign cultures. _____

Describe pertinent project history.

The project will be developed by a Design Build Request for Proposal.

The proposed facility will replace temporary accommodations utilized by the Special Operations Forces for linguistic skill training. It will be built on a different site where an existing barracks building is scheduled for demolition. _____

Broad Goals

What are the broad goals relative to program needs?

The overall architectural goal is to provide a functional, visually appealing facility that is a source of pride for the installation and delivered within the available budget and schedule. This facility a language will provide soldiers with linguistic skills that distinguish them from other military units. The new building is also expected to exemplify environmental conscientiousness. _____

What are the broad goals relative to future expansion?

The Language Sustainment Facility will be the anchor for Gabriel Field and sets the stage for the future development of the Fifth Special Forces Group complex. The building itself is not being planned for future expansion. _____

What are the broad goals relative to flexibility?

The goal is to allow ready availability in response to changes in force structure, equipment, and doctrine. The building will be standardized for multiple occupancy. While the facility is designed for linguistic training, it shall also accommodate other multi-purpose activities during evenings and weekends.

What are the broad goals relative to quality of materials?

While it will be designed for a fifty year life cycle, it can be assumed that it will be renovated in twenty five years. The quality of materials is expected to be durable, easily maintained, and cleaned, while adhering to sustainable criteria

What are the broad goals relative to construction costs?

The facility must meet the project budget. Construction costs associated the scope of work and allotted gross square footage and time constraints.

What are the broad goals relative to operational costs?

Meet EPA for reduce water and energy consumption and minimize operating costs as much as possible within first cost budget. The building is being planned to operate efficiently with minimal maintenance and replacement.

What are the broad goals relative to life cycle of the equipment?

Equipment is being planned to last for maximum life cycle duration possible, comparable to quality buildings in the private sector.

Other broad goals:

Comply with egress and life safety requirements of IBC 2006, the National Fire Protection Association (NFPA), Life Safety Code 101 and applicable Fire Protection Engineering for Facilities design requirements. Comply with IBC 2006.

2. Environmental and Sustainability Goals

What are the project goals relative to sustainability and environmental issues? (Example: LEED Silver rating)

LEED Silver Rating

What are the project goals relative to energy efficiency? (example: Meet EPACT)

Meet EPACT

What are the project goals and requirements for building siting that will impact energy use?

Day lighting, Solar exposure, Landscaping, High albedo sidewalks _____

What are the project goals and requirements for building facade that will impact energy use?

Day lighting, Materials Selection_____

What are the project goals and requirements for building fenestration that will impact energy use?

Day lighting, Insulated Glass and Frames _____

What are the project goals and requirements for building envelope that will impact energy use?

Materials Section, Day Lighting, Insulated walls_____

What are the project goals and requirements for building roof that will impact energy use?

High albedo color and finish _____

Other: *(Insert as applicable)*

Efficient mechanical energy systems _____

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.

Educational; administrative; assembly; utility support; comfort and cleansing; storage. __

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.

549 Total (185 Educational and Administrative: M-F 0800 hrs. to 1600 hrs; 364 Multi-Purpose Assembly: M-F & S-S specific times between 0800hrs to 2200 hrs. _____

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.

Access controls operate through card system @ entry vestibules; Exterior lighting control through control panel; Interior lighting control through occupancy sensors; HVAC controls operate 24 hours a day, seven days a week; _____

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: Refer to UFC 3-530-01 Lighting _____
Temperature: Refer to 3-410-01 FA HVAC _____

Humidity: 50% R.H. _____
Air Quality: Refer to ASHRAE 62.1 _____

Ventilation: Refer to ASHRAE 62.1 _____

Filtration: Refer to ASHRAE 62.1 _____

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.

Refer to RFP

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: Room light dimming switches, work station light switches _____

Temperature: Temperature can be raised or lowered by classroom occupants, Officer in Charge, and Non-Commissioned officer in Charge. _____
Humidity: No adjustment control by occupant _____
Air Quality: No adjustment control by occupant _____

Ventilation: No adjustment control by occupant _____

What, if any, specific types of lighting are desired? (example: fluorescent in 2x2 grid, accent lighting, particular lamps)

T-5 Fluorescent Lighting: Overall_____
LED Exterior Lighting _____
Task Lighting: ceiling mounted fixtures @ 20 foot candles on dimmers

Task Lighting: workstation mounted @ 50 foot candles _____

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: **Refer to RFP** _____

Quality: - _____

Preferred Manufacturer: -_____
Reliability: - _____
Automation: -_____

Flexibility: - _____
Maintenance Requirements: - _____
Efficiency Target: -_____

Desired Technologies: - _____

Indicate desired features for the following commissioned system: Ventilation

Desired Type**: Refer to RFP** _____

Quality: - _____

Preferred Manufacturer: _____
Reliability: - _____
Automation: - _____

Flexibility: -_____
Maintenance Requirements: - _____
Efficiency Target: -_____

Desired Technologies: - _____

Indicate desired features for the following commissioned system: Air Conditioning

Desired Type: **Refer to RFP** _____

Quality: -_____

Preferred Manufacturer: -_____
Reliability: - _____
Automation: - _____

Flexibility: - _____
Maintenance Requirements: _____
Efficiency Target: - _____

Desired Technologies: - _____

Indicate desired features for the following commissioned system: Refrigeration

Desired Type: **Not Applicable** _____

Quality: - _____

Preferred Manufacturer: - _____
Reliability: - _____
Automation: - _____

Flexibility: - _____
Maintenance Requirements: - _____
Efficiency Target: - _____

Desired Technologies:

Indicate desired features for the following commissioned system: HVAC Controls

Desired Type: **Direct Digital Control (DDC) Refer to RFP.** _____

Quality: - _____

Preferred Manufacturer: - _____
Reliability: - _____
Automation: **Self contained and mapped to central Facility Maintenance Control System (FMCS)**

Flexibility: High _____
Maintenance Requirements: **Minimal maintenance** _____
Efficiency Target: - _____

Desired Technologies: **Occupancy sensing, oxygen sensing, VAV** _____

Indicate desired features for the following commissioned system: Domestic Hot Water

Desired Type: **Natural gas with solar assistance. Refer to RFP.** _____

Quality: - _____

Preferred Manufacturer: - _____
Reliability: - _____
Automation: **Package unit, completely automated**. _____

Flexibility: - _____
Maintenance Requirements: _____
Efficiency Target: **30% of annual energy from solar.** _____

Desired Technologies: **Thermal solar collectors** _____

Indicate desired features for the following commissioned system: Lighting Controls

Desired Type: **Photocells, Occupancy Sensors for interior spaces, Lighting control panel for exterior**

Quality: - _____

Preferred Manufacturer: -_____
Reliability: - _____
Automation: -_____

Flexibility: -_____
Maintenance Requirements: -_____
Efficiency Target: -_____

Desired Technologies: -_____

Indicate desired features for the following commissioned system: Day lighting Controls

Desired Type: **Not Applicable**

Quality: - _____

Preferred Manufacturer: -_____
Reliability: - _____
Automation: - _____

Flexibility: - _____
Maintenance Requirements: -_____
Efficiency Target: -_____

Desired Technologies: - _____

Indicate desired features for the following commissioned system: Emergency Power

Desired Type: **Battery back up for egress**

Quality: - _____

Preferred Manufacturer: -_____
Reliability: - _____
Automation: - _____

Flexibility: - _____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: - _____

Indicate desired features for the following commissioned system: Other - _____

Desired Type: **Photovoltaic: 5% Energy Recovery**

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?

The U.S. Special Operations Forces will be operating the facility by educating soldiers in foreign skills. There will also be administrative and multi-purpose activities.

Will the facility be connected to an EMCS? If so, what are the interface requirements? (example: monitoring points, control points, scheduling)

Yes. It will be connected to installation Facility Maintenance Control System (FMCS) with extensive monitoring points. Refer to the Fort Campbell Technical Design Guide.

What is the desired level of training and orientation for building occupants to understand and use the building systems?

Building occupants only need to operate thermostat.

What is the desired level of training and orientation for O&M staff to understand and maintain the building systems?

O & M staff must be comfortable with DDC Direct Digital Control.

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 Vent/Filter Reqmt.	Special Acoustic Reqmt.	Special Lighting Reqmt.	Special Occup Adjustability Reqmt.
Admin Open Office	Admin & Reception	3	M-F: 0800 hrs -1400 hrs + after hours	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A.	N.A.	N.A.
Admin Storage	Storage	0	N.A.	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A.	N.A.	N.A.
AV Storage	Storage	0	N.A.	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A.	N.A.	N.A.
Black Comm. Room	Comm.	0	N.A.	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A	N.A.	N.A.
Classrooms (12)	Education	13 each	M-F : 0800 hrs -1400 hrs	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	See RFP Section 01 10 00 Par-3.4.3	VTC for one classroom only	Adj. wall thermostat w/ numeric readout
Corridors	Passage	3	N.A.	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	See RFP Section 01 10 00 Par-3.4.3	N.A.	N.A.
Distance Learning Language Laboratory	Education	16	M-F : 0800 hrs -1400 hrs	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	See RFP Section 01 10 00 Par-3.4.3	N.A.	N.A.

Electrical Room	Electrical panel board access	0	N.A.	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A	N.A.	N.A.
Furniture Storage	Storage	0	N.A.	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A	N.A.	N.A.
Janitor Closet	Maintenance	0	N.A.	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A.	N.A.	N.A.
Lobby	Orientation & Waiting	Varies	M-F: 0800 hrs -1400 hrs + after hours	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A.	N.A.	N.A.
Multi-Purpose Room	Lectures, Ceremonies	364	M-F: 0800 hrs -1400 hrs + after hours	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	Section 01 10 00 Par-3.4.3	Dimmable Track Lighting @ Podium	N.A.
Mechanical Room	Equipment Access	0	N.A.	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A.	N.A.	N.A.
Men's Rest Room	Comfort & Cleansing	Varies	N.A.	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A.	90 CRI lighting quality/ 70 FC @ mirrors	N.A.
Non-Commissioned Officer in Charge Office	Administration	1	M-F : 0800 hrs -1400 hrs	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	See RFP Section 01 10 00 Par-3.4.3	N.A.	Adj. wall thermostat w/ numeric readout

Officer in Charge Office	Administration	1	M-F : 0800 hrs -1400 hrs	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	See RFP Section 01 10 00 Par-3.4.3	N.A.	Adj. wall thermostat w/ numeric readout
Oral Proficiency Interview Room	Testing & Monitoring	7	M-F : 0800 hrs -1400 hrs	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	See RFP Section 01 10 00 Par-3.4.3	N.A.	N.A.
Red Comm. Room	Comm.	0	N.A.	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A.	N.A.	N.A.
Reference Room	Book Access	Varies	M-F : 0800 hrs -1400 hrs	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A.	N.A.	N.A.
Repro Room	Repro & Maint.	Varies	M-F : 0800 hrs -1400 hrs	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A.	N.A.	N.A.
Telecomm room	Communications	0	N.A.	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A.	N.A.	N.A.
Vestibules	Entry	Varies	N.A.	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A.	N.A.	N.A.
Women's Rest Room	Comfort & Cleansing	Varies	N.A.	24 hr/7 day HVAC	None	None	50% R.H. Max.	ASHAE 62.1 Standard	N.A.	90 CRI lighting quality/ 70 FC @ mirrors	N.A.

