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1.0 PROJECT OBJECTIVES

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

Comparison of Military Facilities to Civilian Facilities

Military Facility	Civilian Facility
General Instruction Building/Army Continuing Education Service Facility/Classroom XXI (GIB/ACES/XXI)	College Level Education/Training Facility

1.0.3 1.0.2 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.

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

1.1. SECTION ORGANIZATION

This Section is organized under 6 major “paragraphs”.

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

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

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

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

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

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

2.0 SCOPE

2.1. GENERAL INSTRUCTION BUILDING (GIB), category code 17120

Provide a General Instruction Building (GIB). This project is to provide an instructional facility conforming to Army Standards. This facility type is to be similar to higher education (college or university) buildings in the private sector community. General Instruction Buildings are typically used for classroom training of Army requirements.. Some projects are a combination of General Instruction Buildings (GIB), Army Continuing Education System Facility (ACES), and Classroom XXI. Many include Applied Instruction – refer to chapter 6 for specific Applied Instruction requirements. The General Instruction Building and Army Continuing Education System Standard Design Criteria includes requirements for many functional spaces that may or may not be included in this project. Refer to Chapter 6 for project specific functional space requirements.

The total gross area for this facility is 27,840 square feet. Refer to Chapter 6 for specific site requirements in this project.

The building and site shall conform to attachments, provided plans and diagrams, referenced criteria, applicable army standards, and all other portions of this RFP.

2.2. SITE:

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

Approximate area available 3.75 acres

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

Provide all equipment unless indicated below to be GFGI. Required equipment for each space is provided in the space criteria in the Appendix “GIB and ACES standard Design Criteria”. 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.

The following items are GFGI:

(a) Computers and associated peripheral hardware

(b) Printers

(c) Student and instructor desks and chairs

(d) Interactive whiteboard, projectors, and manual projector screens.

(e) Switches and servers for communications room

(f) Conference Room tables and chairs, credenzas, free standing shelving, and cabinets.

(g) Break room furniture and vending machines

The following are also GFGI items: There is no Government Furnished, Government Installed Equipment associated with this project.

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

2.6. KEY CARD ACCESS

Provide Complete and Comprehensive building Key card access system. Coordinate with Base master planner and the User. See chapter 6 for specific requirements

2.7. HANDICAP ACCESSIBILITY

This facility is required to be handicapped accessible to the extent required in the Appendix “GIB and ACES standard Design Criteria” paragraph 1-7 ACCESSIBILITY REQUIREMENTS.

2.8. OCCUPANCY CLASSIFICATION

Refer to Appendix “GIB and ACES Standard Design Criteria” paragraph 1-4.2 OCCUPANCY CLASSIFICATION.

2.9. ACOUSTIC REQUIREMENTS

This facility has special acoustic design requirements. Refer to the Appendix “GIB and ACES standard Design Criteria” paragraph 3-5.6.22 ACOUSTIC DESIGN.

3.0 GENERAL INSTRUCTION BUILDING (GIB)

3.1. **GENERAL:** A General Instruction Building (GIB) is a facility that includes primarily classroom space for multipurpose training and instruction typically conducted by school/training center facilities. These facilities may include other functional spaces such as auditorium, library, learning resource centers, and administrative support space. This is a general purpose facility intended for use by Total Army School (TASS) schools, schools/training centers of the active and reserve components, combined arms training center in major training areas, and other sites (such as NCO academies) that serve a large population for basic lecture, conference, and/or seminar instruction.

3.1.1. Refer to chapter 6 for the required functional spaces and program net areas required for this facility.

3.1.2. A Conceptual plan and/or adjacency matrix may be provided in the appendix to establish functional and adjacency requirement. This conceptual plan, if provided does not preclude the contractor's obligation to the other requirements in this RFP. A conceptual site layout may also be provided to indicate a preferred site design intent.

3.1.3. This RFP incorporates the GENERAL INSTRUCTION BUILDING (GIB) and ARMY CONTINUING EDUCATION SYSTEM (ACES) Standard Design Criteria as **an attachment and is considered to be part of this RFP**. This document is a planning and design criteria document applicable to all new and renovated Army GIB and ACES facilities. As such, for purposes of this RFP it shall establish the minimum building and site design requirements, including but not limited to (a) space and functional requirements and relationships, (b) features, (c) furnishings/equipment, and (d) finishes. All other requirements are provided elsewhere in this RFP. In the case where these requirements exceed those of the GIB Criteria, the more stringent requirement shall apply. For modifications/clarification on the use of terms in Appendix "GIB and ACES Standard Design Criteria", refer to subparagraphs below. In cases where the attachment references outdated criteria, refer to the criteria provided in chapter 4, 5, and 6 and the facility specific criteria provided in table 3.2. Otherwise, the criteria references in the attachment shall be applicable. In the event of conflict of requirements between an appendix and other portions of this RFP, the more stringent requirement shall be applied.

Note that the program spaces provided in Appendix "GIB and ACES Standard Design Criteria" may not all be applicable to the project. Refer to chapter 6 for the required spaces in this project.

3.1.3.1. Application of selected terms found in Appendix "GIB and ACES Standard Design Criteria":

Terms found in Appendix "GIB and ACES Standard Design Criteria" shall be defined and applied as follows:

"Consider" – same as "desirable", unless otherwise required elsewhere in this RFP.

"Desirable" – Desired but not required, unless otherwise required elsewhere in this RFP.

***"Installation Requirements"* –** refer to chapter 6.

"Larger Facilities"- Facilities larger than 40,000 gross square feet in area or larger.

"Necessary" – Required unless technically and physically infeasible.

"Recommended" – Strongly encouraged but not required, unless otherwise required elsewhere in this RFP.

"Shall" - Required

"Should" - Strongly encouraged but normally not required, unless otherwise determined through indicated analysis or other portions of RFP, in which case it is required.

3.1.3.2. Application of selected requirements found in the Appendix "GIB and ACES standard Design Criteria"

Selected portions of the appendix requirements shall be modified as follows:

All references to “DOIM”, or “Directorate of Information Management” shall be understood to be referring to “NEC”, or Network Enterprise Center”.

All references in the attachment relating to ***energy conservation requirements*** – refer to chapter 5 ENERGY CONSERVATION.

3.2. FACILITY SPECIFIC CRITERIA

The project shall conform to the following criteria in addition to the chapter 4.0 APPLICABLE CRITERIA. In all cases the latest edition shall apply. All requirements of the referenced criteria will be applicable, whether noted or not, unless otherwise specified herein.

Table 3.2 Facility Specific Criteria

American National Standards Institute (ANSI)	
ANSI S12.60-2002	American National Standard Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools
Other Criteria	
GENERAL INSTRUCTION BUILDING (GIB) and ARMY CONTINUING EDUCATION SYSTEM (ACES) Standard Design Criteria provide as attachment to this RFP)	

3.3. AREA AND FUNCTIONAL REQUIREMENTS

3.3.1. Refer to chapter 2 - SPACE DESIGN CRITERIA of Appendix “GIB and ACES Standard Design Criteria” for area and functional requirements for those specific spaces to be included in the project, as determined in chapter 6.

3.3.2. Acoustical requirements – Refer to Appendix “GIB and ACES Standard Design Criteria” and applicable criteria.

3.3.3. Communications Systems (information, voice/data, etc.) – Provide in accordance with paragraphs 5, 6, Appendix “GIB and ACES Standard Design Criteria”, and applicable criteria.

3.3.4. Electronic Security Systems – Not required unless otherwise required in chapter 6.

3.3.5. Alarm and CCTV system - Unless otherwise noted, required for facilities 40,000 GSF or larger. If required, provide in accordance with Appendix “GIB and ACES Standard Design Criteria” and other sections of this RFP.

3.3.6. Required Outdoor spaces (Outdoor break areas) – If required per chapter 6 (geographic dependent feature), provide in accordance with Appendix “GIB and ACES Standard Design Criteria”

3.3.7. Loading/receiving Dock – If required, provide in accordance with Appendix “GIB and ACES Standard Design Criteria”.

3.3.8. Dumpster and enclosure – If required, provide in accordance with Appendix “GIB and ACES Standard Design Criteria”, chapter 6, and Installation Guidelines.

3.3.9. Parking – Comply with applicable criteria and Installation standards. At a minimum , provide accessible parking spaces for those visitors and non-military employees with disabilities. Refer also to Appendix “GIB and ACES Standard Design Criteria” for criteria specific to ACES functions.

3.4. FINISHES

3.4.1. Refer to the Appendix “GIB and ACES standard Design Criteria” for minimum required finishes. However, higher quality finishes in paragraph 6 will govern.

GENERAL INSTRUCTION BUILDING (GIB) and ARMY CONTINUING EDUCATION SYSTEM (ACES)

Standard Design Criteria

Version 2.1

U.S. ARMY CORPS OF ENGINEERS (Norfolk District)

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CHAPTER 1

DESIGN OBJECTIVES

1-1 **PURPOSE.** This manual provides guidance for the standard design of General Instruction Buildings (GIB) (Category Code 17120). The criterion addresses the inclusion of the Army's Continuing Education System (ACES) Facility (Category Code 74025), and other special use functional areas located with general instruction classrooms. Including these special areas in the GIB programming is functionally and financially beneficial to the government. Where feasible, it allows for the integration of formal Army training with on and off duty adult continuing education for mission and self-development requirements to maximize the use of a facility. This criterion will be referred to throughout the rest of this document as "GIB".

1-2 **APPLICABLILITY.** This standard applies to all U.S. Army elements and as a supplement to AR 140-483, Army Reserve Land and Facilities Management for Army Reserve facilities. The information is to be used by those individuals involved in the planning, programming, design or evaluation of facilities. The concepts developed in this document are applicable to new construction, although most are also appropriate for retrofit or renovation applications. Some facilities will have special needs in addition to the basic GIB criteria and these should be considered during planning and design. Examples are the U. S. Army War College library and auditorium requirements.

1-3 **DESIGN GUIDANCE.** The criterion provides the basic guidelines for evaluating, planning, programming, and designing new and renovated General Instruction facilities. The criteria contained in this document establish the baseline levels of features, spaces and finishes to be provided in these facilities. The programming work sheet allows master planners, in coordination with the user, to insert the number of functional spaces required, allowing a determination of gross areas for the building based on actual installation needs. Facilities must be in compliance with Army Standards. Facilities must also comply with Installation standards and the Installation Design Guide (IDG) to the extent permitted by MILCON Business Process principles and procedures (formerly MILCON Transformation). This criteria can be used for stand-alone general instruction and/or continuing education facilities or provide the criteria for the general instruction portion of a facility also containing applied instruction or other space.

1-3.1 **Space Attributes.** The designer must allow for and be sensitive to the differences in space requirements for students, instructors, administrators, and general instruction and applied instruction requirements.

1-3.2 **Entry and Circulation Identification.** There are many first time users in education and training facilities. Students must be able to easily identify their entrance when approaching the site. Once in the building, the Registration/Information desk must be obvious. Students should be able to find counselors, classrooms, and building facilities easily. Zones should be established for the various users of the facility. Instructor's spaces should be closely related to the classrooms while administrators are more remote. Applied Instruction areas often require the use of temporary equipment and therefore must be easily accessible from vehicular circulation on the exterior of the building.

1-4 **REGULATORY STANDARDS.** Planning, design, operation and maintenance of the GIB shall use the latest Unified Facilities Criteria (UFC), Uniform Federal Guide Specifications (UFGS) and other applicable codes, regulations, Technical Instructions and Manuals, and criteria to the extent permitted by MILCON Business Process principles and procedures (formerly MILCON Transformation). This document is intended to supplement the other standards, etc. without repeating the common requirements found in those documents. Facilities shall comply with the construction

requirements of UFC 1-200-01, Design: General Building Requirements, which is a guidance document for the application of model building codes to the design and construction of Department of Defense (DOD) facilities. Codes and standards incorporated into the UFCs by reference include- the International Building Code (IBC); National Fire Protection Association (NFPA); the ABA Accessibility Standard for Department of Defense Facilities ; NRCA, Roofing and Waterproofing Manual; NFPA 70, National Electric Code; NFPA 54, National Fuel Gas Code; and various Military Handbooks and Technical Instructions.

1-4.1 **Occupant Load.** The allowable occupant load for life safety is based on the requirements of UFC 1-200-01 Design: General Building Requirements.

1-4.2 **Occupancy Classification.** General Instruction Buildings are Business Group B occupancy classification under the International Building Code. Supplemental spaces such as Assembly Group A-3 may be included for auditoriums or large lecture halls where occupant load of those assembly spaces exceeds 50 persons and/or when the space exceeds 750 square feet (per IBC). Storage requirements may also include Storage Group S occupancy classification.

1-4.3 **Historic Preservation Act.** Modifications of historic buildings or buildings deemed eligible for the National Register of Historic Places must follow appropriate guidelines including coordination with the Installation Cultural Resource Manager, and State Historic Preservation Office (SHPO).

1-5 **ENERGY AND RESOURCES CONSERVING FEATURES.** Public Law 102-486, Executive Order 13123, and Federal Regulations 10 CFR 435, requires federal buildings to be designed and constructed to reduce energy consumption in a life cycle, cost-effective manner using renewable energy sources when economical. Also, effective 28 June 2010, all DoD facilities will be designed and constructed to achieve an energy consumption that is at least 40% below the consumption of a baseline building meeting the requirements of ASHRAE 90.1. Products designed to conserve energy and resources by controlling the amounts of consumed energy or by operating at increased efficiencies should be considered.

1-6 **THE ARMY'S INSTALLATION DESIGN STANDARDS.** Facilities planning and design shall comply with the Army's Installation Design Standards (http://www.acsim.army.mil/operations/facilitiespolicy.htm). The Headquarters, Department of the Army Facilities Standardization Committee, is the approval authority for waivers to Army Standards. The Headquarters, Department of the Army Facilities Standardization Sub-Committee is the approval authority for waivers to Army standard criteria. The Waiver Process is provided in detail in AR420-1, appendix G.

1-6.1 **Installation Real Property Master Plan.** Facilities planning and design shall be coordinated with the Installation Real Property Master Plan. The plan provides comprehensive documentation of the existing conditions of natural, man-made, and human resources. It also guides future land-use development.

1-6.2 **Installation Design Guide.** Facilities planning and design shall be coordinated with the design guidance and criteria contained in the local Installation Design Guide, to the extent permitted by MILCON Business Process principles and procedures (formerly MILCON Transformation).

1-6.3 **Master Planning Criteria.** Facilities space requirements (by category code) shall be coordinated and reflect the Army Criteria Tracking System (ACTS) as applicable. Facilities space requirements planning and design shall be supported by the latest approved Installation Real Property Planning and Analysis System (RPLANS) and Facility Planning System (FPS) reports. RPLANS and FPS are automated installation systems that incorporate space-planning criteria with installation

populations. This document treats GIB and support spaces as category code 17120, while special functional use areas would have other category codes.

1-7 **ACCESSIBILITY REQUIREMENTS.** As of 31 October 2008, all areas and facilities required to be accessible to physically disabled persons shall conform to the ABA Accessibility Standard for Department of Defense Facilities. This standard is composed of ABA scoping chapters 1 and 2 and the technical chapters 3 through 10. This is a publication of the U.S. Access Board and is available at: http://www.access-board.gov/ada-aba/aba-standards-dod.cfm

1-7.1 Accessible desks and chairs shall be handled by the installation based on specific needs. Accessible desks are not required in each classroom. In Auditoriums access to permanent stages and wheel chair space in the audience shall be provided in accordance with standards.

1-7.2 Accessible parking spaces shall be provided for those visitors and non-military employees with disabilities. The required number of spaces is prescribed by the accessibility guidelines. Such spaces are required to be located so as to provide convenient access to the building entrance.

1-7.3 The following areas are not required to be handicapped accessible: mechanical, electrical, and communications equipment rooms; storage space; hazardous waste/materials storage space; loading docks. All other spaces are required to be accessible unless specifically exempted by the Accessibility Standard.

1-8 **FORCE PROTECTION & ANTI-TERRORISM CONSIDERATIONS.** Project design and construction shall comply with the latest edition of the Department of Defense 'UFC 4-010-01 Design: Minimum Anti-Terrorism Standards for Buildings'. To determine levels of threat and protection, the installation prior to design must provide a threat assessment. Coordinate with the installation security forces and facilities engineer to determine if the minimum standards are adequate for the project location. Provide higher levels of protection if a threat analysis has identified a specific threat that requires more stringent measures than provided by the minimum standards. Special consideration shall be made where drive-up/drop-off areas and delivery areas are required.

1-9 **SUSTAINABLE DESIGN AND DEVELOPMENT.** The goals for improving the sustainability of facilities include: (a) use resources efficiently and minimize raw material resource consumption, including energy, water, land and materials, both during the construction process and throughout the life of the facility, (b) maximize resource re-use, while maintaining financial stewardship, (c) move away from fossil fuels towards renewable energy sources, (d) create a healthy and productive work environment for all who use the facility, (e) build facilities of long-term value with reconfigurable features when feasible, and (f) protect and, where appropriate, restore the natural environment.

1-9.1 Sustainable design techniques shall be considered as they relate to site and building design, construction, and operation and demolition/deconstruction. Techniques that conserve energy, improve functionality, and can be justified by life cycle cost analysis as cost effective are encouraged. Where specific materials are indicated by these criteria, the intent is to provide a basis for functional performance and quality. Designers should consider substitute materials that provide higher levels of sustainable design. For example, permeable pavements and reduced structured drainage techniques should be considered where it is compatible with other requirements and provides a well-engineered solution.

1-9.2 The level of incorporation of sustainable design principles will be measured through use of the U.S. Green Building Council (USGBC) Leadership in Energy & Environmental Design (LEED), available from the following website: https://eko.usace.army.mil/fa/sdd/_. Projects must meet the current Army-wide certifiable level requirement.

1-9.3 Areas of sustainable design that are beyond the control of project designers must be coordinated with the installation before credit can be taken. These areas may include installation master planning, site selection, or involving facility users in the programming process.

CHAPTER 2

SPACE DESIGN CRITERIA

2-1 GENERAL REQUIREMENTS

2-1.1 **Gross Area Limitations.** Maximum gross building allowances are identified in TI 800-1 and the Army Criteria Tracking System (ACTS). A GIB/ACES facility shall include a combination of applicable educational spaces (identified in paragraph 2-4 below) and may include (as required) administrative, special functional use, and support space (identified in paragraphs 2-5, 2-6, 2-7 below). The Programming Worksheet included in the Appendix of this document shall be used for programming the spaces within the TI 800-1 and ACTS gross area limitation. The worksheet should be completed shortly before or during the planning charrette process.

2-1.2 **Gross and Net Area Definition.** Gross area shall follow the definition in TI 800-01, Chapter 5 Buildings and Facilities Criteria, Basis for Space Allowances.

2-1.3 **Net Area Requirements.** Net area for programmed spaces is included in this document. If net area requirements are not specified, the space shall be sized to: accommodate the required function; and comply with code, overall gross area limitations and other requirements. Examples of spaces without net areas defined are corridors, stairs, restrooms, and mechanical and electrical rooms. Provided net areas and room sizes are guidance that may be adjusted for specific situations such as special functional requirements, construction efficiency, or adaptation for existing facilities.

2-2 **COORDINATION.** Each project shall be coordinated with the Regional Installation Management Agency (IMA), Installation, the Using Activity, and the USACE Center of Standardization (COS). The COS is responsible for maintaining the latest standards and may be a resource for current projects and lessons learned. For General Instruction Buildings, USACE Norfolk District is the COS. The USACE COS should participate in both planning and design charrettes for GIBs.

2-3 **SPACE REQUIREMENTS.** The space requirements of each facility will be different based on the needs of the local installation and mission requirements. The criteria in this manual state the area requirements in terms of Net Area (NA) or Gross Area (GA). Space requirements in chapter 2 for the various uses are expressed in terms of NA. GA is determined by adding all NA spaces plus an estimated area for building construction (including wall thickness, chase space, structural enclosure, circulation, etc) and half scope areas such as entry canopies. Gross area in the spreadsheet is based on 145% of the net area required by building functions. This gross area factor is used to cover the area of walls, partitions, structure, mechanical/electrical rooms, chases, restrooms and corridor/hallway circulation. The factor does not include network/server rooms, storage, break area or service spaces, which are identified in net areas. In some cases the 145% may not be appropriate such as very small facilities where it would be inadequate or very large facilities where it may be excessive. Any minor adjustments to the gross area factor should be determined during the planning process.