APPENDIX N
LEED Requirements for Multiple Contractor Combined Projects

Not Used

LEED Credit Paragraph	**LEED Contractor Responsibilities Table**	Building and Site CTR Substitution Permitted	**Required Points Strategy**	NIC=Not in Contract N/A=Not Applicable R=Required
BUILDING: SOF Language Sustainment Training Facility				
PAR	**FEATURE**			**REMARKS**
CATEGORY 1 – SUSTAINABLE SITES				
SSPR1	Construction Activity Pollution Prevention (PREREQUISITE)	NO	R	Site CTR is primary permittee. Building CTR is secondary permittee to primary permittee. All LEED prerequisites are required to be met. Related to compliance with 40 CFR 122.26 (Clean Water Act)
SS1	Site Selection	NO	1	Site CTR responsible. Selected site should meet requirements because it is NOT prime farmland, NOT undeveloped land lower than 5' above 100 year flood, NOT an endangered habitat, NOT within 100' of wetlands, NOT undeveloped land within 50' of water body, and NOT previously a parkland
SS2	Development Density & Community Connectivity	YES	5	Site CTR responsible. Credit is determined by Installation's site selection. Follow Option 2.
SS3	Brownfield Redevelopment	NO		Site CTR responsible. Credit is determined by Installation's site selection. Selected site is not contaminated.
SS4.1	Alternative Transportation: Public Transportation Access	NO		Site CTR responsible. Credit is determined by Installation's site selection. Selected site is not easily accessible to mass transit.
SS4.2	Alternative Transportation: Bicycle Storage & Changing Rooms	NO	1	Combined Bldg/Site credit. Site CTR responsible for bicycle storage. Building CTR responsible for shower/changing rooms.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 1	YES		Requires provision of vehicles, which cannot be purchased with construction funds. Assume Government will not provide vehicles unless indicated otherwise.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 2	YES		Requires provision of vehicle refueling stations. Installation must support type of fuel and commit to maintaining/supporting refueling stations
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 3	NO	3	Site credit. Provide preferred parking for low emitting & fuel efficient vehicles. No new additional parking is being provided.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 4	YES		Provide a low emitting & fuel efficient vehicles sharing program. Assume Government will not provide vehicles unless indicated otherwise.
SS4.4	Alternative Transportation: Parking Capacity	YES	2	Site CTR responsible. Achievable since no new additional parking is being provided.
SS5.1	Site Development: Protect or Restore Habitat	YES		Site CTR responsible. AT/FP clear zone requirements may limit the ability to establish habitat planting in open space.
SS5.2	Site Development: Maximize Open Space	YES	1	Site CTR responsible. AT/FP Standoffs often creat open space required to earn this credit. Installation must commit to not develop the open space to support credit documentation. 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	YES	1	Site CTR responsible. Related to compliance with 40 CFR 122.26 (Clean Water Act). Under Option 1, underwater stormwater detention facilities to be provided to serve site runoff.
SS6.2	Stormwater Design: Quality Control	YES	1	Site CTR responsible.
SS7.1	Heat Island Effect: Non-Roof	YES	1	Building CTR responsible for 100% reflective pavement (concrete meets requirement). Site CTR responsible for ensuring balance of paving in combined project results in 50% compliant when added to TEMF paving.

LEED Credit Paragraph	**LEED Contractor Responsibilities Table**	Building and Site CTR Substitution Permitted	**Required Points Strategy**	NIC=Not in Contract N/A=Not Applicable R=Required
BUILDING: SOF Language Sustainment Training Facility				
PAR	**FEATURE**			**REMARKS**
SS7.2	Heat Island Effect: Roof	YES	1	Building CTR responsible. Provide roof material meeting SRI-29 (>2:12) or SRI-78. Coordinate with nearby airfield requirements, which may preclude this credit.
SS8	Light Pollution Reduction	NO	1	Combined Bldg/Site credit. Building CTR responsible for building lighting rqmts. Site CTR responsible for site lighting rqmts. Comply with interior and exterior lighting requirements. Site is assumed LZ3:Medium as defined by IESNA RP-33.
CATEGORY 2 – WATER EFFICIENCY				
WEPR1	Water Use Reduction	NO	R	Building CTR responsible. All LEED prerequisites are required to be met. Reduce water useage by 20%.
WE1	Water Efficient Landscaping: Reduce by 50%- OPTION 1	YES		Site CTR responsible. Reduce required landscape irrigation useage by 50%.
WE1	Water Efficient Landscaping: No Potable Water Use or No Irrigation- OPTION 2	YES	4	Site CTR responsible. Site landscaping shall not require permanent potable water use or irrigation.
WE2	Innovative Wastewater Technologies - OPTION 1	YES		Proposed credit must fall within CTR scope or be coordinated with other CTR. Captured rainwater not anticipated for this project. 50% water useage reduction not anticipated.
WE2	Innovative Wastewater Technologies - OPTION 2	YES		Site CTR responsible. On-site sewer treatment not anticipated for this project. Space for on-site treatment must be considered in determination of site boundaries.
WE3	Water Use Reduction	YES	2	Building CTR responsible. Goal aims to achieve at least a 30% water useage reduction. Related to Army mandate for waterless urinals beginning FY10.
CATEGORY 3 – ENERGY AND ATMOSPHERE				
EAPR1	Fundamental Commissioning of the Building Energy Systems (PREREQUISITE)	NO	R	Building CTR responsible for commissioning of building systems. Site CTR responsible for commissioning of site systems. All LEED prerequisites are required to be met.
EAPR2	Minimum Energy Performance (PREREQUISITE)	NO	R	Building CTR responsible. All LEED prerequisites are required to be met.
EAPR3	Fundamental Refrigerant Management (PREREQUISITE)	NO	R	Building CTR responsible. All LEED prerequisites are required to be met. Reduce stratospheric ozone depletion with zero use of CFC based refrigerants.
EA1	Optimize Energy Performance	YES	10	Building CTR responsible. Must comply with EPACT and Executive Orders to show energy savings through whole building energy simulation.
EA2	On-Site Renewable Energy	YES	1	Proposed credit must fall within CTR scope or be coordinated with other CTR. Must comply with EPACT and Executive Orders. Cost of renewable energy systems must be identified and funded in programming.
EA3	Enhanced Commissioning	NO	2	Additional commissioning process through an independent Commissioning agent.
EA4	Enhanced Refrigerant Management	YES	2	Building CTR responsible. Reduce ozone depletion and direct contributions to climate change to comply with Montreal protocol. No use of CFC, HCFC, or Halon refrigerants.

LEED Credit Paragraph	**LEED Contractor Responsibilities Table**	Building and Site CTR Substitution Permitted	**Required Points Strategy**	NIC=Not in Contract N/A=Not Applicable R=Required
BUILDING: SOF Language Sustainment Training Facility				
PAR	**FEATURE**			**REMARKS**
EA5	Measurement & Verification	YES		Building CTR responsible. Credit relates to EPACT metering requirements. Provider and funding of post-occupancy activities must be coordinated. Cost must be identified and funded in programming if provided by construction contractor. Installation provides coordination data on EMCS system, if available.
EA6	Green Power	NO		Building CTR responsible. A two year renewable energy contract may be outside of the scope for this project.
CATEGORY 4 – MATERIALS AND RESOURCES				
MRPR1	Storage & Collection of Recyclables (PREREQUISITE)	NO	R	Building CTR responsible. All LEED prerequisites are required to be met.
MR1	Building Reuse	N/A		Initial project programming must address renovation versus new construction. No existing structures meet program requirements. Any existing structures on the site are currently not being recovered with this project.
MR2.1	Construction Waste Management: Divert 50% From Disposal	NO	1	Aggregate credit. Building CTR responsible for diversion of minimum 50% of waste generated. Site CTR responsible for diversion of minimum 50% of waste generated. Army mandates a 50% diversion for all projects.
MR2.2	Construction Waste Management: Divert 75% From Disposal	NO	1	Aggregate credit. Building CTR responsible for diversion of minimum 75% of waste generated. Site CTR responsible for diversion of minimum 75% of waste generated.
MR3.1	Materials Reuse: 5%	NO		Aggregate credit. Building CTR responsible for 5% materials reuse. Site CTR responsible for 5% materials reuse. See installation for any salvaged/refurbished materials available.
MR3.2	Materials Reuse: 10%	NO		Aggregate credit. Building CTR responsible for 10% materials reuse. Site CTR responsible for 10% materials reuse. See installation for any salvaged/refurbished materials available.
MR4.1	Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	NO	1	Aggregate credit. Building CTR responsible for minimum 15% recycled materials. Site CTR responsible for minimum 1% recycled materials. Relates directly to EPA Comprehensive Procurement Guidelines (CPG) compliance. Federal regulation require purchase of products that contribute to this credit.
MR4.2	Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	NO	1	Aggregate credit. Building CTR responsible for minimum 30% recycled materials. Site CTR responsible for minimum 1% recycled materials. Relates directly to EPA Comprehensive Procurement Guidelines (CPG) compliance. Federal regulation require purchase of products that contribute to this credit.
MR5.1	Regional Materials:10% Extracted, Processed & Manufactured Regionally	NO	1	Aggregate credit. Building CTR responsible for minimum 3% regional materials. Site CTR responsible for minimum 30% regional materials. Region is 500 mile radius of project site. Earning this credit depends on project location relative to extraction locations or required materials.
MR5.2	Regional Materials:20% Extracted, Processed & Manufactured Regionally	NO	1	Aggregate credit. Building CTR responsible for minimum 6% regional materials. Site CTR responsible for minimum 60% regional materials. Region is 500 mile radius of project site. Earning this credit depends on project location relative to extraction locations or required materials.