2-3.1 **Instruction Programs.** Specific coordination with the Installation Master Planner, the User, Major Command, and Regional IMCOM is required to determine the functions to be included in the facility. Although trends and research indicate a combined General Instruction facility including NCO training and ACES as well as some applied instruction is very efficient and desirable, the IMCOM is ultimately responsible for determining functional programs to be included in the project. Laboratories are provided in the form of computer instruction. Traditional chemistry or biology laboratories are not normally included in general instruction facilities but may be added as needed for special situations but only if demand for such single-purpose facilities are validated in advance (experience indicates that in ACES centers, where present, they are often highly under-utilized). Functional spaces not included in this criterion may be required such as command offices, joint services offices, mailroom, map rooms, book store, AAFES/MWR spaces, library, applied instruction or simulator space. General Instruction programs are typically for full time attendance by students who are on temporary assignment by area commands (these students are usually on post or commute). NCO training is normally for those on full time temporary assignment from a larger geographic area, attending the training for a longer period of time. ACES training is typically for self initiated training of local soldiers or civilian employees, their dependents and sometimes the local community on a part time basis most often after normal duty hours to attain education degrees.

Generally operation for a GIB is normal duty hours Monday through Friday. When NCO and ACES functions are included, the hours of operation extend to approximately 2230 plus weekends. Some Installations have developed agreements with state or regional education systems to share Installation GIB/ACES facilities as a means of expanding the education programs offered to military personnel and their dependents.

2-3.2 **Space Programs.** Classroom sizes and mix of types and sizes shall be coordinated with the user, planner, and designer in response to the optimum class instructional size for the anticipated classes as well as the mix of room types. Depending on the use, classrooms may be enlarged to accommodate special equipment related to the instruction for instance in a combined general/applied instruction situation.

2-3.3 **Furniture/Fixtures/Equipment (F/F/E).** The space description includes recommended F/F/E for each classroom. The designer shall verify requirements with the user and coordinate specific sizes, arrangements and finishes. Any F/F/E that are Government Furnished Government Installed (GFGI) are provided by the government but the contractor must plan for it (provide space, power, cooling, etc.). The government must program and purchase GFGI items so they are available at the proper time.

2-4 EDUCATION SPACES

2-4.1 **Traditional Classroom.** (Category Code 17120) The space is used to present lectures, projected images and written information on the board. These spaces have the flexibility to teach in the traditional lecture mode and use projection media. Since this type of space takes only slightly less space than a Multi-Purpose Classroom, the use of Multi-Purpose classrooms should be considered where budget allows. Power and network connections shall be provided in the room for future access to each desktop. This type of classroom shall be programmed for various size classes. If classes smaller than 30 are required, Multi-Purpose Classrooms will be used. 30 and 40 student classes shall have a single projector and projection screen while 50 through 70 student classrooms shall have 2 projectors and projection screens. Interactive whiteboard shall be included with white boards at the front of the class. In these classrooms whiteboards are not a satisfactory projection surface.

Function:	Instruction of students through lecture, projected images, computer presentation and written information on the board.
Occupancy:	30 students, 1 instructor 40 students, 1 instructor 50 students, 2 instructors 60 students, 2 instructors 70 students, 2 instructors
Adjacency Reqmnts:	Classrooms should be clustered and have student break, vending and restrooms nearby. Classrooms shall be easily accessed from the public entrance. Instructors' offices should be close to the classrooms.
Space requirement:	Total net area. 30 students- approximately 9144 mm [30 ft] wide by 10973 mm [36 ft] deep = 100 m^2 [1080 s.f.]. 40 students- approximately 12192 mm [40 ft] wide by 10973 mm [36 ft] deep = 134 m^2 [1,440 s.f.]. 50 students- approximately 12192 mm [40 ft] wide by 12802 mm [42 ft] deep = 156 m^2 [1,680 s.f.] 60 students- approximately 12192 mm [40 ft] wide by 14630 mm [48 ft] deep = 178 m^2 [1,920 s.f.] 70 students- approximately 14022 mm [46 ft] wide by 14630 mm [48 ft] deep = 204 m^2 [2,200 s.f.]
Mechanical:	Mechanical system shall be designed to accommodate partial to full occupancy with temperature control separate from other portions of the building. Equipment and airflow shall be quiet to meet noise level requirement. Each classroom must have individual temperature control[1].
Electrical/Lighting:	Day lighting is preferred and shall be controlled. Electric lighting shall be switched to allow variable lighting levels. Each Classroom shall have individual lighting control that switches off automatically when the room is not in use[11].
Communications:	Instructor shall have data and power receptacles. Room shall have data and power receptacle for future use by every student. This future use shall be by recessed floor or wall-mounted raceway (below desk level) or below computer access flooring.
Furniture/Fixtures/ Equipment (F/F/E)	Provide map rail, white board, tack board, and coat hooks. Government furnished equipment includes computers, printer, student desks and chairs, interactive whiteboard, ceiling mounted projectors and screens, and instructor's desk. Student desk shall be 914 mm wide [3 ft] wide by 762 mm deep [30 inches] for each student. (Refer to AR415-15)
Finishes:	See the Finish Schedule for standard finishes.
Other Requirements:	A storage space, typically about 3.3 m^2. [36 s.f.] is required in each classroom. Large classrooms may require more. Classrooms with greater than 5 rows of seating (i.e., 50 students or more) should have higher ceilings to allow better

[1] This is an Army Standard for GIB

viewing of the screen at the front of the room.

2-4.2 **Multi-Purpose Classrooms.** (Category Code 17120) These spaces have theflexibility to accommodate teaching in the traditional lecture mode, perform computer instruction at each desk, and use projection media. Since this type of space requires only slightly more space than a traditional lecture class, Multi-Purpose Classrooms shall be used in lieu of Traditional Lecture Classrooms where budget allows. This criterion applies the recent move at some Installations to use laptop computers at each desk, providing for a more flexible classroom. The laptops may be stored in the classroom in a storage cabinet or carried by students when they are provided. Power and network connections are provided to each computer. The use of laptops requires less desk surface than desktops and permits better sightlines for students. Some installations may choose to use a desktop computer with a LCD flat panel to save desk space relative to CRT monitors. Desk with CRT monitors located below a transparent desktop is also an option for ACES classes but not when used primarily as a GIB. This type of classroom shall be set up for various size classes. The 15 student classroom has the same attributes as larger classes but is used for highly interactive, small group learning. These smaller classes often use a conference table or U-shaped desk layout.

Function: Instruction of students through lecture, projected images, computer presentation and written information on the board.

Occupancy:
15 students, 1 instructor
30 students, 1 instructor
40 students, 1 instructor
50 students, 2 instructors
60 students, 2 instructors
70 students, 2 instructors

Adjacency Reqmnts: Classrooms should be clustered and have student break, vending and restrooms nearby. Classrooms shall be easily accessed from the public entrance. Instructors' offices should be close to the classrooms.

Space requirement: Total net area.
15 students- approximately 9144 mm [30 ft] wide by 5486 mm [18 ft] deep = 50.2 m^2 [540 s.f.]
30 students- approximately 9144 mm [30 ft] wide by 12192 mm [40 ft] deep = 111 m^2 [1,200 s.f.].
40 students- approximately 12192 mm [40 ft] wide by 12192 mm [40 ft] deep = 149 m^2 [1,600 s.f.].
50 students- approximately 12192 mm [40 ft] wide by 14630 mm [48 ft] deep = 178 m^2 [1,920 s.f.].
60 students- approximately 12192 mm [40 ft] wide by 16764 mm [55 ft] = 204 m^2 [2,200 s.f.].
70 students- approximately 14326 mm [47 ft] wide by 16764 mm [55 ft] = 241 m^2 [2,590 s.f.].

Mechanical: Mechanical system shall be designed to accommodate partial to full occupancy with temperature control separate from other portions of the building. Equipment and airflow shall be quiet to meet noise level requirement. Each classroom must have individual temperature control.

Electrical/Lighting: Day lighting is preferred and shall be controlled. Electric lighting shall be switched to allow variable lighting levels. Each Classroom shall have individual lighting control that switches off automatically when the room is not in use 1

Communications: Room shall have data and power receptacle for every student and instructor space. This shall be by recessed floor or raised access flooring.

F/F/E: Provide white board, map rail, tack board and coat hooks. Government furnished equipment includes computers, printer, student desks, chairs, interactive white boards, two ceiling mounted projectors and screens (one of each is needed for class size up to 30), instructor's integrated podium or instructor's workstation. In 15 student classrooms the interactive whiteboard may be used as a projection surface and the screen and whiteboard may be deleted. Student desk shall be approximately 914 mm [3 ft] wide by 762 mm [30 inches] deep for each student. (Refer to AR415-15)

Finishes: See the Finish Schedule for standard finishes.

Other Requirements: A storage space typically about 3.3 m2 [36 s.f.] is required in or near each classroom as well as a storage cabinet for laptop computers. This space is included within the classroom net area allowance. Larger classrooms may require more storage. Classrooms with greater than 5 rows of seating (i.e., 50 students or more) should consider higher ceilings to allow better viewing of the screen from the rear of the room. A method for flexible data and power distribution and reconfiguration shall be considered such as access flooring (see paragraph 3-5.6.4 for options).

2-4.3 **Seminar Model Classroom.** (Category Code 17120) These spaces are often used for higher levels of education such as the master's program at the War College. The model consists of two rooms. A larger room serves the class of 16 - 24 students and 1 – 4 instructors in a seminar fashion around moveable tables. The group breaks into two teams to solve problems and prepare research for a significant portion of time. The breakout requires a second space. Therefore this model consists of a primary space of 93.5 m^2 [1000 s.f.] and a breakout of 46.5 m^2 [500 s.f.] for a total of 139 m^2 [1500 s.f.]. Both rooms use tables/chairs that can be rearranged, have four computer terminals, white boards, and storage. The larger room should have an overhead projector. One to four instructors interact with this group depending on lesson requirements.

Function: Instruction of students through lecture, interactive work groups, projected images, computer presentation and written information on the board.

Occupancy: 24 students, 4 instructors

Adjacency Reqmnts: The two rooms required for this function should be near each other. Instructors' offices and classroom storage should be close to the classrooms.

Space requirement: Total net area.
Two rooms totaling 139 m^2 [1500 s.f.].

Mechanical: Mechanical system shall be designed to accommodate partial to full occupancy with temperature control separate from other portions of the building. Equipment

and airflow shall be quiet to meet noise level requirement. The larger of the two rooms must have individual temperature control[1].

Electrical/Lighting: Day lighting is preferred and shall be controlled. Electric lighting shall be switched to allow variable lighting levels. Each Classroom shall have individual lighting control that switches off automatically when the room is not in use[1].

Communications: Room shall have data and power receptacle for each computer workstation. This shall be by recessed floor or wall-mounted raceway (below desk level) or raised access flooring.

F/F/E: Provide screen in large space, white board, map rail, coat hooks, and tack board in each space, Government furnished equipment includes ceiling mounted projector, interactive whiteboard, instructor's workstation, computers, printer, student desks, chairs. The interactive whiteboard may be used as a projection surface and the screen and whiteboard may be deleted in the small space. Student desk shall be approximately 914 mm [3 ft] wide by 762 mm [30 inches] deep for each student, large space shall have desk to accommodate all students. Additional desk shall be provided with four computer workstations in each room. A method for flexible data and power distribution and reconfiguration shall be considered such as access flooring (see paragraph 3-5.6.4 for options).

Finishes: See the Finish Schedule for standard finishes.

Other Requirements: A storage cabinet is required in each space. Access flooring shall be considered in this space.

2-4.4 **Consolidated Training Configuration (CTC) Space.** (Category Code 17120) The space is specifically used by the Defense Language Institute (DLI) but could be useful in other intense training situations. It uses a cluster of 3 small classrooms for 10 students and 2 instructors each, 2 instructor rooms with 3 work stations each, a breakout room, and a common space break room that includes 2 storage areas. Each of the 7 rooms is 27.9 – 32.5 m^2 [300 – 350 s.f.] for a total net area of 195 – 228 m^2 [2100 – 2450 s.f.] Instructors use lectures, projected images, written information on the board and a great deal of verbal interaction. Power and network connections shall be provided to each moveable desktop. Classes shall have a single projector and interactive whiteboard at the front of the class. Instructor rooms are offices with 3 workstations and a desk, 4-shelf bookcase, shared white board/tack board, and coat rack. The break rooms usually have a coffee bar and are furnished based on the course requirements.

Demountable or moveable wall panel partitions are desirable within the CTC.

Function: Instruction of students through lecture, projected images, computer presentation, written information on the board, and discussion.

Occupancy: 30 students, 6 instructors.

[1]This is an Army Standard for GIB
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Adjacency Reqmnts: CTC should be clustered in classroom area.

Space requirement: Total net area 228 m^2 [2,450 s.f.].

Mechanical: Mechanical system shall be designed to accommodate partial to full occupancy with temperature control separate from other portions of the building. Equipment and airflow shall be quiet to meet noise level requirement. Each CTC must have one or more zones for individual temperature control.

Electrical/Lighting: Day lighting is preferred and shall be controlled. Electric lighting shall be switched to allow variable lighting levels. Each Classroom shall have individual lighting control that switches off automatically when the room is not in use[1].

Communications: Room shall have data and power receptacle for every student and instructor space. This shall be by recessed floor or wall-mounted raceway (below desk level) or raised access flooring.

F/F/E: Provide tack board, white board, and coat hooks. Government furnished equipment includes one ceiling mounted projector, interactive whiteboard, computers, printer, student desks, chairs, and two instructor's workstation. Student desk shall be approximately 914 mm [3 ft] wide by 762 mm [30 inches] deep for each student. Instructor's workstation must be able to secure the computer and files.

Finishes: See the Finish Schedule for standard finishes.

Other Requirements: A storage space, typically about 3.3 m^2. [36 s.f.] is required in each classroom. A method for flexible data and power distribution and reconfiguration shall be considered such as access flooring (see paragraph 3-5.6.4 for options).

2-4.5 **Video-Tele Training Classroom.** (Category Code 17120) The spaces have full distance learning capabilities with 2-way audio-video communication. The room is served through the Network Operations Center and remote communication closets. Each desk has a full size desktop computer. Risers or a high ceiling are very desirable in the larger classroom for better sight lines. Distance learning shall be compatible with the Total Army Distance Learning Program (TADLP). It shall include connectivity to the DOD Satellite Education Network (SEN) and Teletraining Network (TNET).
A communication rack is required for the VTT function in each classroom. For renovations, the rack is often in an alcove leading into the room while in new construction it is usually in a closet within the room.

Function: Instruction of students through teletraining, lecture, projected images, and computer presentation. In some cases the instructor may be remotely located. The space may also be used as a lecture classroom on occasion

Occupancy: 15 students, 1 instructor
30 students, 1 instructor

Adjacency Reqmnts: Classrooms should be clustered and have student break, vending and restrooms nearby. Classrooms shall be easily accessed from the public entrance. Instructor's offices and classroom storage should be close to the classrooms as well.

Space requirement: Total net area.
15 students- approximately 12192 mm [40 ft] wide by 7315 mm [24 ft] deep = 91 m^2 [975 s.f.]
30 students- approximately 12192 mm [40 ft] wide by 12192 mm [40 ft] deep = 149 m^2 [1,600 s.f.]

Acoustics: Partitions shall comply with the acoustic paragraphs of this criteria. Ceilings shall be absorptive, NRC 50 minimum

Mechanical: Mechanical system shall be designed to accommodate partial to full occupancy with temperature control separate from other portions of the building. Equipment and airflow shall be quiet to meet noise level requirement. Each classroom must have individual temperature control

Electrical/Lighting: Day lighting shall be controlled. Electric lighting shall be switched to allow variable lighting levels. Each Classroom shall have individual lighting control that switches off automatically when the room is not in use[1].

Communications: Provide a power and data connection for each instructor and student. This shall be by raised access flooring. Full functional capability requires the following communication components:
1) Connectivity from the site/installation to the wide area network (DISN);
2) Connectivity from the building switch to the installation back-bone;
3) Connectivity from the building switch to the classroom switch, and
4) Connectivity from the classroom switch to each workstation and peripheral in the classroom.

F/F/E: Provide white board, cameras, microphones, and speaker system. Government furnished equipment includes two ceiling mounted projectors and screens (one each in the smaller rooms), interactive whiteboard (if used as a non-VTT classroom also), instructor's workstation, document camera, computers, printer, student desks, and chairs. Student desk shall be approximately 914 mm [3 ft] wide by 762 mm [30 inches] deep for each student.

Finishes: See the Finish Schedule for standard finishes. Low contrast between materials is important for better camera function. A blue color scheme is recommended because it provides a technically correct broadcast quality VTT background.

Other Requirements: A storage space, typically about 3.3 m^2. [36 s.f.] is required in each classroom. A method for flexible data and power distribution and reconfiguration shall be considered such as access flooring (see paragraph 3-5.6.4 for options).

2-4.6 **Classroom XXI.** (Category Code 17136) CR XXI design focuses on instructor use, instructor led training, and instructor facilitated self-paced student training. The level classroom used in these facilities is "Level 3/High Tech Room". It is an open architecture, standards compliant, fully networked multimedia classroom with interoperable Video Teletraining (VTT), Internet access, Installation networked with full distance learning capability. The space requires two video projectors and two 3048 mm [10 ft] wide motor operated projection screens. For ease of viewing and transmitting, other CRXXI technologies are used in favor of marker/integrated white boards. The instructor workstation and projection screens are located at the front of the room. An unobstructed view to the front of the room

by all students is required. The instructor has digital access to each student computer. The instructor station has a computer, document camera, projector control, lighting and a sound system. Each student must have a networked computer on a desk. Rooms are generally square in plan with a wall at least 9144 mm [30 ft] long is optimal. A communication rack is required for the VTT function in each classroom. For renovations, the rack is often in an alcove leading into the room while in new construction it is usually in a closet within the room.

This criteria uses a 20 – 24 person classroom, which has been most common to the Army and very successful. Larger Classroom XXIs may be used in coordination with TRADOC.

Function: Digital training.

Occupancy: 20 - 24 students, 1 instructor.

Adjacency Reqmnts: Locate near other classrooms.

Space requirement: Total net area of 139 m^2 [1,500 s.f.]

Acoustics: Refer to the Acoustics paragraph in this criteria. Partitions shall be STC 50 minimum. Ceiling shall be absorptive, NRC 50 minimum. Floors shall be absorptive, NRC 25 minimum. Doors shall be acoustic to match partitions.

Mechanical: Mechanical system shall be designed to accommodate partial to full occupancy with temperature control separate from other portions of the building. Equipment and airflow shall be quiet to meet noise level requirement. Each classroom must have individual temperature control.

Electrical/Lighting: Day lighting shall be controlled. Electric lighting shall be switched to allow variable lighting levels. Each Classroom shall have individual lighting control that switches off automatically when the room is not in use[1]. Lighting shall be planned to eliminate facial shadows. Lights shall not cast direct glare on the projection surface. Lighting shall be divided into four zones aligned parallel with student desks. The classroom shall be powered by a dedicated 100A sub-panel for all student desks, instructor desk, audiovisual systems, classroom equipment, and etc. Power for lighting may be derived from an existing panel. Every student desk will have minimum of six receptacle outlets (15A, 120V) and instructor shall have minimum eight receptacle outlets to accommodate transformers (wall adaptor power supplies. No more than three student positions may share a single 20A circuit. The instructor position must be provided with a single 20A circuit, not to be shared by any other position. Provide one 20A circuit at the front of the room for electric screens and a camera. This circuit should be placed between the two screens. Provide one 20A circuit located approximately 18 feet back from the front of the room to accommodate two video projectors. Provide one outlet for teleconferencing camera dedicated to the instructor. Typically, this camera is located in the rear of the classroom, at a position that lends itself to a clear, unobstructed view of the instructor. This outlet shall be placed in the floor, over which the camera pedestal will be placed.