LEED Credit Paragraph	**LEED Contractor Responsibilities Table**	Building and Site CTR Substitution Permitted	**Required Points Strategy**	NIC=Not in Contract N/A=Not Applicable R=Required
BUILDING: SOF Language Sustainment Training Facility				
PAR	**FEATURE**			**REMARKS**
MR6	Rapidly Renewable Materials	YES	1	Building CTR responsible. Achieve 2.5% of the cost of building materials using rapidly renewable building materials. Relates directly to the USDA Federal Biobased Products Preferred Procurement Program (FB4P) materials compliance.
MR7	Certified Wood	YES	1	Building CTR responsible. Use a minimum of 50% FSC Certified permanent wood.
CATEGORY 5 – INDOOR ENVIRONMENTAL QUALITY				
EQPR1	Minimum IAQ Performance (PREREQUISITE)	NO	R	Building CTR responsible. Establish a minimum Indoor Air Quality performance that meets the minimum requirements for Sections 4 through 7 of ASHRAE 62.1-2007. All LEED prerequisites are required to be met.
EQPR2	Environmental Tobacco Smoke (ETS) Control (PREREQUISITE)	NO	R	Smoking is prohibited in non-residential federal facilities. Building CTR responsible for building ETS control features. Site CTR responsible for site ETS features. All LEED prerequisites are required to be met.
EQ1	Outdoor Air Delivery Monitoring	YES	1	Building CTR responsible. Provide a permanent monitoring system to evaluate ventilation system performance. Can connect to UMCS if applicable.
EQ2	Increased Ventilation	YES	1	Building CTR responsible. Provide 30% increased ventilation above minimum. Coordinate additional energy useage with achieving EA1.
EQ3.1	Construction IAQ Management Plan: During Construction	YES	1	Building CTR responsible. Must follow SMACNA Guidelines during construction. Requires jobsite photos as part of documentation.
EQ3.2	Construction IAQ Management Plan: Before Occupancy	YES	1	Building CTR responsible. Include in construction schedule.
EQ4.1	Low Emitting Materials: Adhesives & Sealants	YES	1	Building CTR responsible. Credit includes everything inside the exterior surface covering, including wall cavities, attics, above ceilings, and ductwork. Use materials with low VOC.
EQ4.2	Low Emitting Materials: Paints & Coatings	YES	1	Building CTR responsible. Credit includes everything inside the exterior surface covering, including wall cavities, attics, above ceilings, and ductwork. Use materials with low VOC.
EQ4.3	Low Emitting Materials: Carpet/Flooring Systems	YES	1	Building CTR responsible. Credit includes everything inside the exterior surface covering, including wall cavities, attics, above ceilings, and ductwork.
EQ4.4	Low Emitting Materials: Composite Wood & Agrifiber Products	YES	1	Building CTR responsible. Credit includes everything inside the exterior surface covering, including wall cavities, attics, above ceilings, and ductwork.
EQ5	Indoor Chemical & Pollutant Source Control	YES	1	Building CTR responsible. Provide a permanent entryway system and MERV 13 filters in regularly occupied rooms. System requiring weekly cleaning to earn this credit is not a permitted option.
EQ6.1	Controllability of Systems: Lighting	YES	1	Building CTR responsible. Provide lighting controls for 90% of the occupants.
EQ6.2	Controllability of Systems: Thermal Comfort	YES	1	Building CTR responsible. Provide individual comfort controls for 50% of building occupants.
EQ7.1	Thermal Comfort: Design	YES	1	Building CTR responsible. Design HVAC and envelope to meet ASHRAE 55-2004
EQ7.2	Thermal Comfort: Verification	YES	1	Building CTR responsible. Provide a method of thermal comfort assessment over time.

LEED Credit Paragraph	**LEED Contractor Responsibilities Table**	Building and Site CTR Substitution Permitted	**Required Points Strategy**	NIC=Not in Contract N/A=Not Applicable R=Required
BUILDING: SOF Language Sustainment Training Facility				
PAR	**FEATURE**			**REMARKS**
EQ8.1	Daylight & Views: Daylight 75% of Spaces	YES	1	Building CTR responsible. Credit should achievable if handled early in design process.
EQ8.2	Daylight & Views: Views for 90% of Spaces	YES		Building CTR responsible.
CATEGORY 6 – INNOVATION IN DESIGN				
IDc1.1	Innovation in Design	YES		Proposed credit must fall within CTR scope or be coordinated with other CTR.
IDc1.2	Innovation in Design	YES		Proposed credit must fall within CTR scope or be coordinated with other CTR.
IDc1.3	Innovation in Design	YES		Proposed credit must fall within CTR scope or be coordinated with other CTR.
IDc1.4	Innovation in Design	YES		Proposed credit must fall within CTR scope or be coordinated with other CTR.
IDc2	LEED Accredited Professional	NO	1	LEED AP during design and construction is required.
CATEGORY 7 – REGIONAL PRIORITY CREDITS (v3 only)				
RPc1.1	Regional Priority: SSc6.1		1	See respective credit for more information.
RPc1.2	Regional Priority: EAc1 (28%)		1	See respective credit for more information.
RPc1.3	Regional Priority: EAc2 (1%)		1	See respective credit for more information.
RPc1.4	Regional Priority: MRc2 (50%)		1	See respective credit for more information.
	TOTAL		66	

APPENDIX P

USGBC Registration of Army Projects

Typical Registration Procedure

1. Complete the online registration form (see guidance below) at the USGBC website http://www.usgbc.org/showfile.aspx?documentid=875 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. The USGBC will follow up with a final invoice, the LEED-online passwords and template information.
4. If you have any questions, the USGBC contact (as of October 08) is:
Courtney Yan, LEED Program Assistant
U.S. Green Building Council
202/587-7180
cyan@usgbc.org

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
Total gross area all buildings in project
Total construction cost for buildings only (see Project Details Section instructions below)

ACCOUNT/LOGIN INFORMATION SECTION

1. The person registering the project **must have an account with USGBC** (login and password) to complete the form. If you have an account, select "I already have a USGBC Web site account" and enter email and password (twice). If you do not have an account, you may select "Create a new USGBC website 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 on the form (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.

PROJECT TYPE SECTION

Self-explanatory. As of October 08 USACE projects use LEED for New Construction V2.2. USACE staff members are USGBC members.

GENERAL PROJECT INFORMATION SECTION

Project Title: Match the project name used in P2. Contact the USACE Project Manager for this information.
Is Project Confidential: Indicate NO except if project has security sensitivity (elements that are FOUO or higher security) indicate YES.
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
How Did You Hear About LEED: USACE requirement

PRIMARY CONTACT INFORMATION

The Primary Contact may be a Contractor or a USACE staff member. USGBC considers this individual the primary point of contact for all aspects of the project. It is recommended this person be the Contractor Project Manager or the USACE Project Manager.

PROJECT OWNER INFORMATION

Project Owner First Name, Last Name, email: The Project Owner is the USACE Project Manager.
Organization Name: 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.

PROJECT DETAILS

Owner Type: Military Base
Project Scope: Provide brief description (example: barracks complex)
Site Conditions: Provide brief description (example: wooded with steep grades)
Occupant Type: Provide brief description (example: military and civilian employees)
Owner Occupied: No
Gross Square Footage: Provide total area all buildings in project
Project Budget: Do not include the cost for design, site work, demolition, abatement or other work – do not include Government contingency or supervision costs. For design-build and construction projects registered after award, use the awarded contract cost for construction of buildings only. For projects registered prior to award of design-build or construction contract, use the total Primary Facility cost from DD1391 or updated Primary Facility cost based on design development if available.
Current Project Phase: Identify phase at time of registration (example: design start, construction start)
Project Type: Self-explanatory

PAYMENT INFORMATION

Self-explanatory

APPENDIX Q
REV 1.1 – 31 MAY 2009
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 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

RMS SUBMITTAL REGISTER INPUT FORM

CONTRACT NUMBER

DELIVERY ORDER

TITLE AND LOCATION

Button <-----Right click for Instructions

SECTION	PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL											CLASSIFICATION						REVIEWING OFFICE					
			01 - PRECON SUBMITTALS	02 - SHOP DRAWINGS	03 - PRODUCT DATA	04 - SAMPLES	05 - DESIGN DATA	06 - TEST REPORTS	07 - CERTIFICATES	08 - MFRS INSTRUCTIONS	09 - MFRS FIELD REPORT	10 - O&M DATA	11 - CLOSEOUT SUBMITTALS	FIO - FOR INFORMATION ONLY	GA - GOVERNMENT APPROVED	DA - DESIGNER OF RECORD APPROVAL	CR - CONFORMANCE REVIEW	DA / CR	DA / GA	DO - DISTRICT OFFICE	AO - AREA OFFICE	RO - RESIDENT OFFICE	PO - PROJECT OFFICE	DR - DESIGNER OF RECORD	AE - ARCHITECT / ENGINEER
00 72 00	52.236-13	Accident Prevention Plan	X														X				X				
00 73 00	1.11	Dev. From Accept. Design. No Deviation from Contract					X											X			X			X	
00 73 00	1.11	Dev. From Accepted Design - Deviates from Contract					X												X		X			X	
00 73 00	1.17	Supplemental Price Breakdown	X											X							X				
00 73 00	1.18	SSHO Qualifications	X												X						X				
01 10 00	5.2.3.1	(if concrete pavement) Joint Layout Plan with design drawings					X										X								
01 10 00	5.5.2	Building Envelope Sealing Performance Testing						X						X							X				
01 10 10	***	Tests as Req by Codes - DOR Develops Test Program						X						X							X			X	
01 10 00	5.8.3	BAS Review Information		X														X		X	X			X	
01 10 00	5.8.3	BAS Performance Verification Test						X						X							X			X	
01 10 00	5.8.4	Testing Adjusting and Balancing						X						X							X			X	
01 10 00	5.8.5	Commissioning						X						X							X			X	
01 10 00	6.15	Environmental As Required for Site Specific					X										X				X			X	
01 10 00	6.16	Permits as required for Site specific					X										X				X			X	
01 10 00	5.10.2	Fire Protection Tests						X	X					X							X			X	
01 32 01.00 10	3.4.1	Preliminary Project Schedule	X												X						X				
01 32 01.00 10	3.4.2	Initial Project Schedule	X												X						X				
01 32 01.00 10	3.4.3	Design Package Schedule	X												X						X				
01 32 01.00 10	3.6.1	Periodic schedule updates from the Contractor	X												X						X				
01 32 01.00 10	3.7	Time Extension Request (Schedule)	X												X						X				
01 33 00	1.8	Submittal Register - DOR Input Required	X												X						X			X	
01 33 00	1.8	Submittal Register Updates (Design Packages, etc.)	X												X						X			X	
01 33 00	1.3.1	Substitution of Manuf or Model Named in Proposal		X	X													X			X			X	
01 33 16	1.2	Identify Designer(s) of Record	X												X						X				
01 33 16	1.1.2 / 3.2.4	Fast Track Design Package(s)					X										X			X	X				
01 33 16	1.2	Identification of all Designers of Record	X														X				X				
01 33 16	3.2.1	Site and Utility Des Package, incl. Substantiation					X										X			X	X				
01 33 16	3.2.2/3.5	Interim Des Subm Package(s), incl. Substantiation					X										X			X	X				
01 33 16	3.5.1	Drawings					X										X			X	X				
01 33 16	3.5.2.2	Sitework Design Analyses					X										X			X	X				
01 33 16	3.5.2.3	Structural Design Analyses					X										X			X	X				
01 33 16	3.5.2.4	Security Design Analyses					X										X			X	X				
01 33 16	3.5.2.5	Architectural Design Analyses					X										X			X	X				
01 33 16	3.5.2.6	Mechanical Design Analyses					X										X			X	X				
01 33 16	3.5.2.7	Life Safety Design Analyses					X										X			X	X				
01 33 16	3.5.2.8	Plumbing Design Analyses					X										X			X	X				
01 33 16	3.5.2.9	Elevator Design Analyses (as Applicable)					X										X			X	X				
01 33 16	3.5.2.10	Electrical Design Analyses					X										X			X	X				
01 33 16	3.5.2.11	Telecommunications Design Analyses					X										X			X	X				
01 33 16	3.5.2.12	Cathodic Protection Design Analyses					X										X			X	X				
01 33 16	3.5.3	Geotechnical Investigations and Reports					X										X			X	X				
01 33 16	3.5.4	LEED Submittals					X										X			X	X				
01 33 16	3.5.5	Energy Conservation Documentation					X										X			X	X				
01 33 16	3.5.6	Specifications					X										X			X	X				
01 33 16	3.5.7	Building Rendering					X										X			X	X				
01 33 16	3.2.4/3.7	Final Des Submittal Package(s), incl. Substantiation					X										X			X	X				
01 33 16	3.7.5	DD Form 1354 (Transfer of Real Property)											X				X				X				
01 33 16	3.2.5/3.8	Design Complete Submittal Package(s)					X										X			X	X				
01 33 16	3.3.3	Design and Code Review Checklists					X										X			X	X				
01 33 16	A-2.0	SID - Interim and Final (as applicable)			X	X	X								X						X				
01 33 16	B-2.0	FFE (as Applicable)					X								X						X				
01 45 04.00 10	3.2	Design and Construction QC Plan	X														X				X				
01 57 20.00.10	1.2	Environmental Protection Plan	X														X				X				
01 78 02.00 10	1.2.1	Final as-Built Drawings											X		X										
01 78 02.00 10	1.2.7	Provide final as-built CADD and BIM Model files											X		X						X				
01 78 02.00 10	1.2.9	Provide scans of all other docs in Adobe.pdf format											X		X						X				
01 78 02.00 10	1.3.1	Equip-in-Place list of all installed equip and cost											X		X						X				
01 78 02.00 10	1.3.2	Data on equip not addressed in O&M manuals											X		X						X				
01 78 02.00 10	1.3.3	Final as-built specs - electronic files											X		X						X				
01 78 02.00 10	1.4.2.1	Warranty management plan - FAR 52.246-21											X		X						X				
01 78 02.00 10	1.4.2.1	Certificates of Warranty for extended warranty items											X		X						X				
01 78 02.00 10	1.4.2.1	Contractor's POCs for implementing warranty process											X		X						X				
01 78 02.00 10	1.4.2.1	List of each warranted equip, item, feature or system											X		X						X				
01 78 02.00 10	1.5	See also Section 01 10 00 par. 5.8.4 and 5.8.5											X		X						X				
01 78 02.00 10	1.6.1.2	Equipment O&M Manuals - 1 electronic / 2 hard copies											X		X						X				
01 78 02.00 10	1.7	Field Training DVD Videos										X		X							X				
01 78 02.00 10	1.8	Pricing of CF/CI and GF/CI Property											X	X							X				
01 78 02.00 10	1.11	List of Completed Cleanup Items											X				X				X				