Communications: Provide a power and data connection for each instructor and student. This shall be by raised access flooring. Full functional capability requires the following communication components:

1) Connectivity from the site/installation to the wide area network (DISN);
2) Connectivity from the building switch to the installation back-bone;
3) Connectivity from the building switch to the classroom switch, and
4) Connectivity from the classroom switch to each workstation and peripheral in the classroom.

F/F/E: Government furnished equipment includes an integrated VTT system, video/data projection system (instructor and student cameras, 2 projectors and projection screens, and document camera), audio system (wireless instructor microphone/student microphones and typically 6 room ceiling speakers, depending upon classroom size), instructor classroom management system, touch control panel (to control lighting, sound levels, projection sources, VTT), fax machine and printer on an equipment stand, classroom network switch, and student/instructor networked computers, ergonomic desks and chairs (padded, rolling, adjustable height, tilt, lumbar support, and armrest). Student desk size varies according to room size and number of student workstations required. Student Workstations are commonly 1219 mm [4 ft] wide by 762 mm [30 inches] deep. Instructor Workstation is commonly 2032 mm wide by 762 mm deep [80"w x 30" d] with a side return 1067 mm wide by 762 mm deep [42"w x 30" d].

Finishes: See the Finish Schedule for standard finishes. Low contrast between materials is important for better camera function. A blue color scheme is recommended because it provides a technically correct broadcast quality VTT background. The color scheme shall include an integrated interior design package for all features and furnishings in the classroom. A finished ceiling height of 3658 mm [12 feet] above the finished floor is desirable to enable maximization of screen sizes and maintain a comfortable room temperature.

Other Requirements: A sound system is required which includes a wireless microphone for the instructor and typically 6 speakers. The system must allow students to hear the instructor as well as hear and speak on VTCs. EIRS BULLETIN 95-05, Engineering and Design, Automation-Aided Classroom Design Criteria applies to the design of these classrooms. Department of the Army Real Property Category Code is Construction Category Code, 17136, Automation-Aided Instruction Building as supplemented by this document. Access flooring is required in this space.

2-4.7 **Noncommissioned Officer (NCO) Academy Training Space.** (Category Code 17120) The space is used to present lectures, projected images and written information on the board. Instructors are traditionally military. This type of classroom is planned for 16 students arranged in a “U-shaped” desk configuration. These spaces have the flexibility to teach in the traditional lecture mode, use projection media, present hand held material, and work on group projects that may require moving furniture to create an open area. Power and network connections shall be provided to each instructor and student desk. Classes shall have a single projector, an interactive whiteboard and white board at the front of the class. In the past, small open offices have been remotely provided for instructors but it has been found that they are not often used. Provide two 5.9 m^2 [64 s.f.] workstation cubicles in each classroom for NCO Academy instructors. Consider the additional need for shared private space for counseling.

Function: Instruction of NCO Academy students through lecture, projected images,

computer presentation and written information on the board.

Occupancy: 16 students, 2 instructors

Adjacency Reqmnts: NCO Academy classrooms should be clustered and have vending and restrooms nearby. Classrooms shall be easily accessed from the public entrance. Instructors' offices should be in the classrooms. NCO Academy classes may be separate from GIB classrooms.

Space requirement: Total net area.
16 students-102 m^2 [1,100 s.f.]

Acoustics: Partitions shall be STC 45 minimum.

Mechanical: Mechanical system shall be designed to accommodate partial to full occupancy with temperature control separate from other portions of the building. Equipment and airflow shall be quiet to meet noise level requirement. Each classroom must have individual temperature control.

Electrical/Lighting: Day lighting is preferred and shall be controlled. Electric lighting shall be switched to allow variable lighting levels. Each Classroom shall have individual lighting control that switches off automatically when the room is not in use[1].

Communications: Room shall have data and power receptacle for every student and instructor space. This shall be by recessed floor or wall-mounted raceway (below desk level) or raised access flooring.

F/F/E: Provide white board, tack board, and coat hooks. Government furnished equipment includes one ceiling mounted projector, interactive whiteboard, computers, printer, student desks, chairs, podium/lectern, and two instructor's workstation. Student desk shall be approximately 914 mm [3 ft] by 610 mm [24 inches] for each student.

Finishes: See the Finish Schedule for standard finishes.

Other Requirements: A storage space typically 3.3 m^2 [36 s.f.] is required in each classroom. Lower level NCOES programs require additional storage space for NBC and communications equipment. Typically requires housing nearby for longer TDY assignments. A method for flexible data and power distribution and reconfiguration shall be considered such as access flooring (see paragraph 3-5.6.4 for options).

2-4.8 **Digital Training Access Center (DTAC).** (Category Code 13115) The DTAC is directly associated with the CRXXI. It allows training-on-demand to the student's desktop or the instructor's equipment "anywhere at anytime". It allows students to access the same or different courseware simultaneously. It allows the use of high bandwidth over the Local Area Network (LAN). Generally a DTAC serves an entire installation. It is often located in the Network Enterprise Center (NEC) building

[1] This is an Army Standard for GIB

but may be located in the GIB, within the Network Operations Center (NOC) or in another facility.

The DTAC electronically stores and distributes the digital proponent record copy of approved training and other materials. It is the proponent's portion of the Reimer Digital Library. It will interface with the Automated Systems Approach to Training (ASAT) [ASAT is planned to be replaced in the future, possibly by the Training and Doctrine Developers Tool (TDDT)] to receive completed training materials.

The DTAC is also considered a large communications area and its configuration is dependent on the engineering solution for the systems architecture. The DTAC includes an area for 4-12 servers housed in 2 communication racks usually, 2 workstations for technical support personnel, and an uninterrupted power source (UPS). Shelving storage is required for software. If an overhead raceway is not feasible, a sub-floor system with a complete utility supply and cable management system (raised flooring) is acceptable.

Function:	Information storage and distribution.
Occupancy:	2 System Administrators.
Adjacency Reqmnts:	The DTAC is centrally located for the GIB or CRXXI but may be remote if necessary.
Space requirement:	37 m^2 [400 s.f.]
Mechanical:	A dedicated air conditioning system shall be provided for year round air conditioning. The unit shall maintain room temperature and humidity to meet criteria for computer/server rooms.
Electrical/Lighting:	Day lighting is not desirable. A raised floor or overhead cable raceway system is required.
Communications:	The space is a large network room or a communications area. Provide power and communications infrastructure for computers, servers, switches, hubs, UPS, communication racks, and workstations.
F/F/E:	Government furnished equipment includes computers, servers, switches, hubs, UPS, communication racks, shelves, workstations, software.
Finishes:	A ceiling height of 2438 mm [8 ft] to 2743 mm [9 ft] is required.

2-4.9 **Resource Center.** (Category Code 17120) The Resource Center is sometimes called a Learning Center and is intended to eventually replace the paper/book library found in many GIBs. It includes the Military Occupational Specialty (MOS) library which is required to be digital in future facilities. It provides LAN and commercial Internet access to students and staff for research. It is not intended to be a group instruction space. In certain education facilities such as the US Army War College or the US Army Sergeant Major Academy the requirements of a Resource Center may still include a large Library (Category Code 61065).

A Common access card may be required for students to use computers in the center.

The Programming Worksheet has a 10-student (small) and 30-student (large) Resource Center. The small space would for example reflect the needs of an ACES facility with a capacity of 2000 students. The large would be used for more demanding General Instruction Buildings or combination GIB and Education Center. With the growing availability of electronic information and student self-learning, it is expected multiple Resource Centers could be required in large facilities.

Function:	Access to digital and printed information.
Occupancy:	10 students, 1 administrator (small); 30 students, 2 administrators (large)
Adjacency Reqmnts:	Student areas.
Space requirement:	Total net area of 37 m^2 [400 s.f.] (small); 111 m^2 [1,200 s.f.] (large).
Mechanical:	Mechanical system shall be designed to accommodate partial to full occupancy with temperature control separate from other portions of the building. Each classroom shall have individual temperature control.
Electrical/Lighting:	Day lighting is not desirable. Use indirect or parabolic lighting fixtures to reduce glare on video display terminals (VDTs). Each Classroom shall have individual lighting control that switches off automatically when the room is not in use[1].
Communications:	Include on corridor public address system. Room shall have data and power receptacle for every student and instructor/administrator space. This shall be by recessed floor or wall-mounted raceway (below desk level) or raised access flooring.
F/F/E:	Provide coat hooks. Government shall provide shelving, cabinets, study carrel type computer stations, staff work stations, telephones, computers, printers, and copier.
Finishes:	See the Finish Schedule for standard finishes.
Other Requirements:	A method for flexible data and power distribution and reconfiguration shall be considered such as access flooring (see paragraph 3-5.6.4 for options).

2-5 ADMINISTRATION SPACES

2-5.1 **Information/Reception.** Students wait to see counselors or college representatives (mostly an ACES function), very little use by NCO Academy. The functional size, furnishings, seating and staff is based on the needs for a GIB. If the facility is also co-used as an ACES facility, the space should be keyed to peak registration simultaneous load data. Staff is located behind a service counter where they use computers and files to access records and standard forms and coordinate appointments for counselors. Students wait in a seating area for processing by someone who can assist them. This space must be easy to find by visitors and have clear signage and information displays.

[1] This is an Army Standard for GIB

Function: Waiting area for students and administrative space for staff.

Occupancy: 15-30 students, 2 staff

Adjacency Reqmnts: Near and observable from building entrance, convenient access to restrooms.

Space requirement: Total net area of 50 m2 [540 s.f.].

Mechanical: Mechanical system shall be designed to accommodate partial to full occupancy with temperature control separate from other portions of the building.

Electrical/Lighting: Day lighting is encouraged.

Communications: Cable television connection, network and telephone for staff. Public address system is required in larger spaces to contact waiting students. Space shall have telephone and LAN receptacles per the 13A technical criteria.

F/F/E: Government shall provide seating, workstations for staff, file cabinets, shelving, large screen televisions, computers, and printers. A service counter shall be built-in or provided as part of the GFGI systems furniture. Provide a directory, bulletin board, and signage.

Finishes: See the Finish Schedule for standard finishes.

2-5.2 **Instructors Offices.** (Category Code 17120) Offices required near classrooms for senior, permanent, transient instructors. In many cases the grouping of offices into a larger space with individual desk/work stations is desirable. Where offices are grouped, provisions for confidential counseling must be accommodated. Some situations require the instructor store additional materials in the office in which case additional room size is justified in accordance with Army Regulation 405-70. Some instruction facilities have senior level instructors that require larger offices due to grade (such as the Army War College or Sergeant Major Academy). These offices may be increased in size in accordance Army Regulation 405-70. Planners shall modify the room size on the worksheet as appropriate for these special situations. Facilities that support mainly ACES activities should consider grouping instructor cubicles into space allocated for resident colleges rather than place them adjacent to particular classrooms. Since all college instructors who do not double as college advisors are by nature transient the space requirement could be smaller, possibly 6 m^2 [65 s.f.].

Function: Office.

Occupancy: 2 students, 1 instructor

Adjacency Reqmnts: Near classrooms.

Space requirement: Total net area of 10.2 m2 [110 s.f.].

Mechanical: Space shall provide heating, cooling, and ventilation

Electrical/Lighting: Day lighting is desirable, but not necessary and should be controlled when

used.

Communications: Space shall have telephone and LAN connections.

F/F/E: Provide coat hooks. Government furnished equipment includes workstations or desks approximately 1524 mm [5 ft] wide, seating (for instructor plus 2 students/guest), 4-shelf bookcase, telephone, computer, and printer.

Finishes: See the Finish Schedule for standard finishes.

2-5.3 **Director's Office.** (Category Code 17120) Office space for the director who oversees the program operation. The office includes a small meeting space.

Function: Office.

Occupancy: 1 staff, 2 guests.

Adjacency Reqmnts: Administrative area.

Space requirement: Total net area of 20.4 m^2 [220 s.f.].

Mechanical: Space shall provide heating, cooling, and ventilation. The room shall have individual temperature control.

Electrical/Lighting: Day lighting is desirable, but not necessary and should be controlled when used.

Communications: Space shall have telephone and LAN connections.

F/F/E: Provide coat hooks. Government furnished equipment includes workstation, seating (for director plus 2 guests), small meeting table with seating, file cabinet, shelving, telephone, computer, and printer.

Finishes: See the Finish Schedule for standard finishes.

2-5.4 **Administration Office.** (Category Code 17120) Space for building operations, budget, program and training administration. In addition to handling the on-site training, GIB administrators often schedule and arrange off-site training for Installation forces.

Function: Office.

Occupancy: 1 staff, 2 guests.

Adjacency Reqmnts: Director's office.

Space requirement: Total net area of 12 m^2 [130 s.f.].

Mechanical: Space shall provide heating, cooling, and ventilation.

Electrical/Lighting: Day lighting is desirable, but not necessary and should be controlled when used.

Communications: Space shall have telephone and LAN connections.

F/F/E: Provide coat hooks. Government furnished equipment includes workstation, seating (for administrator plus 2 guests), file cabinet, shelving, telephone, computer, and printer.

Finishes: See the Finish Schedule for standard finishes.

2-5.5 **Building Manager's Office.** (Category Code 17120) Required for controlling the use of the classrooms. Space for copying and media storage is required. Serves as security office and has monitors for the security cameras that are located throughout the facility.

Function: Office space for building administration and security.

Occupancy: 3 staff, 2 guests

Adjacency Reqmnts: Near building entrance.

Space requirement: Total net area 46.5 m^2 [500 s.f.]

Mechanical: Space shall provide heating, cooling, and ventilation.

Electrical/Lighting: Day lighting is desirable, but not necessary and should be controlled when used.

Communications: Space shall have telephone and LAN system including data and cable television.

F/F/E: Provide coat hooks, tack board, and white board. Government furnished equipment includes 3 workstations, seating, shelving, copier, storage cabinets, computers, fax and printers.

Finishes: See the Finish Schedule for standard finishes.

Other Requirements: Security camera and monitor requirements shall be coordinated with the local Installation Security Office. In most cases two monitors are required with the ability to switch cameras or have multiple views displayed.

2-5.6 **Conference Room.** (Category Code 61050) The conference room shall provide comfortable seating and meeting space. Furniture system shall provide for a variety of seating arrangements.

Function: Staff and administrative meetings.

Occupancy: 20 staff
30 staff

	50 staff
Adjacency Reqmnts:	Near administrative area.
Space requirement:	Total net area. 20 staff-44 m^2 [480 s.f.] 30 staff-67 m^2 [720 s.f.] 50 staff- 111 m^2 [1,200 s.f.]
Acoustics:	Walls shall have acoustic wall panels.
Plumbing:	Restrooms and drinking fountains shall be located nearby.
Mechanical:	Mechanical system shall be designed to accommodate partial to full occupancy with temperature control separate from other portions of the building. Equipment and airflow shall be quiet to meet noise level requirement. Each room shall have individual temperature control.
Electrical/Lighting:	Day lighting is not desirable or, if provided, should be controlled. Lighting shall be controlled to allow variable light levels. Each room shall have individual lighting control that switches off automatically when the room is not in use.[1].
Communications:	Space shall have telephone and LAN system including data and cable television. Flush data and power receptacles shall be located below probable table locations to avoid exposed wiring during meetings. A clock outlet shall be provided on the rear wall.
Adjacency Reqmnts:	Near the building administration unless shared as a training room.
F/F/E:	Government furnished equipment includes conference tables (reconfigurable table is preferred), seating, and credenza. Provide in the large rooms a speaker system. Government shall provide an interactive lectern and “smart” board system that shall be placed at one end of the room. Government shall provide a ceiling mounted projector in all size rooms. Consider coat/cap closet or rack for ½ of the occupants.
Finishes:	See the Finish Schedule for standard finishes.

2-5.7 **Network Operations Center (NOC).** (Category Code 13131) The NOC is also considered a large communications area and its configuration is dependent on the engineering solution for the systems architecture. For the GIB, the NOC is the intelligent connection to the Communications room, serving as the distribution point for VTT (Teletraining Network known as TNET and the Satellite Education Network known as SEN), internet/intranet, cable television, telephone, and data distribution. The NOC electronically stores and distributes digital training material and other materials. The GIB NOC may contain the DTAC required for Classroom XXI. It will serve VTT classrooms as well as all network functions in the building. Depending on the size of the facility, the NOC may serve sub-communication closets or serve directly to the desktop.

[1] This is an Army Standard for GIB

The NOC includes area for servers, switches, and uninterruptible power supplies, housed in racks. In large facilities, provide two workstations for technical support personnel and administrator.

A cable management system (raised flooring) is necessary. Where the raised floor is not feasible, an overhead raceway is acceptable.

Function: Information storage and distribution.

Occupancy: 2 staff.

Adjacency Reqmnts: Near classrooms.

Space requirement: Total net area of 65.0 m^2 [700 s.f.].

Mechanical: A separate cooling system capable of year-round cooling operation shall be provided. The system shall control and maintain room temperature and humidity to meet criteria for computer/server rooms. Provide slight positive pressure with respect to adjacent spaces.

Electrical/Lighting: Day lighting is not desirable.

Communications: Space shall have TNET, SEN, telephone, Internet/intranet and LAN system including data and cable television. Provide power and communications infrastructure for computers, servers, switches, hubs, UPS, communication racks, and workstations.F/F/E: Government/school furnished equipment includes workstations, seating, shelving, storage cabinets, racks, servers, switches, computers, and printers.

Finishes: See the Finish Schedule for standard finishes. Avoid materials that generate or hold static charges.

Other Requirements: The space shall also be connected to and supply information to the Army's Satellite Education Network (SEN). While this broadcast/receiver system is not as reliable as other hardwire methods, the technology is necessary for remote distribution of information. TRADOC does use it in some of their programs. Broadcast through a SEN is important to commands such as those in Germany who will set up field training facilities in remote locations with broadcast coming from the local instruction facility. This function is often related to the optional Broadcast Studio space. A method for flexible data and power distribution and reconfiguration shall be considered such as access flooring (see paragraph 3-5.6.4 for options).

2-5.8 **Computer Maintenance Area.** (Category Code 13115) For computer setup, storage, maintenance serving classrooms and administrative requirements in large GIBs (usually over 3716 m^2 [40,000 s.f.]). For smaller GIBs that require computer maintenance areas, calculate the requirement based upon AR 405-70 Space allowances or established industry space planning standards.

Function: Computer service.

Occupancy: 2 staff.

Space requirement: Total net area 111 m^2 [1,200 s.f.]

Mechanical: Space shall provide heating, cooling, and ventilation.

Electrical/Lighting: Electrical and lighting shall be arranged for flexible use of a space as a maintenance bay.

Communications: Space shall have telephone and LAN system including data and cable television.

F/F/E: Government/school furnished equipment includes 2 workstations, seating, shelving, copier, storage cabinets, workbenches, computers, fax and printers.

Finishes: See the Finish Schedule for standard finishes.

2-5.9 **Loading Dock.** (Category Code 17120) A loading dock is important for new standalone facilities. It should be remote from the student entrance, and have storage and vertical circulation. In large facilities (over 3716 m^2 [40,000 s.f.]), where delivery of supplies or instruction material is received daily, loading docks are usually required. The dock shall be raised with a platform height at 1097 mm [3 ft-6 inches] above lowered truck area. Dock shall include a roof, dock leveler and stairs.

Function: Receiving area.

Adjacency Reqmnts: Near Material Storage and Service Elevator. Remote from student entrance.

Space requirement: Total net area 14.9 m^2 [160 s.f.] Gross area impact for this space is calculated at 50% and equals 7.4 m^2 [80 s.f.]

Acoustics: Isolate from Classrooms and Testing.

Plumbing: Drain truck pit.

Electrical/Lighting: Provide lighting and outdoor weatherproof receptacles.

Communications: Space shall have an intercom to the Facility Manager's Office.

Finishes: See the Finish Schedule for standard finishes.

2-5.10 **Transient Storage.** (Category Code 17120) Secure storage for transient programs near the Loading Dock is required. Transient programs will use the GIB for temporary training needs. They bring materials and equipment packed in crates. The material and equipment is moved to the classroom and the crates must be stored for return transport. This space is sometimes needed for installations that have an ACES that support a large amount of special short-term training.

Function: Short term storage of crates and teaching materials for visiting instructors.

Occupancy: 1 staff

Adjacency Reqmnts: Near Loading Dock

Space requirement: Total net area of 37.2 m^2 [400 s.f.].

Mechanical: Space shall be heated and ventilated.

Electrical/Lighting: Day lighting is not desirable. Each room shall have individual lighting control that switches off automatically when the room is not in use[1].

Communications: Space shall have telephone and LAN connection.

F/F/E: GFGI storage cabinet, desk and chair.

Finishes: See the Finish Schedule for standard finishes.

2-5.11 **Record Storage.** (Category Code 17120) Storage is required for student records held for 7 years. These files are currently in the form of paper files stored in file cabinets.

Function: Storage space for files.

Adjacency Reqmnts: Near administrative area.

Space requirement: Total net area of 11.1 m^2 [120 s.f.]

Mechanical: Space shall be heated, cooled, and ventilated.

Electrical/Lighting: Day lighting is not desirable. Provide convenience power receptacles.

Communications: Provide telephone and LAN receptacles.

F/F/E: GFGI desk, storage cabinet, and file cabinets.

Finishes: See the Finish Schedule for standard finishes.

2-5.12 **Copy Room.** (Category Code 17120) Central reproduction room is for printing/copying documents, collating, binding and sometimes sending facsimiles. This space is required on each floor. Some facilities may find it unacceptable to share these functions between staff and students, in which case separate and probably smaller spaces would be provided.

Function: Open area for administrative, faculty, and student use.

Adjacency Reqmnts: Near administrative area.

Space requirement: Total net area 18.6 m^2 [200 s.f.]

Acoustics: Partitions shall be used to reduce noise transmission into other areas.

[1] This is an Army Standard for GIB

Mechanical: Space shall be heated, cooled, and ventilated.

Electrical/Lighting: Day lighting is not desirable. Provide power receptacles for printing/copying equipment.

Communications: Space shall have telephone and LAN connections.

F/F/E: Provide a built-in 683 mm [34 inches] high counter approximately 3048 mm[10 ft] long with wall cabinet above and drawer base cabinet below. Cabinets shall have cam locks. Government/school furnished equipment includes shelving, copiers, storage cabinets, computer, fax and printers as well as paper and office supplies.

Finishes: See the Finish Schedule for standard finishes

2-5.13 **Supply Storage**. (Category Code 17120) Storage is required for paper and office supplies. In multi-story buildings, the space shall be divided among each floor or area.

Function: Storage space for administrative materials.

Adjacency Reqmnts: Near administrative area.

Space requirement: Total net area of .6% of the building net area subtotal is appropriate. This would provide 27.9 m^2 [300 s.f.] for a 4645 m^2 [50,000 s.f.] facility.

Mechanical: Space shall be heated, cooled, and ventilated.

Electrical/Lighting: Day lighting is not desirable. Provide convenience power receptacle. Rooms shall have individual lighting control that switches off automatically when the room is not in use[1].

F/F/E: Provide 406 mm [16 inch] deep shelving full height on 2 walls for paper storage.

Finishes: See the Finish Schedule for standard finishes.

Communications: Space shall have telephone receptacle.

2-6 SPECIAL FUNCTIONAL USE AREAS

2-6.1 **Small Arms Training Room.** (Category Code 17131) A small arms training room has the same requirements as a classroom with a few exceptions. Because units bring in their own weapons for training, the room should be located near a delivery area for processing weapons and equipment in and out. An Arms Vault is required for storage of the weapons; in fact, use of the Arms Vault is part of the training. The vault is to be accessible from the classroom. Cleaning agents are used with the weapons, therefore special consideration shall be given to ventilation, room and furniture finishes. Worktables should be provided.

Function: Weapons training.

[1] This is an Army Standard for GIB

Occupancy: 32 students, 2 instructors.

Adjacency Reqmnts: Near delivery area, on first floor.

Space requirement: Total net area of 104 m^2 [1,125 s.f.]

Acoustics: Partitions shall be STC 45 minimum.

Mechanical: Mechanical system shall be designed to accommodate partial to full occupancy with temperature control separate from other portions of the building. Equipment and airflow shall be quiet. A separate exhaust system is required. Return air shall not be mixed with adjacent rooms.

Electrical/Lighting: Day lighting is desirable but should be controlled. Electrical lighting and power is same as typical classrooms. Each room shall have individual lighting control that switches off automatically when the room is not in use[1].

Communications: Classroom shall be wired like multipurpose classroom for power and data connections at each seat.

F/F/E: Government provided projector, interactive white board, instructor's lectern, display table for mounting weapons, 1524 mm [5 ft] by 610-mm [2 ft] worktables at stool height with 2 student stools (vinyl finish), two instructor's workstations, chairs, computers, and printers. Provide a ceiling mounted projector mounting and white board.

Finishes: See the Finish Schedule for standard finishes. Finishes are required to be more durable than typical classrooms due to the use and movement of equipment. Floor should be light to medium darkness without patterns so that small items can more easily be found.

Other Requirements: See Arms Vault.

2-6.2 **Arms Vault.** (Category Code 44223) Provide one per weapons training classroom. Minimum dimensions shall be 4000 mm [13 ft] x 7000 mm [23 ft]. Provide GSA approved Class 5 vault door with day gate between Vault and classroom. Walls and ceiling of Vault shall be reinforced concrete masonry or concrete. Floor shall be reinforced concrete. Rack anchor rings shall be provided. Design shall be in compliance with TI 800-01 Design Criteria and AR 190-11 Physical Security of Arms, Ammunition, and Explosives.

Function: Secure storage of weapons used for instruction. Ammunition is not to be stored in the vault.

Adjacency Reqmnts: Access from the Small Arms Training Room.

Space requirement: Total net area of 27.9 m^2 [300 s.f.]

Mechanical: Space shall be heated and cooled as part of the Small Arms Training classroom.

[1] This is an Army Standard for GIB

Electrical/Lighting: Day lighting is not allowed.

Communications: Provide telephone and LAN receptacles. Provide an empty conduit system with pull wires for the government installed intrusion detection system.

F/F/E: Government shall provide intrusion detection system, racks, shelving, and clearing barrel.

Finishes: See the Finish Schedule for standard finishes. Finishes are required to be more durable than typical classrooms due to the use and movement of equipment.

2-6.3 **Fixed Seat Auditorium.** (Category Code 17120) The auditorium may not be a required space in every facility. Often the Installation has satisfactory spaces for addressing large groups near instruction buildings. When a fixed seat auditorium is required (and there are no other on post facilities that can reasonably accommodate this requirement) it will be sized from the 151 or more person capacity. Requirements for smaller auditorium sizes will be accommodated with existing on post facilities, the multi-purpose auditorium, or a multi-purpose classroom. The size of the auditorium is based on the number of anticipated users at one time. ACTS has a formula for calculating this. This criteria uses 1.2 m^2 [13 s.f.] per seat for net area including related spaces. Auditoriums should include spaces such as a vestibule, main seating area, stage, storage and sound room. Projection rooms are not usually required since most presentations are computer based.

Project equipment should include a lectern (with proper lighting/audio/visual controls), two electric projection screens or a wide screen, two projectors, wireless microphones, theater quality audio system, theater seating with writing tablets.

A sloped floor is very desirable. Where it can be accommodated, curved or fan shaped rows of seating are preferred to straight rows. Seating should focus on and provide a good viewing of the speaker and projection screens. Seating should have upholstered seats and backs to soften acoustics but solid bottoms and rear panels for durability. Fixed seating should not create maintenance and repair problem for auditorium floor, consider swivel type fixed seating so that floor mounts due not unduly damage flooring surface.

Function: A presentation and learning space for large groups including graduation ceremonies.

Adjacency Reqmnts: Near the building entrance and restrooms

Occupancy: Based on need

Space requirement: Total net area including support spaces shall be number of seats x 1.2 m^2 [13 s.f.] net.

Acoustics: Partitions shall be STC 45 minimum. Rear wall and floor should have an absorptive NRC of 25 minimum while the ceiling, front and sidewalls shall be reflective.

Plumbing: Restrooms and drinking fountains shall be located nearby.

Mechanical: Mechanical system shall be designed to accommodate partial to full occupancy with temperature control separate from other portions of the building. Equipment

and airflow shall be quiet to meet noise level requirement. Each auditorium shall be divided into reasonable number of zones for appropriate thermal control.

Electrical/Lighting: Day lighting is not desirable or should be controlled. Lighting shall be zoned and dimmable with controls at the speaker's podium and rear wall.

Communications: Audio, video, cable television systems are required. A clock shall be provided on the rear wall. Provide telephone and LAN receptacles serving the podiums and stage areas; additional wall outlets will be evenly spaced around the room's perimeter at the rate on one per 500 SF of auditorium area.

F/F/E: Provide auditorium seating, projector mounting, a/v/ system rack, audio system and projection screens. Government furnished equipment includes projectors, lectern, computers, freestanding tables and chairs as required for special functions.

Finishes: See the Finish Schedule for standard finishes.

Other Requirements: See code requirements for Assembly occupancies.

2-6.4 **Multipurpose Auditorium.** (Category Code 17120) The multipurpose auditorium is meant for smaller groups and diverse functions compared to the larger auditorium. It may not be a required space in every facility and can often be shared between GIBs. The multipurpose auditorium is intended to seat from 71 up to 150 people using stackable chairs (generally, auditorium requirements below 71 people should be accommodated within multi-purpose classrooms rather than a separate auditorium). It requires storage space for the chairs. It is to have a raised podium/stage sized for the functions of the particular installation. The stage and seating area must accommodate persons with disabilities. A vestibule space and sound/projection room is not required.

Project equipment should include a lectern (with proper lighting/audio/visual controls), two electric projection screens, two projectors, audio system, wireless microphone, and stackable seating. A sloped floor is not acceptable in this multi-use space. Seating should focus on and provide good viewing of the speaker and projection screens.

Function: A multi-use gathering, presentation and learning space for large groups including graduation ceremonies.

Adjacency Reqmnts: Near the building entrance and restrooms

Occupancy: 71 – 150 people.

Space requirement: Total net area including support spaces shall be 209 m^2 [2,250 s.f.]

Acoustics: Partitions shall be STC 45 minimum. Rear wall and floor should have an absorptive NRC of 25 minimum while the ceiling, front and sidewalls shall be reflective.

Plumbing: Restrooms and drinking fountains shall be located nearby.

Mechanical: Mechanical system shall be designed to accommodate partial to full occupancy with temperature control separate from other portions of the building. Equipment and airflow shall be quiet to meet noise level requirement Each auditorium shall

be divided into reasonable number of zones for appropriate thermal control.

Electrical/Lighting: Day lighting is not desirable or if provided, should be controlled. Lighting shall be dimmable with controls at the speaker's podium and rear wall.

Communications: Provide telephone and LAN receptacles serving the podiums and stage areas; additional wall outlets will be evenly spaced around the room's perimeter at the rate on one per 500 SF of auditorium area. Audio, video, and cable television systems are required. A clock shall be provided on the rear wall

F/F/E: Provide projector mounting, a/v/ system rack, audio system, and projection screens. Government furnished equipment includes projectors, lectern, computers, freestanding tables and chairs as required for planned functions.

Finishes: See the Finish Schedule for standard finishes.

Other Requirements: See code requirements for Assembly occupancies.

2-6.5 **Army Continuing Education System (ACES) Classrooms and Support Space.** (Category Code 74025) These spaces often operate until late at night. Consider sharing classrooms with daytime general instruction space, but program as ACES facility so adequate support space is provided. See GIB classroom and office administration descriptions for selection of appropriate spaces. Include Information/Reception, College Offices, Counselor Offices, and Testing facilities listed below as required by the ACES function. For ACES, Instructor offices should be located near college offices and administration space instead of near classrooms; this provides more flexibility to change use of the space as requirements change. Sizing of ACES functional areas should be based maximum student load usually occurring in the early spring or late fall. Information/Reception Area is often located near the Break Area for overflow during peak registration times.

2-6.5.1 **College Office.** (Category Code 74025) This is a function of the ACES. The Army provides offices for those colleges serving their ACES. Each office varies in size based on the needs at the particular Installation. Provisions are usually made for shared offices by those colleges who do not provide full time staff on site.

Function: Office space for administrative and counseling support to students.

Occupancy: 2 students, 1 counselor.

Adjacency Reqmnts: Near administrative area and reception area.

Space requirement: Total net area at an average of 11.1 m^2 [120 s.f.] full time staff person.

Acoustics: Partitions shall be STC 45 minimum.

Mechanical: Space shall be heated, cooled, and ventilated.

Electrical/Lighting: Day lighting is desirable, but not necessary and should be controlled when used.

Communications: Space shall have telephone and LAN system including data and cable television.

F/F/E: Government/school furnished equipment includes workstations, seating,

shelving, copier, storage cabinets, computers, fax and printers.

Finishes: See the Finish Schedule for standard finishes.

2-6.5.2 **Counselors.** (Category Code 74025) Counselors assist students in planning their education and registering or changing class schedules. The functional size, furnishings, seating and staff is based on the needs for an ACES facility. The requirement should be adjusted appropriately based on Installation needs. In some facilities, counselors will also require administrative assistance. Space for assistants would be programmed as a counselor office function at a ratio of approximately one per five counselors.

Some situations require the counselor store additional materials in the office in which case additional room size is justified in accordance with Army Regulation 405-70. Some counselors have larger groups to counsel in which case it is preferable to use common meeting/conference space. Planners shall adjust the room size on the worksheet as appropriate for these special situations.

Function: Private office for counseling.

Occupancy: One counselor, 2 students.

Adjacency Reqmnts: Near administrative area and reception area.

Space requirement: Total net area of 11.1 m2 [120 s.f.]per counselor.

Acoustics: Partitions shall be STC 45 minimum.

Mechanical: Space shall be heated, cooled, and ventilated.

Electrical/Lighting: Day lighting is desirable, but not necessary and should be controlled when used.

Communications: Space shall have telephone and LAN connections.

F/F/E: Government furnished equipment includes workstations, seating (for counselor plus 2 students), shelving, bulletin/white board, telephone, computer, and printer.

Finishes: See the Finish Schedule for standard finishes.

2-6.5.3 **Testing Room.** (Category Code 74025) Testing is generally a requirement of ACES. The space shall also be useable as a Multi-Purpose Classroom. Testing requires space for traditional (paper) and computer testing as well as administration, observation and storage space. One proctor is required for each 15 students; testing rooms are normally set up for 15 or 30 students. The testing room and process shall comply with AR 611-5 Personnel and Classification Testing and DANTES Exam Program Handbook.

The space shall be sized for 30 students but dividable as two rooms for testing 15 on each side. The moveable partition shall provide an STC rating equal to the requirement for fixed wall construction. An intercom system shall be used between the Control Room and each side of the Testing Room. A minimum of 4 speakers and microphones shall be used for each 15-student area.

Function: Student testing.

Occupancy: 30 students, 2 instructors

Adjacency Reqmnts: Testing Control Room and within a quiet area of the facility.

Space requirement: STC 48.

Mechanical: Mechanical system shall be designed to accommodate partial to full occupancy with temperature control separate from other portions of the building. Each classroom shall have individual temperature control.

Electrical/Lighting: Day lighting is not necessary. Electric lighting shall be switched to allow variable lighting levels.

Communications: Room shall be wired like multi-purpose classroom for power and data connections at each seat. The standard intercom addressing all classrooms shall not be used in the Testing Room.

F/F/E: Government shall provide desk approximately 610 mm [2 ft] deep by 914 mm [3 ft] wide for use with or without computers and seating. Desks that have transparent tops with a computer monitor below are a desirable feature to allow computer based testing and paper testing without changing room arrangement. Provide wall clock, marker board, and tack board.

Finishes: See the Finish Schedule for standard finishes.

2-6.5.4 **Testing Control Room.** (Category Code 74025) Certain testing must be observed from an adjacent space. The Control Room shall comply with AR 611-5 Personnel and Classification Testing and DANTES Exam Program Handbook. A large observation window shall be used with one-way glass. The Testing Control Room is approximately 13.9 m^2 [150 s.f.] and included with the Testing Room because it is an integral requirement. With proper layout, a single Testing Control Room could serve two 30-person rooms. The space also requires approximately 6.5 m^2 [70 s.f.] of miscellaneous Storage (furniture, materials and computers) and approximately 6.5 m^2 [70 s.f.] of Secure Storage connected to the Testing Control Room. All of these spaces are included in the Testing Room net area. Some facilities may have two personnel assigned to this space, requiring separate computers and a test scanner. Students will not have access to the test control room.

Function: Observe testing, store test.

Occupancy: 1 - 2 instructor(s).

Adjacency Reqmnts: Testing rooms.

Space requirement: Total net area of 26.9 m^2 [290 s.f.].

Acoustics: STC 48.

Mechanical: Space shall be heated and cooled as part of the Test Room.

Electrical/Lighting: Day lighting is not desirable. Lighting shall be dimmable to enhance use of one-way glass.

Communications: Public address going to other classrooms shall be included in the Test Control Room. Provide an intercom to the Test Room. Space shall have telephone and LAN connections.

F/F/E: Government shall provide safe, files, shelves, seating, computer, test scanner, and printer. Provide built-in counter, observation window with one-way glass, window blind, coat hooks, and tack board.

Finishes: See the Finish Schedule for standard finishes.

2-6.5.5 **Testing Administrator.** (Category Code 74025) An office space for a test administrator is required in some facilities but is often combined with the Testing Control room in ACES facilities.

Function: Office.

Occupancy: 2 students, 1 administrator

Adjacency Reqmnts: Near Testing Rooms.

Space requirement: Total net area of 10.2 m^2 [110 s.f.]

Mechanical: Space shall be heated, cooled, and ventilated.

Electrical/Lighting: Day lighting is desirable, but not necessary and should be controlled when used.

Communications: Space shall have telephone and LAN connections.

F/F/E: Government furnished equipment includes workstations, seating (for administrator plus 2 students), shelving, file cabinet, telephone, computer, and printer.

Finishes: See the Finish Schedule for standard finishes.

2-6.6 **Broadcast Studio.** (Category Code 13175) The space is used to record and send out instructor information. The digital information may be produced, copied and distributed from the space to the Network Operations Center. From there it may be broadcast on the SEN.

Function: Digital recording of video and audio information.

Occupancy: 2 staff.

Adjacency Reqmnts: Quiet, remote location away from mechanical equipment.

Space requirement: Total net area 41.8 m^2 [450 s.f.]

Acoustics: Partitions shall be STC 52 minimum. Rear wall and floor should have an

absorptive NRC of 25 minimum while the ceiling, front and sidewalls shall be reflective.

Mechanical: Space shall be heated, cooled, and ventilated with individual temperature control. System shall be quiet to meet noise level requirement.

Electrical/Lighting: Day lighting is not desirable. Consider use of studio lighting to eliminate facial shadows.

F/F/E: Government furnished equipment includes audio/visual recording and broadcast equipment, workstations, seating, shelving, storage cabinets, computers, printer, studio lighting and recording equipment.

Finishes: See the Finish Schedule for standard finishes. Low contrast between materials is important for better camera function. A blue color scheme is recommended because it provides a technically correct broadcast quality VTT background.

2-6.7 **Applied Instruction Building Module.** (Category Code is dependent on actual use) This document does not include specific criteria for Applied Instruction spaces but does allow the planner/designer to input requirements in the GIB programming worksheet. Installation specific requirements must be evaluated and input to the programming and design documents. Refer to the latest Real Property Planning and Analysis System (RPLANS) and Facility Planning System (FPS) reports for category codes 1713x for various types of applied instruction facilities.

Applied Instruction often includes special equipment such as vehicle lifts, pneumatic tools, high bay work/training areas, special electricity, large quantities of water or cooling, special supply and disposal requirements, and unique ventilation. Examples of applied instruction training facilities are vehicle maintenance, helicopter maintenance, dive tanks, ordnance, large weapons, and equipment instruction.

Function: Instruction for specific hands-on applications often involving military equipment.

Occupancy: Student and instructor load is based on the particular requirements of the Applied Instruction and must be programmed on an individual basis.

Adjacency Reqmnts: Applied Instruction often requires bringing in equipment, therefore facilities must be located near delivery.

Space requirement: Total net area is based on the particular requirements of the Applied Instruction and must be programmed on an individual basis.

Acoustics: Consider appropriate acoustic treatments to separate from classroom and administrative spaces. Partitions shall be STC 45 minimum.

F/F/E: F/F/E requirements are specific to the instruction being taught.