RMS INPUT FORM 4288A

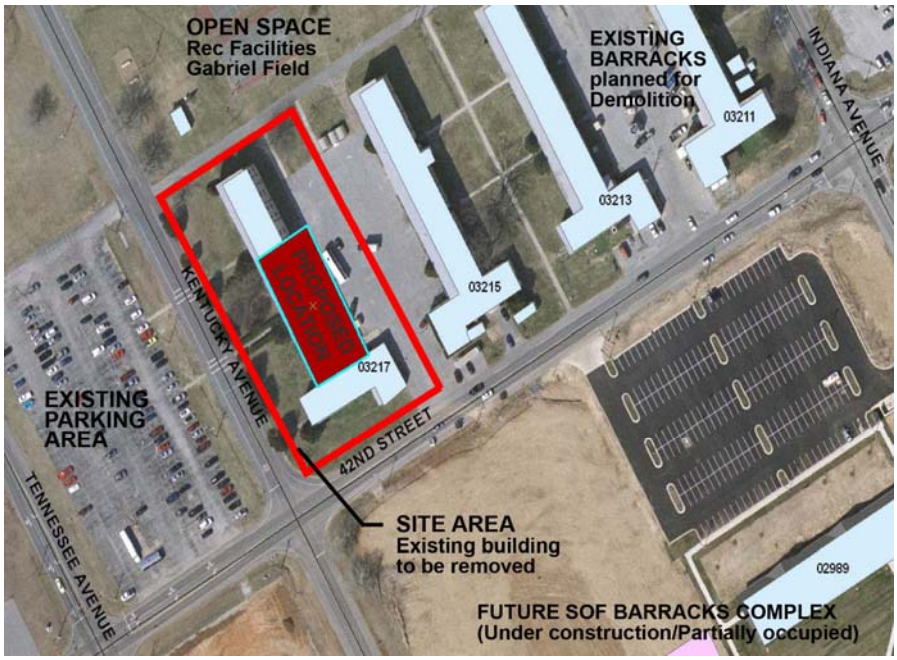
Export to RMS in CSV(MS-DOS) (*.csv) Format

Note: Reviewing Office Optional

Appendix AA

Recent Site Photos
(FOR INFORMATION ONLY)

The following images are provided for information on the appearance of the present existing conditions of the area surrounding the proposed Special Forces Language Sustainment Training Facility (SOF-LSTF) building. The buildings shown do NOT (except as noted) represent an appropriate architectural character for the proposed SOF-LSTF building; as most of the existing buildings in the area are programmed for demolition and redevelopment.



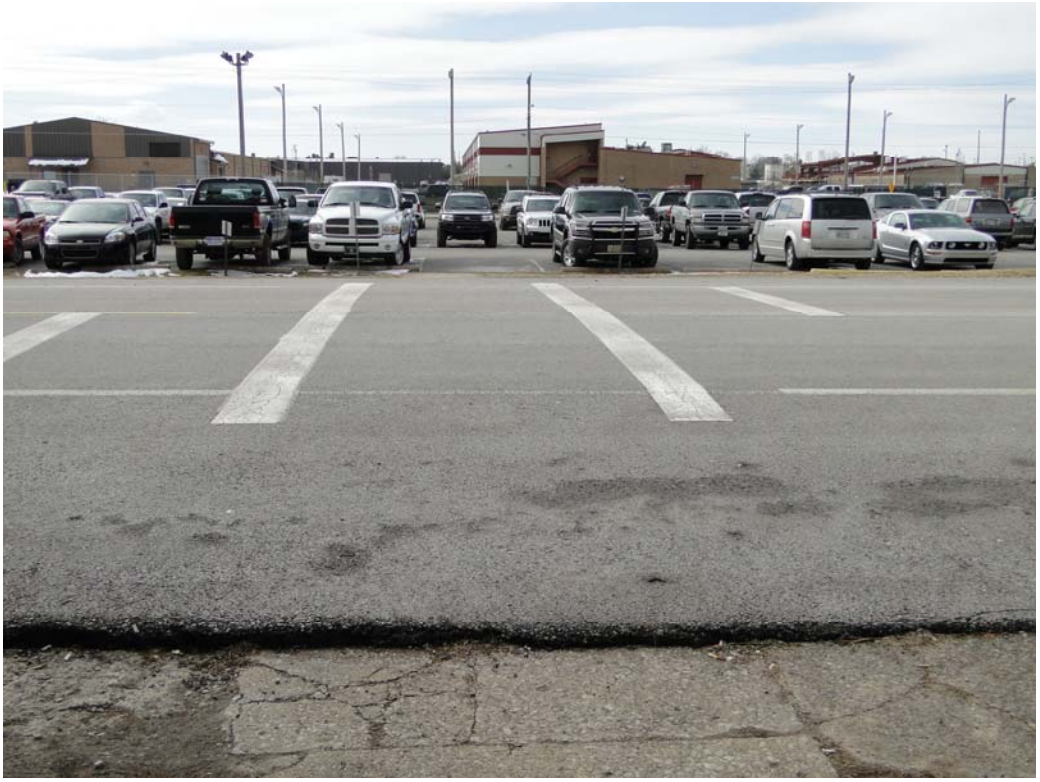
SITE AERIAL – *showing site area and surrounding land uses (2008)*

B-3217 - *Kentucky Ave side of the site showing existing building to be removed (NOT appropriate for architectural character) and some of the trees to be preserved if possible.*

B-3217 – *back of the existing building to be removed from the site showing existing adjacent parking area (Not appropriate for architectural character).*

Site *– Intersection of 42nd Street and Kentucky Avenue looking southwest along 42nd Street.*

Site *– Existing drainage swales along Kentucky Avenue frontage of the site.*



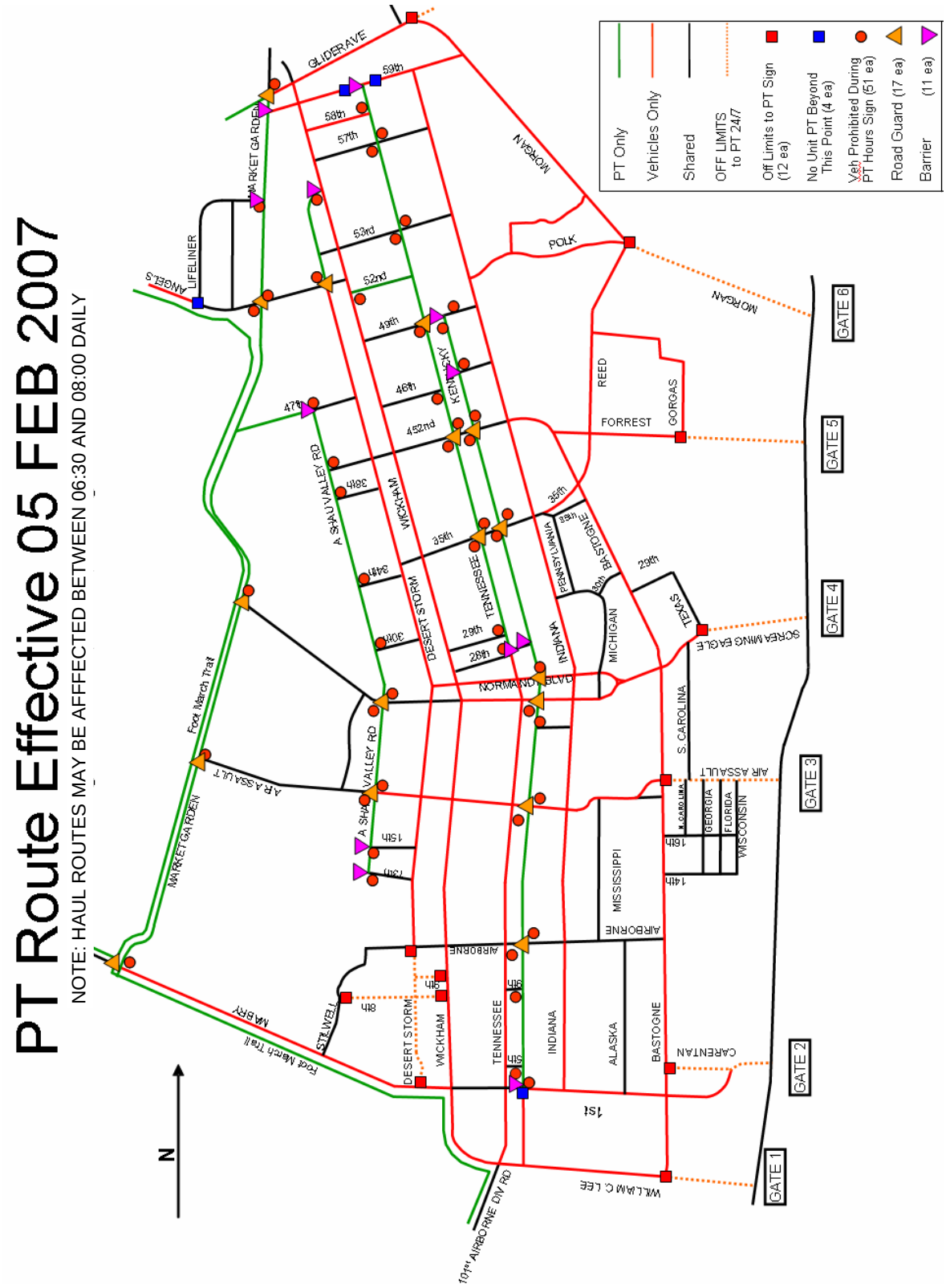
Site *– Existing parking area across Kentucky Avenue from the site showing the SOF motor pool facility beyond (Not appropriate for architectural character).*