Finishes: Finishes are generally more industrial in durability and appearance than used for General Instruction spaces.

Communications: Provide telephone and LAN receptacles.

2-7 SUPPORT SPACES

2-7.1 **Vestibule.** (Category Code 17120) A vestibule or air lock shall be provided at the main entrance.

Function: Reduce drafts and improve energy efficiency.

Adjacency Reqmnts: Exterior and Lobby

Space requirement: Total net area of 7.4 m^2 [80 s.f.]. The net area is part of the gross area factor calculation.

Mechanical: Space may be heated in cool climates.

Finishes: See the Finish Schedule for standard finishes. Use durable materials and take the opportunity to continue exterior material palette into the building.

Other Requirements: Provide a recessed entrance floor mat. Exterior glazing should be insulated.

2-7.2 **Student Break and Vending Area.** (Category Code 17120) Separate instructors and students break areas required. Student Break area works well as an open “food court” style space in coordination with the Vending Area, offering flexibility in types of seating and gathering. A variety of machines/food selection is necessary. The installation shall determine the number and type of machines to be used. Acoustic separation from classrooms is important. In two story facilities, a Break/Vending area may be required on each floor. In ACES facilities it is advantageous to locate this near the Reception area for over flow during class registration.

Designers shall coordinate with the installation AAFES on number and size of vending machines to be provided so the result will be a designed/coordinated space for the actual government provided equipment.

Function: Serves as a snack vending and break area for students and workers.

Adjacency Reqmnts: Adjacent to corridor and vertical circulation. Restrooms and drinking fountains shall be located nearby. Relationship to outdoor areas is desirable.

Space requirement: Total net area is calculated at approximately 6% of the gross area subtotal.

Acoustics: Determined by surrounding spaces.

Plumbing: Include an electric water cooler nearby. Plumbing as required for vending machines (coffee).

Mechanical: Space shall be heated, cooled, and ventilated. Heat Load of the vending machines shall be included in cooling load calculations.

Electrical/Lighting: Provide receptacles for vending machines, refrigerator, coffee maker and microwave oven.

Communications: Include speaker for corridor PA system. Provide wall (Installation access only) telephone receptacles. Consider providing two pay phones. (Verify phone requirements with Installation).

F/F/E: Government shall provide trash/recycle receptacles, seating and tables. AAFES will provide vending machines. Provide tack boards.

Finishes: See the Finish Schedule for standard finishes. Casework with durable finishes.

Other Requirements: Exterior windows are desirable. Provide casework with lockable storage below. Plan for restocking of vending machines.

2-7.3 **Staff Break Area.** (Category Code 17120) Separate administrative staff and students break areas are required. Additional staff break areas may be required for instructors in multi-story facilities. In facilities with less than 30 staff, a staff break area is not usually provided. Generally staff will share the student vending machine. The staff space shall be an enclosed space. Acoustic separation from classrooms is important. Provide for handicapped accessibility.

Function: Serves as a snack and break area for staff.

Occupancy: 16 staff.

Adjacency Reqmnts: Adjacent to corridor and vertical circulation, near Administration areas.

Space requirement: Total net area of 27.9 m^2 [300 s.f.] is generally adequate. The net area is part of the gross area factor calculation.

Acoustics: Partitions shall be STC 45 minimum.

Plumbing: Plumbing connections for a refrigerator ice maker and coffee maker. Provide a single bowl polished stainless steel sink and instantaneous hot water dispenser.

Mechanical: Space shall be heated, cooled, and ventilated.

Electrical/Lighting: Provide convenience receptacles as well as receptacles for refrigerator and counter top appliances.

Communications: Provide telephone and LAN receptacles. Include speaker for corridor PA system.

F/F/E: Government shall provide trash/recycle receptacles, vending machines (if not provided elsewhere), refrigerator, coffee maker, microwave oven, seating and tables. Provide wall and base cabinets, and tack boards.

Finishes: See the Finish Schedule for standard finishes. Casework with durable finishes.

Other Requirements: Exterior windows are desirable. Provide casework with lockable storage below.

2-7.4 **Restrooms.** Plan on proper male/female ratio and for surges when classes break. Currently, many installations have a greater male instruction program than female and this must be considered when determining fixture counts. In facilities with more than 30 staff, separate administrative restrooms from student restrooms. Minimum number of fixtures shall be as required by International Plumbing Code (Business occupancy). Consider additional fixtures to handle surge of students. Arrange entrance to provide visual privacy.

Function:	Restrooms for occupants. Include accessible fixtures as required by code.
Adjacency Reqmnts:	Adjacent to corridor, near classrooms, student break and vending areas, staff break areas and administrative area.
Space requirement:	The area is part of the gross area factor calculation. Total net area is calculated at approximately 4% of gross area subtotal.
Plumbing:	Efficiently locate fixtures. Toilets, urinals, and lavatories shall have automatic valves. Installation shall determine if the valves are battery or hardwired. Provide a minimum of one floor drain with Trap Seal Primer connection; locate floor drain outside of traffic areas.
Mechanical:	Space shall be heated, cooled, and ventilated.
Electrical/Lighting:	Provide GFI-protected convenience receptacles. Provide occupancy sensors for automatic control of lighting.
Communications:	Include speaker for corridor PA system.
F/F/E:	Provide countertop-mounted lavatories, floor mounted toilets, and wall-hung urinals. Countertops shall be solid surfacing materials. Provide toilet partitions at each toilet, and urinal partitions between urinals. Partitions shall be solid polymer plastic, overhead-braced type. Provide the following toilet accessories: one continuous mirror full width of countertop at countertop mounted lavatories; full length mirror; one paper towel dispenser/waste receptacle per three toilet fixtures; one soap dispenser per lavatory; one toilet tissue dispenser per toilet; one robe hook on each toilet partition door. In addition, for Women's room provide one sanitary napkin disposal per toilet and consider one sanitary napkin/tampon vending machine. Toilet accessories shall be fabricated from stainless steel, provide semi-recessed units where possible. Government shall provide trash receptacles.
Finishes:	See the Finish Schedule for standard finishes.
Other Requirements:	Consider the need for showers and locker rooms on a per project basis. Actual need must be compared to available facilities (building location relative to other facilities such as housing and physical fitness centers).

2-7.5 **Janitor Closet.** Provide one at each group of toilets on each floor of the building. Minimum area: 4.5 m^2 [48 s.f.]. Room shall be accessed from the corridor. Provide one floor mounted mop sink and mop rack for three mops. One Janitor's Closet is required on each floor minimum.

Function:	Sink and storage of cleaning supplies, soap, paper products, floor buffer, and wet vacuum.

Adjacency Reqmnts: Near toilets.

Space requirement: Total net area of 4.5 m2 [48 s.f.] The net area is a part of the of the gross area factor calculation.

Plumbing: Faucet shall be designed to support a bucket and have a threaded end to receive a hose. Provide vacuum breaker for faucet.

Mechanical: Space shall be ventilated.

Electrical/Lighting: Provide a GFCI protected receptacle near the shelving wall.

F/F/E: Provide shelving.

Finishes: See the Finish Schedule for standard finishes.

2-7.6 **Mechanical Room.** Provide dedicated interior spaces and exterior areas for plumbing, fire protection, and HVAC equipment. Size and locate rooms (including doorways) to allow equipment removal and maintenance. Provide floor openings and vertical shaft spaces as necessary.

Function: Mechanical support spaces for the building.

Adjacency Reqmnts: Locate main mechanical room on ground floor with doors opening to exterior. Mechanical support spaces shall not be used for storage or other purposes; access to mechanical spaces will be limited to authorized personnel. Locate exterior mechanical equipment and air intake and openings in exterior walls to comply with force protection standards.

Space requirement: The area is part of the gross area factor calculation. Total net area equal to 5% of the gross building area subtotal for planning purposes. Actual required area shall be determined during programming based on Installations and environmental requirements.

Plumbing: Provide plumbing as required for functions of the space.

Mechanical: Space shall be heated independently from the remainder of the building. Space shall be ventilated.

Electrical/Lighting: Provide convenience receptacles as well as requirements for equipment.

Communications: Provide telephone service for energy management system and maintenance use.

Finishes: See the Finish Schedule for standard finishes.

Other Requirements: Locate air intake and exhaust openings to provide optimum indoor air quality. Locate air intakes to meet AT/FP requirements.

2-7.7 **Electrical Room.** Provide dedicated interior spaces and exterior areas for electrical equipment. Size and locate rooms (including doorways) to allow equipment removal and maintenance. Provide floor openings and vertical shaft spaces as necessary. Provide minimum of one electrical room per floor.

Function: Electrical support spaces for the building.

Adjacency Reqmnts: Locate main electrical equipment room on ground floor. Electrical rooms on upper floors should be located to allow efficient distribution. Size and locate rooms to allow equipment removal and maintenance. Electrical rooms shall not be used for storage or other purposes; access to electrical rooms will be limited to authorized personnel. Locate exterior electrical equipment to comply with force protection standards.

Space requirement: The area is part of the gross area factor calculation. Total net area equal to 1.5% of the gross building area subtotal for planning purposes. Actual required area shall be determined during programming based on Installations and environmental requirements.

Plumbing: Do not run plumbing over electrical panels.

Mechanical: Space shall be ventilated. Shall be cooled as necessary to keep the electrical equipment functioning properly.

Electrical/Lighting: Provide convenience receptacles.

Communications: Provide telephone service for fire alarm and security systems and maintenance use. Finishes: See the Finish Schedule for standard finishes.

Other Requirements: Electrical service to the building shall be underground. Provide masonry screen walls with lockable metal access gates around outdoor equipment Coordinate with requirements of Installation Design Guide. It is preferable to locate transformer within the screened mechanical equipment area. Comply with AT/FP standards.

2-7.8 **Communications (Comm) Room.** A Communications Room is required to manage building connection to telephone, fiber optic, cable television, and other infrastructure. For GIBs larger than 10,000 square feet, multiple Communications Rooms are required and are to be arranged in accordance with the I3A Technical Criteria. The room shall not be located remote from the Network Operations Center (NOC) or classrooms for the purpose of being located near Department of Public Works managed spaces such as Mechanical or Electrical Rooms. The Communications Room shall serve the NOC, which is the primary means of distributing information/communications systems through the facility to desktops. Provide additional communications closets as required to meet the I3A Technical Criteria.

Function: Communications service to the building.

Adjacency Reqmnts: Within service distance to NOC.

Space requirement: The area is part of the gross area factor calculation. Total net area of communications room(s) to be 1.1% of the Gross square footage of the building. Communications rooms must be a minimum dimension of 10x8 feet.

Mechanical: A dedicated system shall be provided for year round air conditioning. The unit shall control and maintain room temperature and humidity to meet criteria for Comm. Room. Provide positive pressure with respect to adjacent spaces.

Electrical/Lighting: Provide convenience receptacles and power connections and lighting in accordance with I3A criteria.

Communications: Provide telephone and LAN receptacles in accordance with I3A criteria.

F/F/E: GFGI distribution hardware, switches, servers, etc. Provide backboards and racks.

Finishes: See the Finish Schedule for standard finishes.

Other Requirements: Communications service to the building shall be underground.

2-7.9 **Corridors.** Provide as required for circulation; minimum corridor width shall be as required by applicable codes, but not less than 1829 mm [6 ft] for student areas (24384-mm to 36576-mm [8 to 12 ft] is appropriate in large facilities) and 1524 mm [5 ft] for administrative areas. Provide glazed aluminum (or other material as required by the Installation Design Guide) storefront doors at public entrances. Provide abuse-resistant wall material/finish in the corridors to applicable height. Provide insulated hollow metal doors and frames for exterior service areas.

Function: Circulation and egress; movement of equipment and people throughout

Adjacency Reqmnts: Adjacent to stairs, elevator, exterior entrances and classrooms, and other core areas.

Space requirement: Total net area as required by design. The net area of corridors is part of the gross area factor calculation.

Acoustics: See requirements for adjacent rooms

Mechanical: Space shall be heated and cooled.

Electrical/Lighting: Provide convenience receptacles (15 m [50 ft] o.c. minimum).

Communications: Provide wall telephone and LAN receptacles as required for safety and security. Public address system shall be provided in the corridors and public areas.

F/F/E: Provide room identification signage at doors to each room.

Finishes: See the Finish Schedule for standard finishes.

Other Requirements: Overhang or recess at exterior doors is desirable for weather protection. Provide vestibules at secondary entrances as required by the Installation. Coordinate user requirements for access control of exterior corridor doors. Where equipment on carts or dollies is regularly moved through corridors, add requirement for wall guard and corner guard protection

2-7.10 **Stairs.** Provide as required for circulation and egress in multi-story buildings. Interior stairs are preferable in most climates. A stair shall be conveniently located near the Lobby/Elevator/Public

Entrance to the building. Minimum stair width shall be as required by applicable codes, but not less than 1118 mm [44 inches.] The main student use stair should be at least four feet wide. Provide exit signage. Stair doors shall have glazed panels (comply with code requirements for fire ratings and safety glazing). Exterior stairs shall be cast-in-place concrete construction. Interior stairs shall be cast-in-place concrete or steel construction with concrete-filled treads. Open risers and metal grating treads are prohibited.

Function:	Circulation and egress, movement of equipment and people between floors.
Adjacency Reqmnts:	Adjacent to corridors, exterior entrances. Main stair should be located close to public main entrance.
Space requirement:	Total net area is part of the gross area factor calculation.
Mechanical:	Fire stairs shall be heated in cool climates. The main stair shall be cooled and heated.
Finishes:	See the Finish Schedule for standard finishes.

2-7.11 **Elevator.** Provide at least one hydraulic passenger elevator in each multi-story building. Some facilities will require an additional passenger and freight elevator but the designer should focus on convenient stair design and locations to minimize the need for elevators. Passenger elevator: 1134 kg [2,500 lb] capacity, minimum 22860 mm [75 feet] per minute speed; center opening doors. Elevator is required for handicapped accessibility to floors not on ground level.

Function:	Vertical conveyance of people, equipment and furniture.
Adjacency Reqmnts:	Adjacent to corridor, near main entry for public use. The freight elevator shall be located near the receiving and computer maintenance areas.
Space requirement:	Total net area is part of the gross area factor calculation.
Acoustics:	STC 48 for both the elevator shaft and the equipment room.
Plumbing:	Elevator pit shall have a sump as required by code.
Mechanical:	Equipment room shall be ventilated.
Electrical/Lighting:	Lighting in passenger elevators shall be recessed down lights
Communications:	As required by Elevator Code.
Finishes:	See the Finish Schedule for standard finishes. Car door and front: satin finish stainless steel. Hoist way entrance doors and frame: satin finish stainless steel.
Other Requirements:	Provide one elevator machine room in each multi-story building adjacent to elevator and corridor. Consider locating the machine room door on the exterior of the building to reduce noise in the building. Size to comply with equipment and code requirements.

2-7.12 **General Storage.** Storage is required for furniture, computers, etc. when rearranging classroom layout.

Function: Storage space for furniture and equipment.

Adjacency Reqmnts: Near classroom and receiving areas.

Space requirement: The net area is part of the gross area factor calculation. Total net area equal to 2% of the gross building area subtotal.

Mechanical: Space may be heated, cooled, and ventilated as determined by the storage requirement.

Electrical/Lighting: Day lighting is not desirable. Provide convenience power receptacle. Each room shall have individual lighting control that switches off automatically when the room is not in use[1].

Finishes: See the Finish Schedule for standard finishes.

2-8 OUTDOOR SPACE

2-8.1 **Outdoor Break Area.** This space is desirable in appropriate climates but do not locate where it will disturb classes. Assure this space is not located near mechanical fresh air intakes or noisy equipment.

Function: Near Break/Vending Area for staff and students.

Occupancy: 30 students.

Adjacency Reqmnts: Convenient to vending, away from main building entrance. Away from mechanical fresh air intake louvers.

Space requirement: Outdoor Break Area is not a part of the calculated area unless it is a covered space in which case the gross area is calculated at 50% of net. This would be programmed for the individual needs of the Installation.

Acoustics: Avoid conflicts with Classrooms.

Plumbing: Assure area is properly drained.

Electrical/Lighting: Provide area lighting for nighttime use.

Communications: Include area on the public address system.

F/F/E: GFGI appropriate seating and ash/trash/recycle receptacles as desired by the Installation. Comply with the Installation Design Guide.

Finishes: Low maintenance outdoor finishes. Comply with the Installation Design Guide.

Other Requirements: Assure surfaces are well drained.

[1] This is an Army Standard for GIB

2-8.2 **Parking.** Comply with the requirements of Technical Instructions 804-11 Design for Non-Organizational or Privately Owned Vehicle (POV) Site Circulation and Parking and Technical Instructions 800-01 Design Criteria, Chapter 3 Site Planning and Design Criteria. Special consideration is required for number of parking spaces when an ACES function is included in the project. ACES's may include off base students that will increase the parking requirement. ACES requires parking for 50% of the ACES classroom seats. Where located adjacent to existing activities, consider shared parking areas

Function: Parking for staff and students.

Adjacency Reqmnts: Near entrances, accessible from roads, and in compliance with ATFP standards.

Electrical/Lighting: Provide lighting in compliance with the Installation Design Guide.

F/F/E: Comply with the Installation Design Guide.

Finishes: Comply with the Installation Design Guide for signage, lighting and furnishings.

2-8.3 **Equipment Yard.** Equipment yards shall be provided in compliance with ATFP and the Installation Design Guide to house and screen mechanical and electrical equipment, satellite antennas, emergency generators, etc. Access to the yards shall be provided for maintenance; consider the use of turf pavers for vehicle access.

Function: To enclose and screen equipment from view.

Adjacency Reqmnts: Place out of the main pedestrian and vehicular flow but in a location that can be accessed for repair work and convenient for utility lines to the mechanical/electrical rooms. Comply with ATFP setback from buildings.

Finishes: Comply with the Installation Design Guide.

Electrical/Lighting: Provide outdoor weatherproof receptacle outlets for maintenance purposes.

Other Requirements: Provide masonry screen walls. Coordinate with requirements of Installation Design Guide.

2-8.4 **Dumpster Enclosure.** If a dumpster is provided, provide an enclosure. Consider accomodating recycling in the same enclosure.

Function: To enclose dumpsters and screen from view.

Adjacency Reqmnts: Place out of the main pedestrian and vehicular flow but in a location that can be accessed by truck for emptying the dumpster. Comply with AT/FP required setback from buildings.

F/F/E: Provide bollards on the exterior to protect from vehicles. Provide bollards on the interior to prevent dumpsters from bumping the rear wall.

Finishes: Comply with the Installation Design Guide.

Other Requirements: Provide size, gates and landscape in accordance with the Installation Design Guide. Assure the height is adequate for the dumpsters to be used. Provide a reinforced concrete apron for the front tires of the truck to bear on. Use landscape screening.

2-8.5 **Outdoor Storage.** Storage facility for outdoor equipment such as lawn maintenance equipment may be considered. The structure must be consistent with Installation Design Guide and same architectural theme and color scheme as the GIB.

Function: To store equipment away from the building.

Adjacency Reqmnts: Place out of the main pedestrian and vehicular flow but in a location that can be accessed by lawn maintenance equipment. Comply with AT/FP required setback from buildings.

Space requirement: Net area of approximately 11.1 m^2 [120 s.f.] is required. Confirm with Installation.

Finishes: Comply with the Installation Design Guide.

Other Requirements: Use landscape screening.

CHAPTER 3

FACILITY DESIGN

3 **FACILITY DESIGN.** Work shall be in accordance with the current versions of Army Design Guides, Technical Manuals, Technical Instructions and applicable codes and standards

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3-1 SITE PLANNING AND CIVIL ENGINEERING

3-1.1 **Design Standards and Codes.** Comply with UFC 3-210-01A Area Planning, Site Planning and Design for site planning and civil engineering and UFC 4-010-01 DOD Minimum Antiterrorism Standards for Buildings, as well as other applicable requirements.

3-1.2 **Site Planning Objective.** Provide a functional layout of buildings and site elements. The site plan should place emphasis on creating a safe work environment. Arrange vehicular circulation to minimize conflict with pedestrian circulation. Pavement marking and signage shall clearly delineate traffic patterns, especially important to first time visitors at the site. Integrate sustainable design principles by retaining and using existing topography to advantage; preserve environmentally sensitive areas and reduce overall project impact on the site.

3-1.3 **Site Selection.** The location of the facility shall be integrated with the Installation Master Plan and be consistent with the approved Land Use Plan and Army Installation Design Standards. It shall be located in an accessible area based on the use of the facility. When NCO training is included it shall have temporary duty housing nearby. When used as an ACES facility it shall be convenient to students located on and off post. Consider requirements for future expansion as well as transient service requirements. Use sustainable planning and design principles to take advantage of passive energy and siting efficiencies.

3-1.4 **Site Design.** Site planning is an essential aspect of the facility design. The art of site planning requires the interdisciplinary involvement of the community planner, architect, landscape architect, civil, mechanical, electrical, and communication engineers. Community planning is an integral part of site planning. The facility must be located in relation to other functional areas such as temporary duty housing, transportation facilities, an auditorium, library, ACES facility, dining facilities and housing where the facility is a consolidated GIB/ACES facility. Siting should consider shared use parking based on the time that adjacent facilities are in use. The design of vehicular paths, pedestrian paths and landscape design can define the functional campus yet enhance the flow into and out of the area. Provide appropriate buffer areas to separate and visually isolate the facility from adjacent areas. Consider providing landscaping or other screening between incompatible land uses.

3-1.5 **Vehicle Traffic.** Site the facility so it is clearly visible to pedestrians, cars and delivery vehicles. Separate service/delivery access from the student/staff access and circulation. Plan for daily deliveries to the loading area in larger facilities. Control vehicular access within UFC 4-010-01 standoff distances for the building.

3-1.6 **Parking and Vehicular Circulation.** Comply with UFC 3-210-02 Privately Owned Vehicles (POV) Site Circulation and Parking. Coordinate parking and vehicular circulation with AT/FP standards. A site traffic impact study should be done to determine the traffic patterns and impact on the local roads and circulation patterns. Access requirements for fire equipment, trash/recycling

removal, and service vehicles on site should be considered. Consider shared use parking with adjacent sites. Design entrance and exit drives for safe and controlled traffic flow. Consider pavement maintenance and snow removal (if applicable) in the design. Consider the use of alternate materials such as turf pavers for service vehicle access to mechanical rooms. Provide concrete paved parking for motorcycles. Pavement for organizational vehicle parking should be designed for the heaviest vehicle at the installation. Provide handicap-parking areas when required.

3-1.7 **Walkways.** Connect the building to public walkway system and to parking with pedestrian walkways. Primary building entrances shall be at least 2438 mm [8 ft] wide. The minimum width of a sidewalk shall be 1524 mm [5 ft]. Place handicapped curb cuts in convenient locations while not creating obstacles for walkers. Depress curbs for handicapped access where possible instead of creating ramps. Consider brick or concrete pavers or patterned concrete to identify significant entrances. Provide well-lighted walkways since the facility is often used in the evening (especially if it is to be used as an ACES).

3-1.8 **Grading and Drainage.** The grading should maintain existing topography while recognizing standard gradients. There should be a balance of the quantity of cut and fill soils which would create a smooth transition of graded areas into the existing natural site. The plan should reflect selective site clearing that preserves groups of trees. Grading should manage site runoff to maintain rate of flow and quantity to pre-construction levels, or reduce site runoff where possible. The principles of positive drainage should be applied to control the conditions that remove rainfall away from facilities and functions. Site design should seek to minimize the disturbance of land, and utilize natural drainage paths where possible. Federal, State and local regulations regarding the design of storm water management systems shall establish minimum design criteria. Coordinate requirements for downspouts, underground and surface drainage with the Installation. Limit sheet drainage in pedestrian and parking areas. Rather than creating large retention basins, control storm water at the source by using micro-scale features that are distributed throughout the site. Integrate the landscape design into the storm water management strategy, creating plant areas that benefit from storm water while pollutants are controlled through natural processes. Additionally, minimize the impact of construction activities on drainage and prevent loss of soils by water and wind erosion.

3-1.9 **Utilities.** Consider the location and adequacy of existing utilities and their connection points when making the site selection and building orientation. The required services include water, sewer, storm water, electricity, telephone, cable television, fiber optics, possibly gas or steam lines, emergency generator, or satellite antennas.

3-1.10 **Stormwater Management Systems.** The storm drainage system shall be properly coordinated with surrounding properties to ensure that runoff does not cause damage to other properties. Treat contaminated storm water prior to discharge from the site. Design storm water management systems in accordance with the applicable requirements of “Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPS”, by the Department of Environmental Programs or in accordance with the requirements of the agency having jurisdiction. Coordinate requirements for an on-site storm water retention/detention system based on the requirements of the Installation. Connection to building roof (as required by the Installation) or area drain lines shall be constructed in accordance with the International Building Code latest edition.

3-1.11 **Outdoor Furnishings.** Provide outdoor furnishings including trash and recycling receptacles, seating, bicycle racks, lighting standards, bollards in coordination with the Installation Design Guide. Where the climate is acceptable, provide outdoor break areas with tables, seating and shading devices.

3-1.12 **Signage.** Plan site identification signage in coordination with site approach, landscape, and

lighting. Comply with the Installation Design Guide and the Army Installation Design Standards.

Provide traffic control signage as well as “No Parking” signs at service drives. Provide informational signs to direct students to appropriate entries.

3-1.13 **Site Lighting.** Site lighting is an integral part of the design. Comply with the requirements of the Installation Design Guide. Provide lighting to ensure safe movement through outdoor areas. Consider the color rendition of outdoor lighting. Use bollards or variations in lighting to articulate entrances and public areas. Design lighting levels in accordance with the *Illuminating Engineering Society (IES) Lighting Handbook* illumination levels. Use photocells, motion detectors and timers to control lighting and conserve energy.

3-2 LANDSCAPE DESIGN

3-2.1 **Landscaping.** Coordinate the landscape design with AT/FP and Installation requirements. Preserve natural landscape features including existing topography, trees, and vegetation. Provide windbreaks and shading where appropriate. Consider earth berms to screen parking and roadways. Where berms or swales are used use gradual slopes no greater than 1:5 to allow use of mowing equipment. Screen service area and outdoor equipment. Shade parking areas to reduce heat developed by exposed pavement. Landscaping shall be in accordance with requirements of the Installation. Where appropriate, provide a variety of plants with seasonal change, color, texture, fragrance, and interpretive value. Always use local, durable, native species to help ensure survivability. The use of native plants will also minimize the requirement for chemical pesticides, herbicides and watering. Choose plant materials on the basis of plant hardiness, climate, soil conditions, low maintenance, and quality. Selected plant materials shall be easily maintained and tolerant of the specific site conditions. Incorporate sustainable design principles into the selection of plants. Planting or seeding shall occur only during periods when beneficial results can be obtained. Plant varieties shall be nursery grown or plantation grown stock. They shall be grown under climatic conditions similar to those in the locality of the project. Plants shall be furnished that have heavy, well developed, and balanced top with vigorous well developed root system, and shall be furnished in containers.

3-2.2 **Soil Test.** A soil test shall be performed for pH, chemical analysis, and mechanical analysis to establish the quantities and type of soil amendments required to meet local growing conditions for the type and variety of plant material specified.

3-2.3 **Sprinkler and/or Irrigation System.** In accordance with the Installation requirements, where required provide a complete permanent automatic irrigation system with controllers covering all common planting areas and slopes. Design the system to function with available water pressure or other sources of water to minimize use of treated water. Where automatic sprinkler systems are used, provide hydrometer control to prevent inappropriate watering. Investigate and employ methods of irrigation based on sustainable design principles, where practical and feasible.

3-3 GEOTECHNICAL.

3-3.1 **Geotechnical Design.** Geotechnical information shall be considered during the planning of the project. Where confident assumptions may be made based on past projects in the area, the geotechnical investigation may take place during the design phase. The geotechnical information is to consider loads from the structure, pavement, walkways, and vehicles. It shall assess the sub-surface

condition determining soil type, density, and moisture content. Where significant debris is expected to exist on site, excavations shall be performed.

3-3.2 **Capillary Water Barrier.** A capillary water barrier is required for all interior slabs on grade, including storage, loading dock, mechanical and electrical spaces.

3-3.3 **Termite Treatment.** Preventive methods for subterranean termites shall be applied in accordance with local regulations.

3-3.4 **Radon Testing.** Test shall be performed for potential radon exposure to occupants in accordance with UFC 3-490-04A.

3-4 STRUCTURAL.

3-4.1 The structural design shall be based on accurate geo-technical information and anticipated loads for the building type and geographic location. Select an economical structural system based on facility size, projected load requirements, and local availability of materials and labor. Consider the use of pre-engineered systems and components when conducting economic analysis. Structural design should allow flexibility for future interior reconfiguration.

3-4.2 **Structural Loads.** Structural loads (including dead, live, hydrodynamic, earth, vehicular, snow, wind, seismic loads and AT/FP) and design shall be in accordance with UFC 1-200-01 Design: General Building Requirements and all codes referenced therein. According to IBC, Computer access flooring shall be rated for at least 488 kg/m² [100 psf].

3-5 ARCHITECTURE.

3-5.1 **Design Standards and Codes.** The design shall be in accordance with the current versions of the Unified Facilities Criteria UFC 1-200-01 Design: General Building Requirements and other relevant codes and criteria.

3-5.2 **Goals and Objectives.** Overall architectural goals for the facility are to provide a functional, visually appealing facility that is a source of pride for facility users, and the installation, instilling attitudes of a high level of achievement and environmental awareness. Provide coherent, architecturally compatible design consistent with the Installation's architectural theme.

3-5.2.1 **Exterior Design Objectives.** Design buildings to enhance the visual environment of the installation. Exterior materials, roof forms, and detailing shall comply with the Installation Design Guide to the extent permissible by MILCON Business Process (formerly MILCON Transformation), and shall be compatible with the immediate local context. Use durable, low-maintenance materials. Configure building massing and use exterior elements such as entry focal points and material detailing to provide human scale, especially at public areas.

3-5.2.2 **Interior Design Objectives.** Arrange spaces in an efficient, functional manner. Provide simple circulation schemes that allow easy way finding within buildings. Use durable materials and furnishings that can be easily maintained and replaced. Use interior surfaces that are light in color; avoid trendy or bright color schemes. Where feasible, arrange spaces to allow rearrangement of furniture layout. Structure interior spaces to allow maximum flexibility for future modifications.

Maximize use of day lighting and operable windows.

3-5.3 **Flexibility.** The need for flexibility is primarily related to interior functional layouts where functional changes are normal operation. Changes may routinely take place in courses being taught, the materials required by the course, teaching techniques, and student load. Multipurpose use should be considered in design of floor loads, ceiling heights and floor systems. Provisions for and location of adequate storage space is important, as is the capability of adapting environmental services for changing requirements.

3-5.4 **Material and Product Selection Criteria.** Materials shall meet the requirements of the criteria. The criterion includes a range of specificity: some material requirements are specific (no option); other material requirements allow a range of options. The criteria requirements establish a minimum quality level.

3-5.5 **Exterior Design.**

3-5.5.1 **Entrances.** Building entrances for the public shall be identifiable and sheltered from harsh weather. Materials, such as flooring, storefront, hardware, etc., shall be exceptionally durable for high use. Entrances shall be accessible to handicapped. Entrances should offer a transparency for recognizing activity in the building. Service entrances shall be screened. Consider alarming egress doors that are not desirable for building access; this will improve security and deter theft.

3-5.5.2 **Building Systems.** Consider efficient yet durable building systems that compliment flexibility. Interior load bearing partitions often deter future re-design for changing needs.

3-5.5.3 **Windows.** Windows in classrooms should be placed high on the wall for small classes in order to preserve more useable wall space for projection screens and white boards. All exterior windows in occupied spaces shall have blinds to control sunlight. Windows in this facility type must satisfy the requirements of UFC 4010-01 Design: Minimum Antiterrorism Standards for Buildings.

3-5.5.4 **Signage.** Comply with IDG for interior and exterior signage. The exterior facility sign shall be illuminated. Provide additional site signage for handicapped accessible parking and traffic control. Provide a “No Parking” sign at the service drive and any required drive within 25 meters of the building.

3-5.5.5 **Roof.** Comply with the NRCA roofing and waterproofing Manual. Slope roof shall have minimum slope of 2:12, and flat roof shall have minimum slope of 1/4 inch per 12 inches to drain.

3-5.6 **Interior Design.**

3-5.6.1 **Scope.** Interior design shall consider creation of spaces, circulation, and functional use as well as materials and colors that compliment the instructional and learning experience.

3-5.6.2 **Circulation.** Vestibules, corridors, stairs, elevators and common spaces shall be linked in obvious ways to make circulation convenient and clear. Low and mid-rise facilities shall not rely on elevators as the primary source of circulation. Stairs shall be located for convenience as well as life safety. Use materials in circulation areas that will control and reduce noise.

3-5.6.3 **Floors.** Consider the requirements for durability in areas that will receive more traffic and areas that have high abuse. Porcelain tile is identified for traffic areas but other durable products such as terrazzo may be considered. Consider using a water proofing membrane and mortar bed for thick setting materials. Coordinate Installation requirements that may require recessed structure. Carpet is

not to be used in high traffic areas such as stairs, corridors, and typical classrooms. Where carpet is used consider carpet tile in a multi-color pattern. In Communication and NOC Rooms provide non-static flooring. Carpet static control shall be provided to permanently control static buildup to less than 3.5 kv when tested at 20% relative humidity and 70 degrees F in accordance with AATCC 134.

3-5.6.4 **Raised Access Floors.** Raised access floor has sometimes been found to meet life cycle requirements allowing for quick reconfiguration of electrical and communication systems to serve the changing needs for technology through less disruption to the permanently fixed floors and walls. Projects in the planning phase shall consider programming raised access floor (or some flexible system of providing power and data) throughout the education, communication and electrical areas of the building or in individual areas. Raised floor is not necessary for mechanical, administrative, service and support areas. When considering access flooring in optional areas, designers shall perform an economic analysis relative to anticipated use. Other alternatives should also be considered such as wall or floor raceways, recessed duct banks, and redundant floor or wall receptacles. “Tombstone” type floor receptacles are not acceptable.

Laminate or tile floor finish is desirable in high traffic areas. Where a plenum is used below the floor for mechanical requirements, additional space and fire stopping is required. Low profile 102 – 127 mm [4” – 5”] access flooring may be used in areas with minor cable requirements. Classroom XXI requires access floor and the low profile floor system has been successful.

3-5.6.5 **Interior Walls and Partitions**[1] **.** Non-combustible construction is preferable, even where combustible materials are allowed by code. A better level of materials is required for GIBs to reinforce the desired level of professionalism and achievement the Army is pursuing in the education of the military force. Painted gypsum board or plaster shall be the standard, although designs should consider using reconfigurable partitions for future room change requirements. Moveable partitions should also be considered to allow similar room types to be expanded on occasion. When reconfigurable or moveable partitions are used, other requirements such as acoustic ratings and equipment locations must be considered. Metal studs for interior partitions shall not be lighter than 20ga. Use chair rails in small rooms with moveable furniture.

3-5.6.6 **Room Dividers.** Where multiple classrooms are located adjacent to one another, moveable partitions (panel type) shall be used in at least one location to allow classrooms to be opened into a larger instruction space. Consider the stacking requirement for the partition. See acoustic requirements in paragraph 3-5.6.22.

3-5.6.7 **Ceilings and Ceiling Heights.** Ceilings are identified in the finish schedule generically. Where acoustic tile is used, gypsum board or plaster may be incorporated to add interest such as bulkheads, soffits or other patterns. In acoustically rated spaces the wall/partition shall penetrate the ceiling. The acoustic rating shall include the entire envelope, therefore requiring partitions to extend to the structure above or treatment of the ceiling to prevent sound from transmitting over the partition.

Refer to the Finish Schedule for minimum ceiling heights. Any room with a ceiling mounted projector must have a ceiling at least 2.7 m [9 ft] high. Classroom XXI requires 3658 mm [12’] high ceilings. This is sometimes impossible in renovation projects. In difficult situations, if a 3048 mm [10’] foot ceiling cannot be provided for Classroom XXI alternative spaces should be investigated. Classrooms and conference rooms with forty (40) or more people should have at least 3048 mm [10’] ceilings. Classrooms and conference rooms with sixty (60) or more people should have at least 3353 [11’] ceilings.

3-5.6.8 **Window Treatments.** Typically, in occupied spaces, exterior windows shall have window blinds capable of being adjusted to control natural lighting. Consider blinds in public spaces that will

not produce maintenance problem. In Classroom XXI and VTT classrooms lighting control is critical and shall be handled by the addition of blackout drapes or shutters.

3-5.6.9 **Interior Doors and Frames.** Provide hollow metal frames and solid core wood doors generally. Hollow metal doors are acceptable at service areas. Where equipment will be moved in and out often such as transient classrooms, consider double doors. Doors at classrooms, counselors, and conference rooms shall have a small glazed vision.

3-5.6.10 **Door Finish Hardware.** Locks shall be series 1000 mortised locks. Classrooms shall be locked and opened by the Building Manager's office when needed for classes. Integrate with the Installation locking system where possible. Use programmable electronic card access locks[1]. For NCO academies there is often an interest in using cipher locks for specific classrooms.

3-5.6.11 **Elevators.** Consider service use of the elevators when making material selections. The elevator shall have the same level of design as other portions of the building in terms of quality of materials. Stainless steel doors and entrances are preferred. Carpeted floors are acceptable in low service use elevators since it is easily replaced.

3-5.6.12 **Coat Storage.** Consider project specific requirements for coat storage. This usually takes place inside of classrooms. Storage in corridors is not acceptable.

3-5.6.13 **Interactive Whiteboard.** Interactive Whiteboards will be wall mounted in coordination with other equipment in the room. Installation will be by TRADOC, however, provide power to approximate locations in coordination with TRADOC . Early coordination with TRADOC is essential. Small classrooms and meeting rooms, but not large classrooms or Classroom XXI or full time VTT rooms, may use the white board as a projection surface. The board is used to write and edit notes to work in projected and non-projected modes. The board is able to capture notes and save them to a digital file. The system shall be fully integrated into the classroom with concealed power and data. TRADOC normally determines the size of the boards based on current models and room requirements. Units are self-contained with all operating software included with each board. Do not provide wall recesses, since the final board size may change during the design in response to the availability of more desirable larger models.

LCD panels located at lecterns or instructor's workstation and provide the same functions as interactive whiteboards may be used to replace the white boards. This will allow instructors to work without turning their backs to students or blocking the information.

3-5.6.14 **Whiteboard/Marker board.** Marker board shall have a porcelain enamel writing surface (on a steel backing) and chalk tray. It shall be a factory assembled unit complete in one piece, without joints whenever possible. Marker board shall include a map rail with a tackable insert and shall have map hooks with clips for holding sheets of paper. Dry erase markings shall be removable with a felt eraser or dry cloth without ghosting. Unit shall come complete with accessories. Installations shall determine the size of the boards based on current models and room requirements.

3-5.6.15 **Tack board.** Tack board should have fabric wall covering laminated to cork, insulation board or fiberboard and framed to match other specialties in the space. In offices, tack board and whiteboard may be a combination unit. Installations shall determine the size of the boards based on current models and room requirements.

3-5.6.16 **Projection Screen.** Ceiling mounted motorized projection screen should be motor operated in large rooms. Installation will be by TRADOC, however, provide power to approximate locations in coordination with TRADOC . Early coordination with TRADOC is essential. Screens are motorized

with 3-position control switching to stop or reverse screen at any point. Accommodate recessed ceiling mounted case. Coordinate with TRADOC on exact size. However, screens are typically at least 1828-mm [72”] high x 2134-mm [84”] wide or larger as appropriate for room size. Bottom of screen should be no lower than 914-mm [36”]. TRADOC will provide controls and wiring that integrate with the interactive lectern/instructor’s workstation in rooms where they are required.

3-5.6.17 **Projectors and Brackets.** Provide sufficient blocking and structure to accommodate TRADOC provided ceiling mounted projectors and bracket supports with concealed power and control wiring. Fixed brackets are typically used. Models are selected based on individual classroom requirements, and early coordination with TRADOC is essential in order to define the loading requirements and locations..