Site *– Existing fire-service drive on north boundary of the site showing drainage and adjacent Building-3215 (Not appropriate for architectural character).*

Site *– Existing new SOF Barracks across 42nd Street from the site (appropriate architectural character for color and materials).*

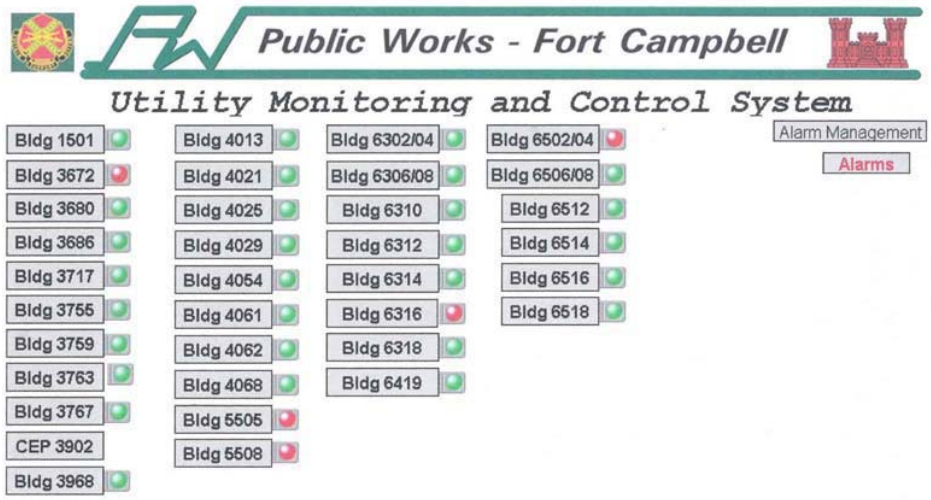
Appendix - BB

ENCLOSURE 1 Fort Campbell PT Run/Foot March Route Effective 05 Feb 07



Appendix - CC

FMCS Sample Graphics



Family Readiness Center Building 1501

Schedules

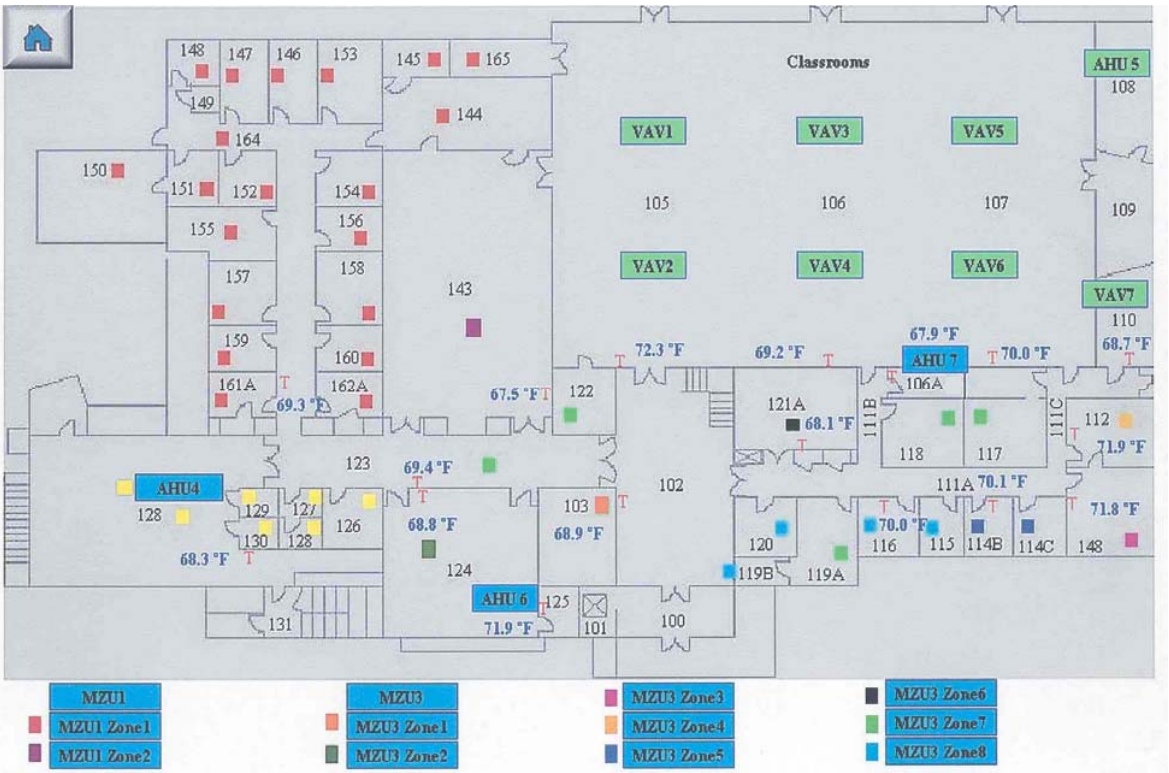
Second Floor

First Floor

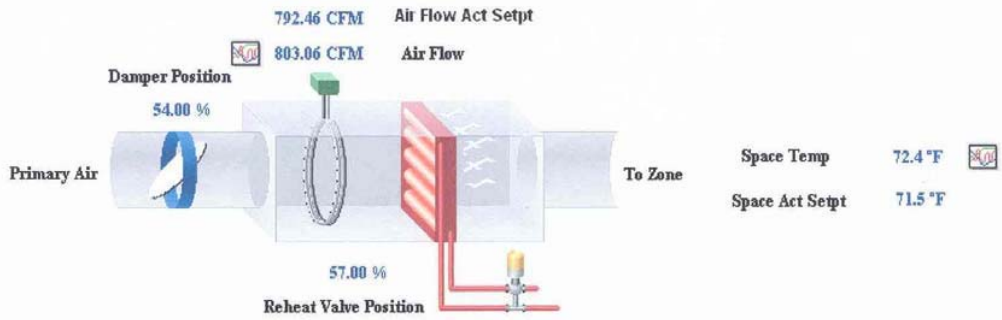
Basement

Index

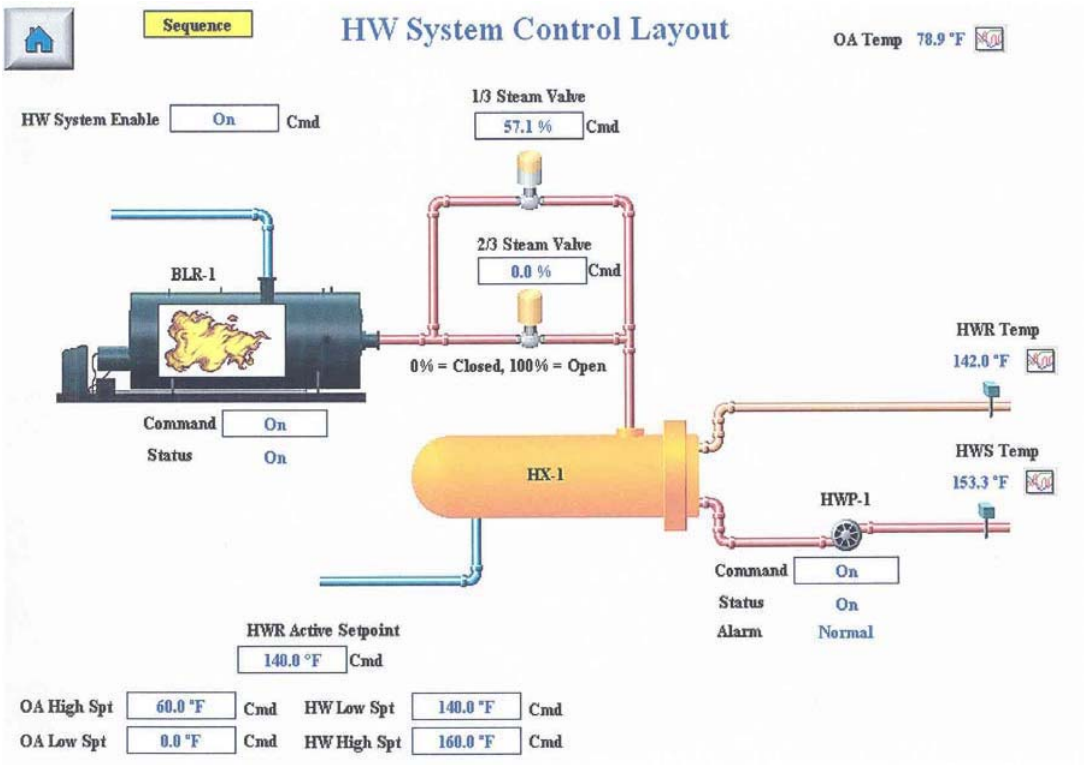
Honeywell Webs EMCS System
Installed by C-Tech, Inc.
615-672-8210