3-5.6.18 **Lectern.** Interactive Lecterns shall be enclosed metal or wood cabinets manufactured specifically as a lectern. They shall integrate control of room lights, projector, and sound system in large classrooms (50 or more students), large conference rooms (50 or more people), and auditoriums. It shall include a sloped reading surface, reading light, sound system, wireless microphone, clock with countdown feature, and space/connectivity for a computer. The lectern shall be coordinated with building electrical power and lighting and LAN. Cabling shall be concealed. As indicated in the space narratives, instructor’s desk with the same functions should be used for VTT and Classroom XXI in lieu of a lectern. Lectern requirements shall be coordinated for each project to address special needs such as rack-mounted computer. Some large auditoriums may require 2 lecterns. All control wiring for classroom A/V equipment is provided by TRADOC.

3-5.6.19 **Furniture.** Desk and chairs for students and staff shall be heavy duty, ergonomic designs for high use. The use of keyboard trays will be up to the local school based on their teaching situation (classes that seldom use computers but require maps and books on the desk will prefer keyboard trays). In automated classrooms, such as VTT and Classroom XXI, key board trays should not be used. Desk that has keyboards on the top should be 686 mm [27”] high for proper typing ergonomics. Consider desk with recessed computer monitors for ACES classrooms where a variety of classes are taught for short durations (looking through the desktop at a monitor for a long period of time is not ergonomic). Student desk shall be modular and have appropriate wire management to allow easy reconfiguration of spaces. Where desktop computers are used, consider flat screen monitors to use less desk space and provide better sight lines to the front of the class.

Desks should be steel frame based using at least 18-gauge steel with high-density particleboard or plywood to minimize lifecycle costs. Student desk should be approximately 914 mm [3 feet] wide by 762 mm [30 inches] deep. This may vary based on the subject being taught and the inclusion of applied instruction. Where students work in pairs, a singlewide desk may be required. Where use of equipment or printed maps/drawings is taught, a deeper and occasionally wider desk may be required. In the case of applied instruction such as the operation and repair of radios, special desk are required to support and power equipment. These things should be considered in the planning process.

Administrative spaces should make use of systems furniture where possible and should include integral cabling and task lighting. Desktops shall have medium to low reflectivity durable surfaces. Conference room tables shall be modular to allow for reconfiguration and removal from the room. Common area furniture such as in Lounges shall be durable, comfortable and reconfigurable.

Fixed auditorium seating should consider riser mounting to keep the floor open. Consider the need for writing tablets, data and power connections in special situations.

3-5.6.20 **Signage.** Provide interior room identification signage for all rooms. Provide gloss or matte finish plaques with slots in base laminate for insertion of changeable message strips. Auditoriums and

conference room signage shall have an “In Use” feature. Provide a building directory at the public entrance. In large complex facilities provide a graphic directory indicating orientation of the building from the location the directory is placed.

3-5.6.21 **Finish Schedule.** A finish schedule is provided to establish minimum levels of acceptance. The designer in conjunction with the Installation should determine the requirements for the specific project in compliance with Army Standards. Ceiling heights are minimum recommended. See room descriptions for higher ceilings in large spaces. It is understood some renovation projects may not be able to achieve the higher ceiling heights.

Space Name	Floor	Base	Walls	Ceiling	Clg Hgt Minimum
EDUCATION SPACES					
Traditional Classroom	Vinyl Tile	Resilient	Paint	Susp Acou	3048 mm[10 ft]
Multi-Purpose Classroom	Vinyl Tile	Resilient	Paint,	Susp Acou	3048 mm[10 ft]
Seminar Model Classroom	Vinyl Tile	Resilient	Paint	Susp Acou	2743 mm[9 ft]
CTC	Vinyl Tile	Resilient	Paint	Susp Acou	2743 mm[9 ft]
NCO Training Space	Vinyl Tile	Resilient	Paint	Susp Acou	3048 mm[10 ft]
Video-Tele Training	Carpet	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Classroom XXI	Carpet	Resilient	Paint	Susp Acou	3658 mm[12 ft]
DTAC	Carpet	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Resource Center	Vinyl Tile	Resilient	Paint	Susp Acou	2743 mm[9 ft]
ADMINISTRATION SPACES					
Information/Reception	Tile	Resilient	Paint	Susp Acou	3048 mm[10 ft]
Instructors Offices	Carpet	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Director’s Office	Carpet	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Administration Office	Carpet	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Building Manager	Carpet	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Conference Room	Carpet	Resilient	Paint/pan	Susp Acou	2743 mm[9 ft]
NOC	Vinyl Tile	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Computer Maintenance	Vinyl Tile	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Loading Dock	Concrete	NA	E Wall	Plaster	3048 mm[10 ft]
Transient Storage	Concrete	Resilient	Paint	Open Struct	3048 mm[10 ft]
Record Storage	Vinyl Tile	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Copy Room	Vinyl Tile	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Supply Storage	Vinyl Tile	Resilient	Paint	Paint Gyp	2743 mm[9 ft]
SPECIAL FUNCTIONAL USE AREAS					
Small Arms Training	Vinyl Tile	Resilient	Paint	Susp Acou	3048 mm[10 ft]
Arms Vault	Concrete	Resilient	Paint,	Conc.	2438 mm[8 ft]
Fixed Seat Auditorium	Vinyl Tile	Resilient	Paint	Susp Acou	Varies
Multipurpose Auditorium	Vinyl Tile	Resilient	Paint	Susp Acou	3048 mm[10 ft]
College Office	Carpet	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Counselors	Carpet	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Testing Rooms	Vinyl Tile	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Testing Control Room	Carpet	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Testing Administrator	Carpet	Resilient	Paint	Susp Acou	2743 mm[9 ft]
Broadcast Studio	Carpet	Resilient	Paint	Susp Acou	3048 mm[10 ft]
AIB Module	Varies	Resilient	Paint	Susp Acou	Varies
SUPPORT SPACES					
Vestibule	Tile	Tile	Paint	Susp Acou	2743 mm [9 ft]

Student Break/Vending	Tile	Tile	Paint,	Susp Acou	2743 mm [9 ft]
Staff Break Area	Tile	Tile	Paint	Susp Acou	2743 mm [9 ft]
Restrooms	Ceramic	Ceramic	Paint	Susp Acou	2438 mm [8 ft]
Janitor Closet	Ceramic	Ceramic	Paint	Paint Gyp	2438 mm [8 ft]
Mechanical Room	Concrete	NA	Paint	Open Struc	NA
Electrical Room	Concrete	NA	Paint	Open Struc	NA
Comm Room	Vinyl Tile	Resilient	Paint	Susp Acou	2743 mm [9 ft]
Corridors	Tile	Tile	Paint	Susp Acou	2743 mm [9 ft]
Lobby Stair	Tile	Tile	Paint	Susp Acou	2743 mm [9 ft]
Stairs	Vinyl Tile	Resilient	Paint	Susp Acou	2438 mm [8 ft]
Elevator	Carpet	Lamin	Lamin	Metal	2235 mm[7ft4”]
General Storage	Vinyl Tile	Resilient	Paint	Susp Acou	2743 mm [9 ft]

Abbreviations:

Ceramic	Ceramic Tile
Concrete	Sealed Concrete
E Wall	Exterior Wall Construction
Lamin	Laminate Panels
NA	Not Applicable
Susp Acou	Suspended Acoustic Tile
Paint Gyp	Painted gypsum bd
Pan	Acoustical wall panels
Conc	Concrete
Tile	Large Porcelain or Ceramic Tile

3-5.6.22 **Acoustic Design.**

Design. Designers and planners must consider environmental as well as functional noise when locating and designing instruction facilities. Where possible avoid background noise from traffic, airfields, outdoor activities and mechanical equipment. Work within the building to acoustically separate classrooms from student gathering areas, mechanical equipment, restrooms, etc. Extend acoustically rated partitions to the horizontal acoustic element such as the roof deck or floor slab above (acoustic ceilings do not effectively stop sound transmission over partitions). Use acoustic doors in sound rated partitions. Consider acoustic windows in exterior walls. Separate and seal penetrations in rated partitions. Locate mechanical equipment in less sensitive areas such as over corridors. Use low noise ballasts in light fixtures. Realize the use of operable partitions increases noise levels.

Reverberation. Effective learning requires students be able to hear. The Signal Noise Ratio (SNR) and Reverberation Time are key factors for intelligible hearing. A successful SNR is 15 decibels (dB) or more. For instance, an instructor’s voice should be approximately 50 decibels average weighted (dBA) at the rear of the classroom. To achieve a SNR 15 the ambient noise in the room cannot be greater than 35 dBA. Likewise the reverberation time or length of time it takes a sound to decay should not exceed 0.6 – 0.7 seconds to avoid build-up of noise and degradation of speech.

Space Requirements.

- Classrooms and large meeting spaces (which we will define as 15 students or more) with a volume less than 283 cubic meters [10,000 cubic feet] should have background noise levels of

35dBA or less and a reverberation time of no more than 0.6 seconds.

- Classroom and large meeting spaces with a volume between 283 cubic meters [10,000 cubic feet] and 566 cubic meters [20,000 cubic feet] should have background noise levels of 35dBA or less and a reverberation time of no more than 0.7 seconds.
- Classrooms and large meeting spaces with a volume of 566 cubic meters [20,000 cubic feet] or more should have background noise levels of 40dBA. An acoustic designer should determine the reverberation time in compliance with ANSI S12.60 2002.

STC/IIC/NRC. To achieve these sound levels and reverberation limits walls/partitions, floors, and ceilings must have certain Sound Transmission Class (STC), Impact Insulation Class (IIC) and Noise Reduction Coefficient (NRC) ratings. The STC rating is a measure of the isolation provided between adjacent surfaces for noises in the range of common speech. The IIC rating is similar but measures the isolation of impact noise between a space and the space below it. The higher the STC or IIC number the greater the isolation. The NRC is a measure of a materials ability to absorb the sound within a space when the sound waves hit it. The NRC is described in hundredths using a decimal point such as .65 NRC.

- This standard will use the following minimum wall STC ratings for classrooms and meeting spaces for 15 or more students-
  - STC-45 adjacent to circulation spaces, offices, and conference rooms.
  - STC-50 adjacent to other classrooms/meeting spaces or outdoors.
  - STC-53 adjacent to restrooms.
  - STC-60 adjacent to mechanical room and student gathering areas.
  - STC-47 for moveable partitions.

- This standard will require STC-30 or higher ratings for classrooms/meeting space doors.

- This standard will use an IIC of 50 (recommended) and 45 (minimum) for spaces above classrooms/meeting spaces in new construction.

- Classrooms/meeting spaces should have a ceiling with a NRC of 0.70 or higher.

3-6 FIRE PROTECTION

3-6.1 **Design Standards and Codes.** The fire protection design for all facilities shall be in accordance with the current versions of the Unified Facilities Criteria 3-600-01 Design: Fire Protection Engineering for Facilities, International Building Code and the National Fire Protection Association (NFPA) standards and codes.

3-6.2 **Sprinkler System.** Provide a wet and/or dry type sprinkler as required by the project. Design shall be provided by a qualified Fire Protection Engineer as defined in UFC 3-600-01 and shall be in compliance with UFC 3-600-01 and NFPA 13, Standard for the Installation of Sprinkler Systems.

3-6.3 **Loading Docks.** Covered loading docks shall be fully sprinkled by a suitable sprinkler system.

3-6.4 **Hydrant Flow Data:** A hydrant flow test shall be performed in the early stages of design indicating Date and Location of Test, Static Pressure, Flow, and Residual Pressure. Provide preliminary hydraulic calculations to determine whether there is sufficient water supply and pressure to meet the flow demands of the sprinkler systems within the facility and the fire department hose stream requirements from the fire hydrants.

3-6.5 **Fire Pump.** When a pump is required, type of pump shall be in accordance with Unified Facilities Criteria 3-600-01 Design: Fire Protection Engineering for Facilities. Provide electric driven fire pump and controllers in accordance with NFPA 20. .

3-6.6 **Fire Extinguishers and Cabinets.** Provide portable fire extinguishers in accordance with NFPA 10. Provide bracket-mounted extinguishers in service areas. Provide semi-recessed aluminum fire extinguisher cabinets with clear view panel in public areas. Provide fire-rated cabinets in fire-rated wall assemblies.

3-6.7 **Interior Wall and Ceiling Finishes.** Wall and ceiling finishes and movable partitions shall conform to the requirements of the IBC and NFPA 101, except as follows:

Interior finish for exits, and exit passageways shall be Class A only. Flame spread (FS) and smoke development (SD) shall be tested in accordance with IBC requirements. Class C materials shall only be permitted in fully sprinklered buildings.

3-6.8 **Fire Alarm.** Provide an addressable fire alarm system conforming to requirements of NFPA 72 and NFPA 101. Fire alarm system shall consist of pull stations, audiovisual devices, control/annunciation panel and tamper and/or flow connection/supervision to the sprinkler system. Provide supervision of fire pump where fire pump is provided. Fire alarm system shall tie into the base-wide system in accordance with base requirements.

3-7 MECHANICAL.

3-7.1 **Design Standards and Codes.** The mechanical design for all facilities shall be in accordance with the current versions of Army Design Guides, UFC, International Mechanical codes, and applicable codes and standards.

3-7.2 **Facility Energy Conservation Requirements.** The building including the building envelope, HVAC systems, service water heating, power, and lighting systems shall meet the Mandatory Provision and the Prescriptive Path requirements of ASHRAE 90.1.

Design all building systems and elements to meet the minimum requirements of ANSI/ASHRAE/IESNA 90.1. Design the building, including the building envelope, HVAC systems, service water heating, power, and lighting systems to achieve an energy consumption that is at least 40% below the consumption of a baseline building meeting the minimum requirements of ANSI/ASHRAE/IESNA Standards 90.1. Energy calculation methodologies used for this documentation and analysis shall follow the guidelines set forth in Appendix G of ASHRAE 90.1, with the exception that receptacle and process loads may be omitted from the calculation.

The equipment shall be Energy Star or FEMP designated products. The term “Energy Star” 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 equivalent products for energy efficiency. When selecting integral sized electric motors, chose 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 application 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).

3-7.3 **Design Calculations.** Heat loss and heat gain calculations. Heating and cooling loads shall be

in accordance with the current edition of the ASHRAE Handbook of Fundamentals, International Mechanical Code and UFC 3-410-01FA – Design: Heating, Ventilating, and Air Conditioning. Computer-generated load calculations shall be provided, and shall include complete input and output summaries. Equipment may be oversized to no more than 115 percent of the computer-generated load. Design shall be based on weather data from UFC 3-400-02, Engineering Weather Data; from ASHRAE Handbook of Fundamentals; or from other recognized and authoritative sources of weather data. Values for internal cooling loads shall be included in the computerized load calculations in accordance with ASHRAE recommendations. Minimum space heating and ventilation shall be provided in spaces normally unoccupied, such as storage and equipment rooms. Any industrial ventilation requirement, other than that required per human occupant, may be considered process load when selecting supplemental heating equipment for the bay area.

3-7.3.1 **Load Design Criteria.** Internal loads shall be included for each space. Lights shall be included for the actual quantity provided. Any additional equipment furnished or planned under the design shall also be included in the appropriate space.

3-7.3.2 **Ventilation Air Calculations.** Calculations determining minimum outside ventilation air shall be provided for each building space. Ventilation rates shall be in accordance with the current edition of the International Mechanical Code, and the current ASHRAE Standard 62.1. Outside air quantities will be sufficient to meet ventilation requirements and maintain a positive pressure relative to the outdoors.

3-7.3.3 **Exhaust Air Calculations.** Calculations determining minimum exhaust shall be provided for each exhaust system. Exhaust rates shall be in accordance with the current edition of the International Mechanical Code and the current ASHRAE 62.1.

3-7.3.4 **Piping Calculations.** Calculations shall be provided for pressure drop calculations for all piping systems, including head loss calculations for all pumps.

3-7.3.5 **Duct Calculations.** Calculations shall be provided for sizing all duct systems, including static pressure drop calculations for all fans. Ductwork layout drawings shall also be provided to indicate all fittings and devices to substantiate calculations.

3-7.4 **Humid Air Design.** Where applicable, the special criteria for humid areas in UFC 3-410-01FA – Design: Heating, Ventilating, and Air Conditioning shall be used.

3-7.5 **Mechanical Systems.** Each building core area shall be provided with a central heating and air conditioning system. Systems shall be designed, installed, balanced, and adjusted to distribute heat and cooling in proportion to the calculated load requirements of these spaces. A detailed investigation of the treatment of outdoor ventilation air shall be provided. Classroom spaces, auditoriums, training spaces, conference rooms, and multipurpose spaces are typically occupied by a relatively high number of people. The correspondingly high amount of outdoor air required is often beyond the capability of office or classroom type systems, leading to potential problems with mold, mildew, and high humidity situations. Special problems requiring special solutions occur when the outdoor air is at a high relative humidity condition and/or the spaces are only partially occupied or unoccupied. Systems such as a dedicated VAV outdoor air handling unit and carbon dioxide sensing controls (Demand Ventilation) shall be investigated and considered. Provide means for determining when rooms are partially occupied or unoccupied to modulate outdoor air supply. Each space shall be provided with a separate system with occupancy sensors and/or other override to change status from unoccupied to occupied. The Designer in close coordination with the installation shall determine the allowable system types and fuel options to be used. Also coordinate unit locations with Installation facilities engineering personnel (DPW). Consider systems utilizing energy efficient equipment, providing additional space in the mechanical room, and other features, which contribute to ease of

system operation and maintenance. Consider the high people and computer load that may require cooling in some areas while heat is needed in others at the same time.

3-7.5.1 **Air Distribution Systems.** Provide duct systems conforming to the recommendations of the SMACNA Duct Construction Standards including seal class requirements. Fire dampers shall be provided where required by NFPA 90A. Balancing dampers shall be provided at all branch takeoffs and for all supply outlets. Permanent access to dampers shall be provided. Air intakes shall be placed at least 10 feet above ground to meet the requirements of UFC 4-010-01 – DoD Minimum Antiterrorism Standards for Buildings. Intakes shall be covered with screens to prevent insects and foreign objects from entering.

3-7.5.2 **Building Automation System.** Provide a building Automation System consisting of a building control network, and integrate the building network into the existing base wide EMCS/UMSC (if present).

3-7.5.2.1 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. The building control network shall be an Open implementation of LonWorks® technologies 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. 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.

3-7.5.2.2 Perform all necessary actions needed to integrate the building DDC system into the base wide EMCS/UMCS. These actions shall 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 network to the EMCS/UMCS IP network. Routers shall be capable of configuration via DHCP and use of an ANSI/CEA-852 configuration server but shall not reply on these services for configuration. All communication between the EMCS/UMCS and building networks shall be via the ANSI/CEA-709.1B protocol over the IP network in accordance with ANSI/CEA-852.

3-7.5.2.3 Provide air distribution emergency shutoff switch as required by UFC 4-010-01.

3-8 ELECTRICAL.

3-8.1 **Design Standards and Codes.** The electrical design for all facilities shall be in accordance with the current editions of the National Electrical Code and the National Electrical Safety Code, and any other applicable criteria. Lighting design shall conform to the Illuminating Engineers Society of North America (IESNA) Lighting Handbook and recommended practices.

3-8.1.1 **Facility Energy Conservation Requirements.** The entire facility design, including interior and exterior lighting and power systems shall be in compliance with ASHRAE 90.1.

3-8.2 **Design Calculations.** Provide analysis throughout the design to document selection of equipment and wiring in accordance with applicable criteria. Calculations as a minimum shall include load analysis, voltage drop, fault, device coordination, interior and exterior lighting.

3-8.3 **Space Requirements.** Provide electrical space for all electrical equipment. Space shall provide clearances and working areas as required by the National Electrical Code. Coordinate location to consider factors such as aesthetics, ease of maintenance, proximity to loads being served, and accessibility.

3-8.4 **Materials and Equipment.** All materials and equipment shall be the standard catalogued products of manufacturers regularly engaged in the production of such equipment and material, and shall be the manufacturer's latest design. All equipment and material shall conform to the requirements of American National Standards Institute (ANSI), American Society of Testing and Materials (ASTM), National Electrical Manufacturer's Association (NEMA), National Fire Protection Association (NFPA) or other national trade association as applicable. Where standards exist, materials and equipment shall bear the label and be listed by Underwriters Laboratories, Inc. (UL) or other recognized testing organization.