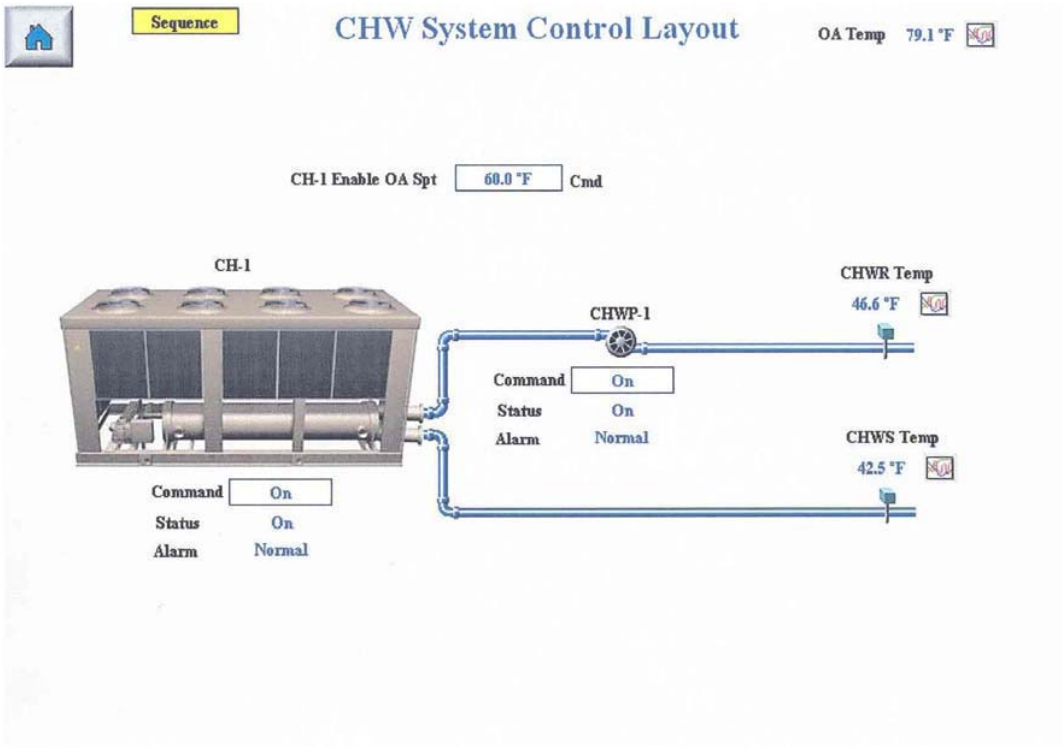

Classrooms
AHU 5
AHU4
AHU 6
AHU 7
VAV1
VAV2
VAV3
VAV4
VAV5
VAV6
VAV7
72.3 °F
69.2 °F
67.9 °F
70.0 °F
68.7 °F
69.3 °F
67.5 °F
68.1 °F
71.9 °F
69.4 °F
68.8 °F
68.9 °F
70.1 °F
70.0 °F
71.8 °F
68.3 °F
71.9 °F
MZU1
MZU1 Zone1
MZU1 Zone2
MZU3
MZU3 Zone1
MZU3 Zone2
MZU3 Zone3
MZU3 Zone4
MZU3 Zone5
MZU3 Zone6
MZU3 Zone7
MZU3 Zone8

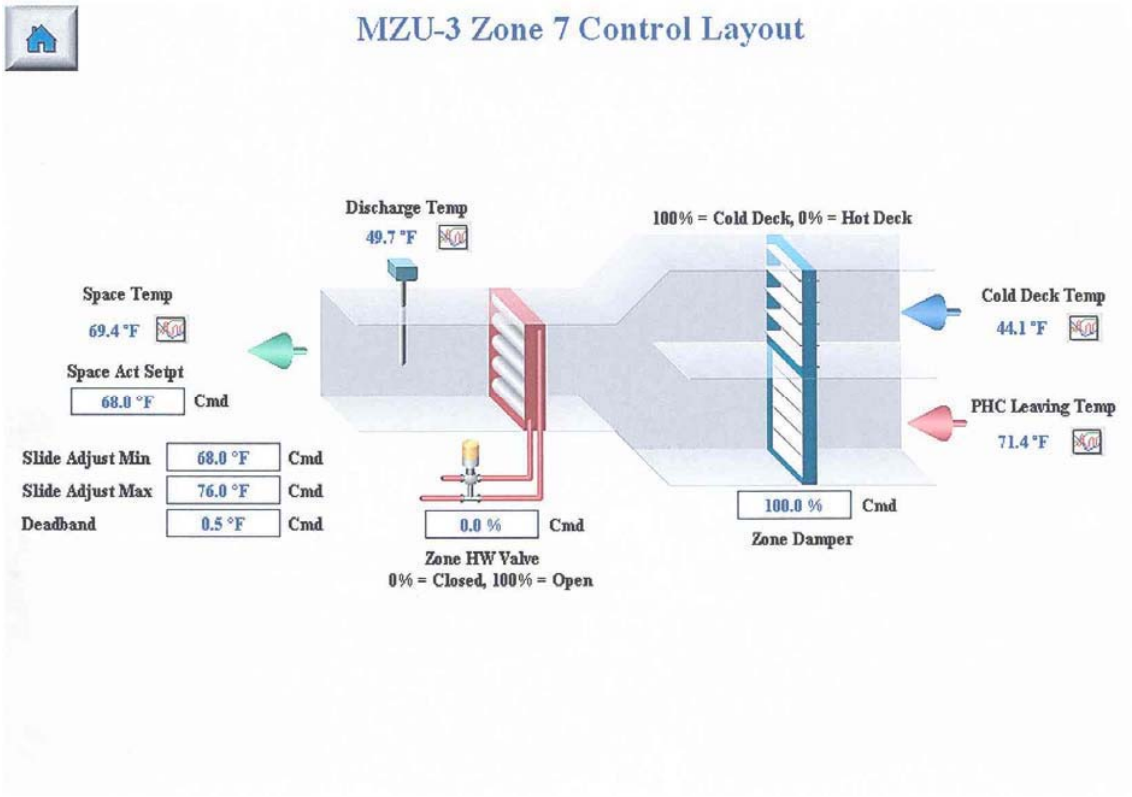
VAV-01

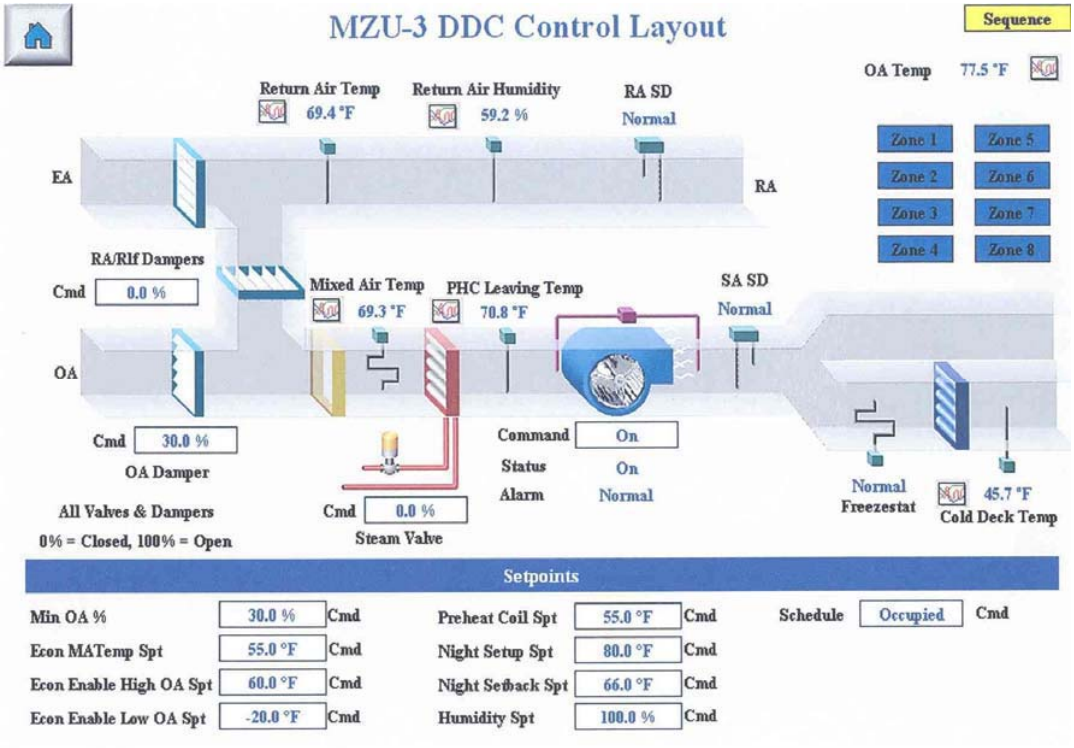


Setpoints				Mode	
UnOccCool	82.40 °F	Manual Setpoint Override	NaN °F	Control Mode	ReHeat
Standby Cool	77.00 °F	Slide Adjust Min	55.00 °F	Occupancy	occupied
Occ Cool	72.00 °F	Slide Adjust Max	84.00 °F	Sched Occ	occupied
Occ Heat	70.00 °F	Bypass Time	180 Min	Manual Occ	Null
Standby Heat	66.18 °F	Max Cool CFM	1593.40 CFM	Low Flow	false
UnOcc Heat	60.80 °F	Min CFM	792.46 CFM		
		Max Heat CFM	792.46 CFM		


Sequence
HW System Control Layout
OA Temp 78.9 °F
HW System Enable On Cmd
1/3 Steam Valve
57.1 % Cmd
2/3 Steam Valve
0.0 % Cmd
BLR-1
0% = Closed, 100% = Open
HWR Temp
142.0 °F
Command On
Status On
HX-1
HWS Temp
153.3 °F
HWP-1
Command On
Status On
Alarm Normal
HWR Active Setpoint
140.0 °F Cmd
OA High Spt 60.0 °F Cmd
HW Low Spt 140.0 °F Cmd
OA Low Spt 0.0 °F Cmd
HW High Spt 160.0 °F Cmd


Sequence
CHW System Control Layout
OA Temp 79.1 °F
CH-1 Enable OA Spt 60.0 °F Cmd
CH-1
CHWP-1
CHWR Temp
46.6 °F
Command On
Status On
Alarm Normal
CHWS Temp
42.5 °F
Command On
Status On
Alarm Normal


MZU-3 Zone 7 Control Layout
Discharge Temp
49.7 °F
100% = Cold Deck, 0% = Hot Deck
Space Temp
69.4 °F
Space Act Setpt
68.0 °F
Cmd
Cold Deck Temp
44.1 °F
PHC Leaving Temp
71.4 °F
Slide Adjust Min
68.0 °F
Cmd
Slide Adjust Max
76.0 °F
Cmd
Deadband
0.5 °F
Cmd
0.0 %
Cmd
Zone HW Valve
0% = Closed, 100% = Open
100.0 %
Cmd
Zone Damper


MZU-3 DDC Control Layout
Sequence
OA Temp 77.5 °F
Return Air Temp 69.4 °F
Return Air Humidity 59.2 %
RA SD Normal
EA
RA
Zone 1
Zone 2
Zone 3
Zone 4
Zone 5
Zone 6
Zone 7
Zone 8
RA/Rlf Dampers
Cmd 0.0 %
Mixed Air Temp 69.3 °F
PHC Leaving Temp 70.8 °F
SA SD Normal
OA
Cmd 30.0 %
OA Damper
Command On
Status On
Alarm Normal
All Valves & Dampers
0% = Closed, 100% = Open
Cmd 0.0 %
Steam Valve
Normal
Freezestat
45.7 °F
Cold Deck Temp
Setpoints
Min OA % 30.0 % Cmd
Econ MATemp Spt 55.0 °F Cmd
Econ Enable High OA Spt 60.0 °F Cmd
Econ Enable Low OA Spt -20.0 °F Cmd
Preheat Coil Spt 55.0 °F Cmd
Night Setup Spt 80.0 °F Cmd
Night Setback Spt 66.0 °F Cmd
Humidity Spt 100.0 % Cmd
Schedule Occupied Cmd

SpaceTempLog
°F
73
72
71
70
69
68
67
66
1pm 2pm 3pm 4pm 5pm 6pm 7pm 8pm 9pm 10pm 11pm 12am 1am 2am 3am 4am 5am 6am 7am
12pm 6-Sep-2006 to 8am 7-Sep-2006
AUTO Y M D H M S
73.81035 °F | 12:00:00pm 06-Sep-2006 CDT

Appendix DD

Fort Campbell Fire Department Standards

The Complete UL Listed, One-Key Fire Department Emergency Access System.

Fire departments across the country use the Knox® System to prevent costly forced entry damage while protecting property and lives. Knox key boxes, vaults and cabinets hold building entrance keys, electronic access cards and vital emergency information. Knox key switches and padlocks provide fire department access through property gates.

As the property owner, you purchase a KNOX-BOX® device then mount it near your building entrance or property gate according to fire department guidelines. Firefighters use a unique high security Knox® Master Key to open KNOX-BOX devices in their jurisdiction.

KNOX-BOX®

Fort Campbell Preference

This leading high security, heavy-duty key box is used for most commercial applications including businesses, schools, government and public buildings, community associations and apartment complexes.

KNOX-BOX® - 3200 SERIES

Dimensions: Surface - 4"W x 5"H x 3-1/4"D
Recessed - 7"W x 7"H(flange) x 3-1/4"D

Weight: Approx. 9 lbs.

Options: Hinged or lift-off door models. UL listed alarm tamper switches that connect to building's security system. Recessed Mounting Kit for new concrete or masonry construction.

Finish: Knox-Coat® proprietary coating system with 3 to 4 times longer protection than standard powder coat. Add aluminization for severe environments.

Colors: Dark bronze, black or aluminum.

KNOX-VAULT™

Key vaults protect building keys, access cards and floor plans for larger businesses, industrial properties, public buildings and universities.

KNOX-VAULT™ - 4400 SERIES

Dimensions: Surface - 7"W x 7"H x 5"D
Recessed - 9-1/2"W x 9-1/2"H(flange) x 5"D

Weight: Approx. 29 lbs.

Options: UL listed alarm tamper switches that connect to building's security system. Recessed Mounting Kit for new concrete or masonry. Dual lock options.

Finish: Knox-Coat® proprietary coating system with 3 to 4 times longer protection than standard powder coat. Add aluminization for severe environments.

Colors: Dark bronze, black or aluminum.

KNOX® KEY SWITCH

Excellent gate override for gated communities, apartment complexes, parking garages, pedestrian gates, emergency machinery shutdown and industrial gated areas.

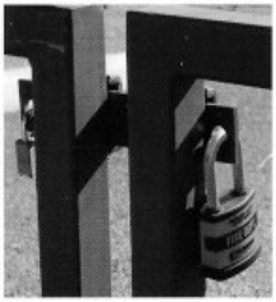
KNOX® KEY SWITCH - 3500 SERIES

Dimensions: Requires 2" recessed depth x 3/4" diameter.

Switch: S.P.S.T. 7A res. 4A ind. at 28VDC. 7A res. and ind. at 115VAC, 60Hz. UL and CSA listed. Two position key removal.

Mounting: Key switch is designed to be recess mounted. Face plate and lock cover ensures weather resistant operation.

Options: Momentary switch available. For custom switch applications, consult factory.



KNOX® PADLOCK

Knox® padlocks secure equipment lockers, restricted utility areas and fire access gates.

KNOX® ALL WEATHER PADLOCK

Dimensions: Model 3753 – 2-1/8" H, 5/16" diameter opening stainless steel shackle.

Finish: Brass body with EPDM rubber seal and body cover with stainless steel shackle and brass cylinder.

KNOX® INTERIOR PADLOCK

Dimensions: Model 3754 – 2" H, 5/16" diameter opening, hardened steel shackle.

Finish: Steel body with hardened steel shackle.

Padlocks

3754
Interior Use

3753
All Weather Use

KNOX® CABINET

Knox® cabinets provide onsite, high security storage for MSDS, Haz-Mat data, pre-fire plans and key storage for industrial and commercial sites and government installations.

KNOX® CABINET - 1300 SERIES

Dimensions: 14-1/2"W x 18"H x 5" or 7"D

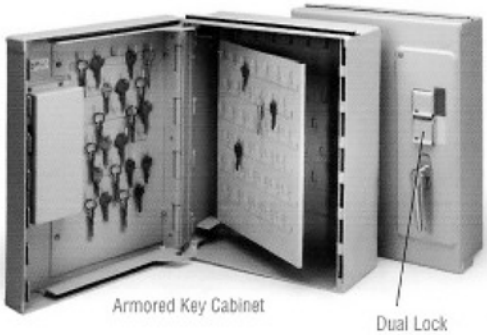
Weight: Approx. 65 lbs.

Options: UL listed alarm tamper switches for connection to building's security system. Single lock standard, dual lock and other lock options available. 40 hook key back panel and 78 hook swing panel available. A Model 1201 Weather Housing should be used for unprotected outdoor installations.

Finish: Knox-Coat® proprietary coating system.

Color: Light gray.

1300 Series



Armored Key Cabinet

Dual Lock Option

KNOX® RESIDENTIAL

The residential key box is used for fire and medical emergencies on single family homes and apartment complexes. For residential use only, it holds a maximum of two keys. It can be mounted permanently near the door or directly on the door or if the key box is needed only for a short-term illness, it is available with a temporary door hanger.

KNOX® RESIDENTIAL - 1650 SERIES

Dimensions: 4"W x 5"H x 1-7/8"D. Door hanger model has door bracket designed to fit over maximum 1-7/8" thick door.

Weight: Approx. 7 lbs.

Options: Hinged or lift-off door models.

Finish: Knox-Coat® proprietary coating system with 3 to 4 times longer protection than standard powder coat.

Color: Black.

1650 Series

Hinged Door Surface Mount

Lift-off Door with Temporary Door Hanger

KNOX® LOCKING FDC CAPS

Knox® locking FDC caps protect fire sprinkler connections from vandalism and prevent repeated sprinkler contractor service calls to replace FDC caps.

KNOX® FDC CAP - 3000 SERIES

Dimensions: 2-1/2" male plug. Other sizes available.

Weight: Approx. 2.5 lbs.

Properties: Solid stainless steel with stainless front cover.

Colors: Bright stainless, matte grey stainless or chrome-like stainless.

Other: 4" or 5" hard-anodized aluminum locking Storz caps.

FDC Caps

Storz FDC 4" Fitting

Storz FDC 5" Fitting

Threaded FDC 2.5" Fitting

Knox Keywrench

KNOX®

Ten Reasons to Install a KNOX-BOX®

KNOX and your local fire department are working hand-in-hand to offer the best in fire protection and the finest in fast and secure emergency access.

1. Eliminate needless, costly forced entry damage that may not be covered by your insurance deductible.
2. Assure immediate building entry by firefighters without delay or waiting for building keys.
3. Protect inventory, equipment and supplies from unnecessary water damage caused by delayed sprinkler shut-off.
4. Satisfy local fire codes and emergency access ordinances.
5. Save time and aggravation by not having to drive to your building at 2:00 am for a false alarm.
6. Feel secure about emergency coverage when your building is left unattended. The fire department holds the only key to the KNOX-BOX.
7. Maintain building security after a fire alarm investigation by simply re-locking the undamaged door.
8. Protect your property from thousands of dollars in damage with this one-time, low-cost investment.
9. Depend on the highest lock box security available with attack resistant, UL tested reliability.
10. Over the last 30 years, KNOX-BOX has been the chosen solution in 8,000 communities nationwide – communities just like yours!

For Order Information, Please Call Your Fire Department or Visit www.knoxbox.com

MADE IN THE U.S.A.

KNOX®
Serving Fire Departments Since 1975

Knox Company • 1601 W. Deer Valley, Phoenix, AZ 85027 • 800-552-5669 • Fax 623-687-2299 • www.knoxbox.com • E-mail: info@knoxbox.com

S.A.E. Turning Radius Calculations

Fort Campbell, KY

110' Aerial

Production Number 126739

Front Bumper Size:	10" Bumper	Wheelbase:	252"
Front Bumper Extension:	20" Extension	Body Width:	96"
Front Axle Series:	FL-941	Front Axle Kingpin Center:	68.5"
Front Wheel Type/Size:	Steel 22.5 x 8.25	Front Axle Track:	79.374"
Front Tire Size:	425/65R22.5 (Michelin)	Front Axle Tire Width:	16.2"
Rear Axle Series:	RT-46160	Dimension Over Rear Tires:	96.374"
Rear Wheel Type/Size:	Steel 22.5 x 8.25	Body Front Overhang:	92"
Rear Tire Size:	11R22.5 (Michelin)		

Inside Cramp Angle	S.A.E Turning Radius	Tire Curb Clearance	Bumper Swing Clearance	Minimum Inside Radius
27	51.86307	52.53807	55.96977	40.05558
28	50.29840	50.97340	54.49993	38.33595
29	48.84273	49.51773	53.13713	36.72564
30	47.48512	48.16012	51.87046	35.21365
31	46.21603	46.89103	50.69041	33.79040
32	45.02714	45.70214	49.58870	32.44751
33	43.91112	44.58612	48.55804	31.17760
34	42.86151	43.53651	47.59201	29.97417

Inside Cramp Angle	S.A.E Turning Radius	Tire Curb Clearance	Bumper Swing Clearance	Minimum Inside Radius	
35	41.87260	42.54760	46.68493	28.83146	
36	40.93932	41.61432	45.83175	27.74434	
37	40.05713	40.73213	45.02800	26.70822	
38	39.22199	39.89699	44.26965	25.71903	Largest Vehicle
39	38.43028	39.10528	43.55311	24.77306	
40	37.67873	38.35373	42.87515	23.86702	
41	36.96441	37.63941	42.23286	22.99791	
42	36.28465	36.95965	41.62361	22.16301	
43	35.63704	36.31204	41.04503	21.35986	
44	35.01941	35.69441	40.49496	20.58624	
45	34.42977	35.10477	39.97144	19.84008	

SAE Turning Radius Calculation v1.1.0

Note: These numbers do not account for aerial overhang, if applicable.

FIRE ALARM SYSTEM FOR FT. CAMPBELL

#1 Firelite

#2 Siemens

#3 Quick Start

KINGFISHER TRANSMITTER

#1 Govt. Furnished Contractor Installed

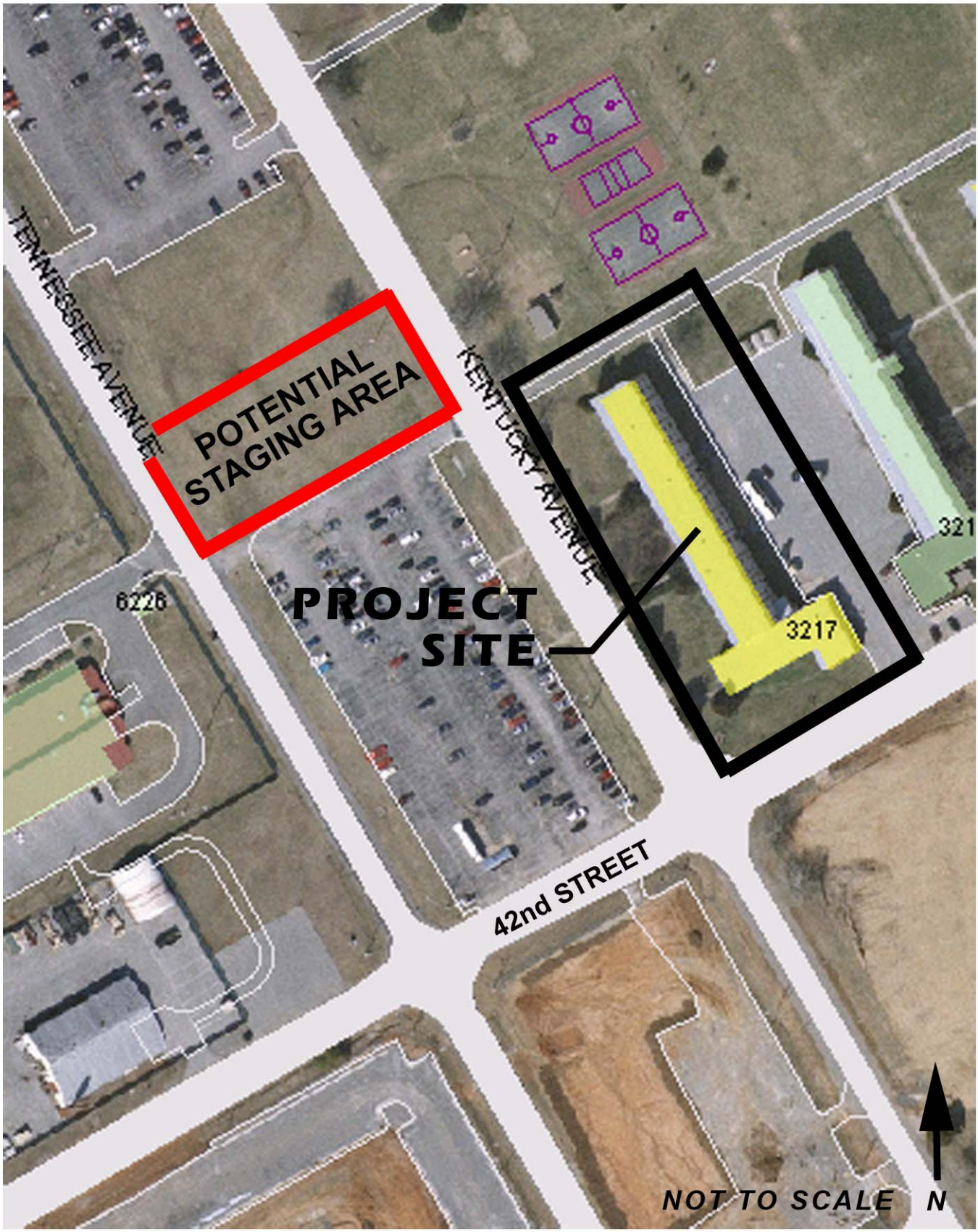
#2 See Contracting Rep. for Kingfisher Systems

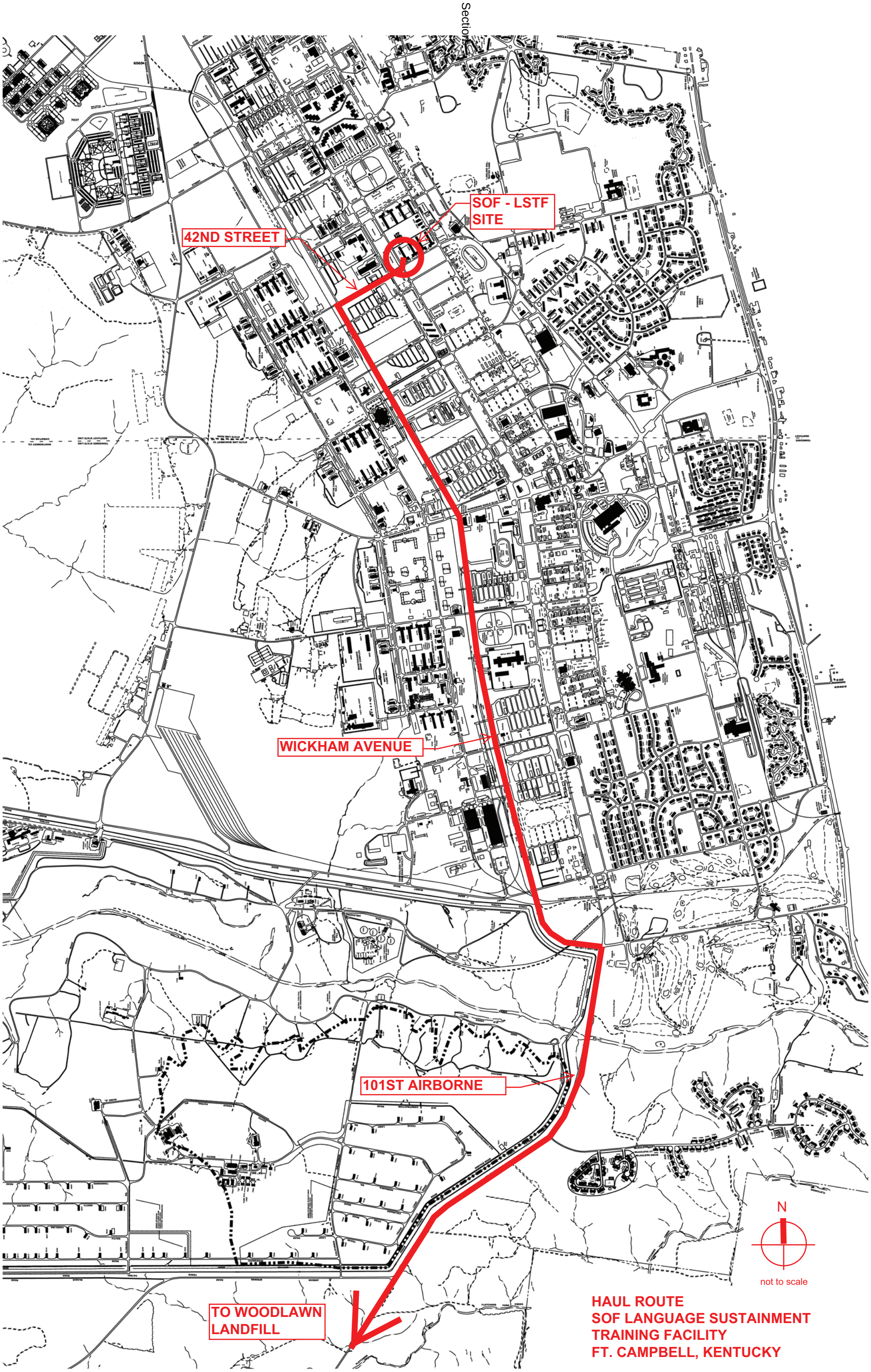
#3 Supplied Transmitter Cabinets, Transmitters, Antennas, and Batteries (2 each)

#4 Note see Ft Campbell Fire Dept. or DPW Fire Alarm Technician for Programming

Appendix-EE

Potential Staging Area & Haul Route



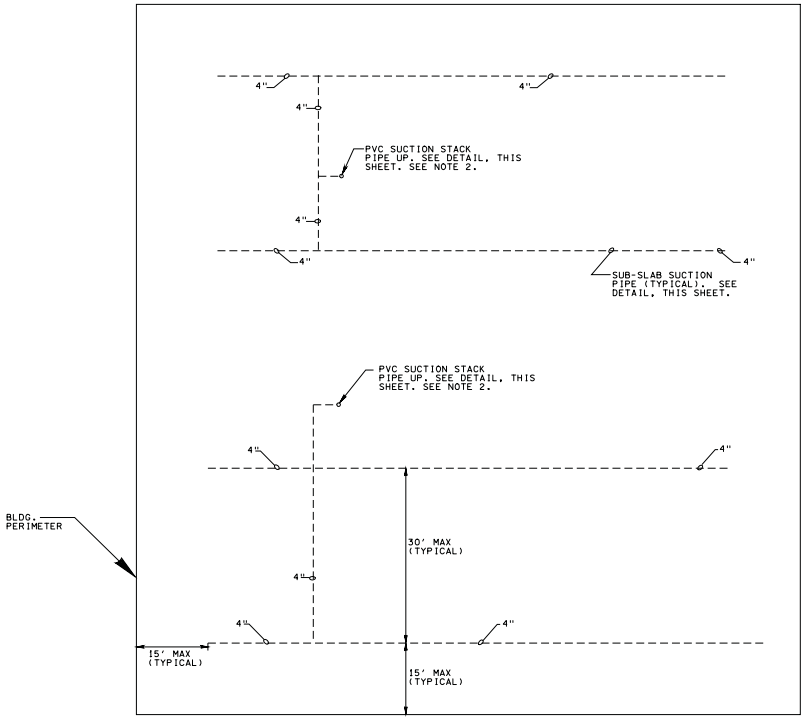

SOF - LSTF SITE
42ND STREET
WICKHAM AVENUE
101ST AIRBORNE
TO WOODLAWN LANDFILL
N
not to scale
HAUL ROUTE
SOF LANGUAGE SUSTAINMENT TRAINING FACILITY
FT. CAMPBELL, KENTUCKY

Appendix FF

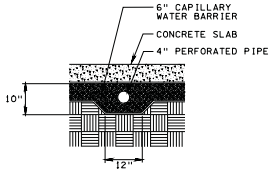
Radon Piping Detail

Excerpt from
Fort Campbell Technical Design Guide
APPENDIX U

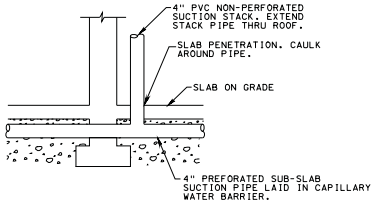
*** SAFETY PAYS ***



SAMPLE RADON PIPING PLAN
SCALE: NONE



SUB-SLAB SUCTION PIPE DETAIL
SCALE: NONE



SUCTION STACK PIPE DETAIL
SCALE: NONE

NOTES:

1. BUILDING PERIMETER IS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. PIPING LAYOUT IS SHOWN TO PROVIDE TYPICAL PIPING DETAILS.
2. SUCTION STACKS SHALL BE SIZED BASED ON AREA SERVED. 4" STACK CAN SERVE UP TO 5000 SF AREA. 6" STACK CAN SERVE UP TO 12500 SF AREA

US Army Corps of Engineers
Louisville District

Symbol	Revisions Description	Date	Appr.

Designed by: KERRY PRATHER
Drawn by: KERRY PRATHER
Checked by: KEVIN PRATHER
Project Engineer/Architect:
Date: FEBRUARY 2008
Scale: AS SHOWN
Drawing code:
Date:

RADON PIPING DETAILS

FT. CAMPBELL KY.

Sheet reference number: P-1
Sheet 23 of 52

*** SUPPORT VALUE ENGINEERING - IT PAYS ***

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W912QR-05-C-0013