3-8.5 **Lighting.** Interior and exterior lighting design shall conform to the recommendations of the IESNA Handbook, RP-1-93, Office Lighting and RP-3-00, Guide for Educational Facilities Lighting. Computer friendly lighting systems such as indirect and parabolic systems shall be used in spaces where Video Display Terminals are used extensively. Provide variable/multilevel switching and/or dimming systems in interior spaces as indicated in Chapter 2, Space Design Criteria. Provide occupancy sensors in spaces where use is intermittent such as classrooms (not CRXXI or VTT), conference rooms, corridors, restrooms, and storage spaces.

3-8.6 **Power and Grounding.** Power service to the buildings will be fed underground from the base electrical distribution system via a pad-mounted transformer located near the primary building. Power service to buildings will be fed underground from the transformer to building service entrance equipment located in the electrical equipment room.

3-8.6.1 **Special Power Requirements.** Electrical power outlets for special power shall be coordinated with the requirements in Chapter 2, Space Design Criteria.

3-8.6.2 **Grounding.** Each building will have in addition to the grounding requirements of the National Electrical Code a ground grid or counterpoise around the building perimeter for connection to incoming service, building steel, telephone service, piping, and internal grounding requirements.

3-8.6.3 **Lightning Protection.** Facilities shall be protected from lightning in accordance with the National Electrical Code. Where recommended by the Standard for installation of Lightning Protection Systems, NFPA 780, Annex L, the facility shall be protected by a building lightning protection system.

3-9 COMMUNICATIONS.

3-9.1 **Information Systems.** Information systems will consist of a complete end-to-end voice, data, and telemetry cable based functional design accomplished IAW the US Army Installation Information Infrastructure Architecture (I3A) Technical Criteria. Information system equipment provided to satisfy the service requirements of this design will meet the technical specifications and planning guidance found in ANSI/TIA/EIA-568-B and 569A, as appropriate. Functional requirements will be developed and implemented based upon the I3A criteria to satisfy both the near-term as well as the growth potential of this US Army facility. The I3A standard dual jack voice/data outlet will be used throughout this facility with the following exceptions: wall telephone outlets will be single jack configuration, classroom computer jacks will be data only (dual jacks) to serve the computers planned for each classroom; however, the classroom instructor's administrative telephone outlet will be a standard dual-

jack voice/data outlet. System provisions will be compliant with the requirements of the Americans With Disabilities Act (ADA), as directed for the facility.

3-9.1.1 **Voice Systems**. The telephone/voice system provided in this project will meet all US Army I3A objectives using standard state-of-the-art equipment and installation practices. The telephone/voice system provided with this facility will receive dial tone from a US government controlled telephone switching system. Special requirements for telephone circuits receiving dial tone from other sources, i.e., pay-telephone, etc., will be coordinated with installation's local commercial provider -- see NEC for contact information. The telecommunications cross-connect scheme for this project will utilize a combination of 110punch down blocks and category rated patch panels as shown in the I3A Criteria; this is not a "small facility" for cross-connect purposes. Coordinate minimum essential service requirements with the NEC; use these requirements in conjunction with the I3A Criteria to develop the design based upon planned functional usage of the various spaces. Plan for wall telephone outlets to satisfy an intelligent design based upon safety, courtesy, and convenience: as a minimum, wall telephone outlets will be provided in all equipment rooms (electrical room, HVAC room, telecommunications room, CATV/CCTV/surveillance room, etc.); in all "break" areas and at all entry areas; and along corridors and hallways using a density of four wall telephones per 10,000 square feet of gross building space.

3-9.1.2 **Data System.** Data jacks will be terminated on patch panels located on racks in the telecommunications rooms(s). Classroom data jacks will be terminated on patch panels located in classroom equipment rack. Each classroom area, i.e., including those established by folding partitions, will have its own equipment. The classroom data network will be contained in a communication closet within the classroom, with its own data switch (provided by TRADOC). Each classroom will be provisioned with twelve strands of fiber optic cable (six single mode and six multimode) to the nearest serving Network Operations Center in the building. Coordinate with the NEC for special data requirements. Provide a dedicated 20 amp circuit for each classroom communication closet.

3-9.1.3 **Wireless Technology.** The use of wireless technology for data transfer must be in accordance with Army Regulation 25-1 Army Information Management found at http://www.army.mil/usapa/epubs/25_Series_Collection_1.html as well as the latest memorandum and letters regarding this quickly evolving issue.

3-9.2 **Information System Equipment.** All equipment provided for the GIB will meet the functional standards found in the I3A criteria. The building's interior copper cabling will be TIA/EIA 568B Category 6. Installation will be in accordance with (IAW) applicable UFGSs.

3-9.3 **Outside Cable Plant Infrastructure**. Extend the information system infrastructure from the nearest existing information system node having sufficient capacity to satisfy the facilities requirements -- coordinate with the NEC on this location. New underground conduits will be multiple concrete encased 100-mm [4-inch] PVC ducts (or equivalent) and will be sized, designed and installed in the underground manhole and duct system IAW the installation's current approved I3A Plan to ensure maximum flexibility for future growth. Place outside plant information systems cabling, both copper cable(s) and fiber optic cable(s), from the servicing nodes into the new facility; extend and terminate the OSP information system cabling on the building's entrance facility per applicable fire and safety code.

3-9.4 **Premises Distribution System (PDS) Infrastructure**. Design the PDS in accordance with (IAW) the I3A Technical Criteria to develop the functional information system features required along with the preferred technical implementation. Ensure that all PDS cable distribution and telecommunications requirements comply with the I3A (for design and allocations) and with the latest versions of TIA/EIA 568B (for technical implementation).

Follow requirements of ANSI/TIA/EIA-569-A for telecommunications paths and equipment room spaces. Provide dedicated PDS raceway space and equipment room space for the purpose of future fiber optic cable installation to each outlet location initially served only by copper cable(s). Provide space for future data and communication cabling. Provide I3A standard dual-jack voice/data outlets throughout core areas, the supply/administration areas, and the classroom's instructor's podiums/desk; use I3A functional area outlet-densities to determine the outlet quantities. Provide data outlets for all planned computer equipped classroom desktops; voice outlets are not appropriate for classroom desktops. Use of multiple-jack outlets to serve classroom desktop locations, (i.e., up to four RJ-45 jacks) is typical. Terminate classroom data outlets on patch panel(s) mounted in a classroom-based cabinet. This cabinet will also contain any LAN networking equipment needed within the classroom. Provide fiber optic cable from this rack (six single mode and six multimode) to the nearest building telecommunications closet.

3-9.4.1 **Cables and Jacks.** Provide in accordance with the I3A Criteria using the latest technical standards in TIA/EIA-568-B. Connect all information system (voice/data) outlets from the equipment room's equipment rack with two 4-pair, Category 6, unshielded twisted pair (UTP) solid copper station cable terminated on 8-position IDC type connectors and extended to the servicing equipment room's equipment rack. Connect all single 8-position type walls, special purpose, and pay telephone outlets with one 4-pair, Category 6, unshielded twisted pair (UTP) solid copper station cable terminated on 8-position IDC type connectors and extended to the servicing equipment room's equipment rack. For specialized circuits, such as pay phones, coordinate with the local telephone company for electrical requirements and Americans with Disabilities Act (ADA) design features. When systems furniture is installed as part of the construction contract, insure that systems furniture specifications include ANSI/TIA/EIA-568-B and ANSI/TIA/EIA-569-A cabling and raceway standards. Use a combination of multimode and single mode fiber optic cable (12 strands of each) for backbone data service, unless expanding an existing site where other backbone cable types are required or requested by user. Refer to the “Installation Information Infrastructure Architecture (I3A) Technical Criteria".

3-9.5 **Paging Systems.** A paging system will be provided for the entire building with the microphone located in the Building Manager’s Office. Provide a system that allows paging individually or grouped in classrooms, administration and public areas. Outdoor spaces such as break areas shall be on the public area system.

3-9.6 **Cathodic Protection.** Cathodic Protection (CP) is mandatory on buried ferrous metallic structures. Design of cathodic protection systems shall be in accordance with UFC-3570-02N.

3-9.7 **Electronic Security System (ESS)**. Coordinate the requirement for any security system including provisions for the CCTV system with the User and the Installation local security authority. Design of security systems shall also be coordinated with the Mandatory Center of Expertise (MCX) Electronic Security Center, US Army Installation Support Center, Huntsville, Alabama.

3-9.7.1 For large facilities, an alarm and CCTV system shall be provided. Alarm monitoring will be performed in the Building Manager’s Office at a console where the public cannot view the alarm and CCTV monitors. Every exterior door shall have at a door position switch. CCTV camera shall be installed in corridors, public spaces, and the loading dock. Facilities shall have their alarms reported to the Installation security office.

3-9.8 **Clock System.** Clocks shall be provided in classrooms and public spaces. When requested by the Activity, this requirement may be met by providing an integrated clock system that provides adjustment of all clocks from one central point.

3-9.9 **Mass Notification System.** Provide a mass notification system conforming to UFC 4-010-01

and UFC 4-021-01 for the purpose of providing real-time announcements in the immediate vicinity of the building during emergency situations. Coordinate specific system requirements with the User and Installation.

3-10 COST

3-10.1 **Criteria.** Programming and cost estimate shall be done in accordance with UFC 3-701-03 DoD Facilities Pricing Guide. Consider the cost of furniture and equipment such as computers, which is currently projected at approximately 15% of construction cost.

3-10.2 **Life Cycle Cost.** During design, consideration must be given to not only the initial cost of construction, but also the cost of operation, maintenance, and custodial care during the intended life of the building. Both initial and life costs must be analyzed, especially in the selection of utility systems, interior and exterior finishes.

APPENDIX A

REFERENCES

The following referenced standards are but a small sampling of criteria that typically govern GIB projects. It should be anticipated that other criteria in addition to these will also be required. Therefore, the designer(s) should ascertain all applicable government and non-government criteria in force for each project. Unless noted otherwise, all referenced criteria shall be the latest published edition adopted by DoD.

GOVERNMENT PUBLICATIONS:

Department of The Army:

Army Regulation AR415-28 and DA Pamphlet 41-28, Guide to Army Real Property Category Codes.

US Army Corps of Engineers:

TI 800-01 Design Criteria. Other technical Instructions for facility design may be found at http://www.hnd.usace.army.mil/techinfo/ti.htm

Army Technical Manuals may be found at http://140.194.76.129/publications/armytm/

US Army information Systems Engineering Command :

Technical Criteria for the Installation Information Infrastructure Architecture (I3A)

Department of Defense:

Unified Facilities Criteria (UFC) documents may be found at http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4

Refer to the Unified Facilities Criteria (UFC) documents for the latest relevant DOD requirements. The following are only the more commonly used UFCs, though there are many more UFCs in force:

UFC 3-410-01FA Mechanical Design – Heating, Ventilating, and Air Conditioning

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

UFC 4-010-01 Design: Minimum Antiterrorism Standards for Buildings

UFC 4-021-01 Mass Notification Systems

UFC 4-023-03 Design of Buildings to Resist Progressive Collapse

U.S. GOVERNMENT PRINTING OFFICE

Superintendent of Documents
U.S. Government Printing Office (GPO) U.S. Government Printing Office Washington, DC 20402

U.S. Government Style Manual:

http://www.gpoaccess.gov/stylemanual/browse.html

NON-GOVERNMENT PUBLICATIONS:

Electronic Industries Alliance (EIA)
2500 Wilson Blvd Arlington, VA 22201-3834

EIA/TIA Standard, TIA-569-B– Commercial Building Standard for telecommunications Pathways and Spaces.

Illuminating Engineering Society of North America (IESNA
120 Wall Street, 17th Floor New York, NY 10005-4001

IESNA RP-8 Roadway Lighting

IENSA Lighting Handbook, Reference and Application

International Code Council, Inc.
500 New Jersey Avenue, NW, 6th Floor, Washington, DC 20001

IBC International Building Code

IPC International Plumbing Code

IMC International Mechanical Code

National Fire Protection Association
One Batterymarch Park Quincy, MA 02269-9101

NFPA 10 Standard for Portable Fire Extinguishers

NFPA 13 Installation of Sprinkler Systems

NFPA 70 National Electrical Code

NFPA 72 National Fire Alarm Code

NFPA 101 Life Safety Code

Institute of Electrical and Electronics Engineers Inc. (IEEE)
2001 L Street, NW. Suite 700 Washington, DC 20036-4910 USA

Standard for Use of the International System of Units (SI): the Modern Metric System IESNA RP-8

American Society of Heating, Refrigerating and Air-Conditioning Engineers (***ASHRAE)***

1791 Tullie Circle NE, Atlanta, GA 30329

ANSI/ASHRAE/IESNA 90.1 Energy Standard for Buildings Except for Low-Rise Residential Buildings

GROSS AREA CALCULATION

Fill in the green fields only based on Installation and User needs

Facility Name **Project Name**

TDA Instructors	0
Other Staff	0
Total staff that are civilians	0
Unit Identification Code (UIC)= number of students	0
Students that are E6 - Field Grade Officer rank	0
Program of Instruction = % of time student in classroom	100%
Utilization Factor= % of time classroom is available	80%
Number of Libraries	0
Ratio of POV to be provided for instructors	100%
Ratio of POV to be provided for other staff	100%

Major Area			
Administrative Area & Support Space			
	Input School TDA Instructors	0	Instructors
	Input School TDA Other Staff	0	Other Staff
	School Criteria Net Area Value	130	s.f./staff
	Subtotal	-	net s.f.
Classroom & Support Area			
	UIC	0	Students
	Program of Instruction	100%	
	Allowed Net Value	56	s.f./Student
	Utilization Factor	80%	
	Subtotal	-	net s.f.
Auditorium			
	Civilians	0	Civilians
	E6 to FGO Students	0	Students
	Auditorium Net Value	13	s.f./Person
	Subtotal	-	net s.f.
Library			
	Library Net Value 6000 s.f.	0 -	net s.f.
Gross Area Calculation			
	Facility Net Total	-	net s.f. total
	Gross Area Factor	1.45	
	Gross Area Total	-	**s.f.**
Parking Allowance			
	Instructor POV at Ratio of 100%	0	0 spaces
	Administrator POV at Ratio of 100%	0	0 spaces
	Total Parking Spaces	-	**parking spaces**
	Pavement Area at 35 S.Y./space	-	S.Y. pavement

This work sheet reflects the allowances by RPLANS for GIB Facilities.
RPLANS uses Installation population to determine ACES gross area allowance.

Major Area is based on ACTS use of 3 major areas in the building for planning purposes.
Each area supports its own common area requirements .
School TDA is the number of staff and instructors positions assigned to the facility.
School Criteria Net Area is the ACTS assigned net area per TDA.
UIC is Unit Identification Code or average number of students in the classroom.
% of Time is the percentage of time students spend in class from Program of Instruction (POI).
Allowed Net Value is the s.f. of net space allowed per student to cover class and some misc space.
Utilization Factor is the percentage of time the class is expected to be available.
Auditorium Net Value is the ACTS s.f. allowed per person.
Library Net Value is the ACTS facility s.f. size allowed.
Gross Area Factor is the multiplier used to cover mech/elec/circulation/structure/etc.
Gross Area Total is the building size.

Parking allowance is provided based on number of Instructors and other staff.
Parking is not provided for students. Parking Ratio for staff may not exceed 1.0

Note: At this time RPLANS is using 7.5 s.f. for the Auditorium sizing. We have recommended a change that will use 13 s.f./seat.
RPLANS also allows 50 net s.f. per student and we are recommending 56 s.f. per student.

PROGRAMMING WORKSHEET (Standard Units)

Project Name — Masterplanner shall fill in the green fields based on Installation and User needs

Space	Per Space Students	Staff	Net Area	Quantity of Spaces	Area Totals Students	Staff	Sum Net Area	Gross Area
EDUCATION SPACES			17120 or 74025					
Traditional Classroom								
	30	1	1,080 s.f.	0	0	0	0 s.f.	0 s.f.
	40	1	1,440 s.f.	0	0	0	0 s.f.	0 s.f.
	50	2	1,680 s.f.	0	0	0	0 s.f.	0 s.f.
	60	2	1,920 s.f.	0	0	0	0 s.f.	0 s.f.
	70	2	2,200 s.f.	0	0	0	0 s.f.	0 s.f.
Multi-Purpose Classroom								
	15	1	540 s.f.	0	0	0	0 s.f.	0 s.f.
	30	1	1,200 s.f.	0	0	0	0 s.f.	0 s.f.
	40	1	1,600 s.f.	0	0	0	0 s.f.	0 s.f.
	50	2	1,920 s.f.	0	0	0	0 s.f.	0 s.f.
	60	2	2,200 s.f.	0	0	0	0 s.f.	0 s.f.
	70	2	2,590 s.f.	0	0	0	0 s.f.	0 s.f.
Seminar Model Classroom								
	24	4	1,500 s.f.	0	0	0	0 s.f.	0 s.f.
Consolidated Training Configuration								
	30	6	2,450 s.f.	0	0	0	0 s.f.	0 s.f.
Video-Tele Training Classroom			17136					
	15	1	975 s.f.	0	0	0	0 s.f.	0 s.f.
	30	1	1,600 s.f.	0	0	0	0 s.f.	0 s.f.
Classroom XXI			17136					
	24	1	1,500 s.f.	0	0	0	0 s.f.	0 s.f.
NCO Training Space			17120					
	16	2	1,100 s.f.	0	0	0	0 s.f.	0 s.f.
Digital Training Access Center			17136					
		2	400 s.f.	0	0	0	0 s.f.	0 s.f.
Resource Center								
	10	1	400 s.f.	0	0	0	0 s.f.	0 s.f.
	30	2	1,200 s.f.	0	0	0	0 s.f.	0 s.f.
ADMINISTRATIVE SPACES			61050					
Information/Reception								
		2	540 s.f.	0	0	0	0 s.f.	0 s.f.
Instructor Office								
		1	110 s.f.	0	0	0	0 s.f.	0 s.f.
Director Office								
		1	220 s.f.	0	0	0	0 s.f.	0 s.f.
Administration Office								
		1	130 s.f.	0	0	0	0 s.f.	0 s.f.
Building Managers								
		3	500 s.f.	0	0	0	0 s.f.	0 s.f.
Conference Room								
	0	20	480 s.f.	0	0	0	0 s.f.	0 s.f.
	0	30	720 s.f.	0	0	0	0 s.f.	0 s.f.
	0	50	1,200 s.f.	0	0	0	0 s.f.	0 s.f.
Network Operations Center (NOC)			17136					
	0	2	700 s.f.	0	0	0	0 s.f.	0 s.f.
Computer Maintenance Area			17136					
	0	2	1,200 s.f.	0	0	0	0 s.f.	0 s.f.
Loading Dock								
	0	0	80 s.f.	0	0	0	0 s.f.	0 s.f.
Transient Storage								
	0	1	400 s.f.	0	0	0	0 s.f.	0 s.f.
Record Storage								
	0	0	120 s.f.	0	0	0	0 s.f.	0 s.f.
Copy Room								
	0	0	200 s.f.	0	0	0	0 s.f.	0 s.f.
Supply Room								
	0	0	300 s.f.	0	0	0	0 s.f.	0 s.f.

PROGRAMMING WORKSHEET (Standard Units)

Project Name — Masterplanner shall fill in the green fields based on Installation and User needs

Space	Per Space Students	Per Space Staff	Per Space Net Area	Quantity of Spaces	Area Totals Students	Area Totals Staff	Area Totals Sum Net Area	Gross Area
SPECIAL FUNCTIONAL USE AREAS			17120 or 74025					
Small Arms Training Room								
	32	2	1,125 s.f.	0	0	0	0 s.f.	0 s.f.
Arms Vault								
	0	0	300 s.f.	0	0	0	0 s.f.	0 s.f.
Auditorium								
	0	0	- s.f.	0	0	0	0 s.f.	0 s.f.
Multi-Purpose Auditorium								
	150		2,250 s.f.	0	0	0	0 s.f.	0 s.f.
College Office								
		1	120 s.f.	0	0	0	0 s.f.	0 s.f.
Counselors Office								
		1	120 s.f.	0	0	0	0 s.f.	0 s.f.
Testing Room								
	30		1,200 s.f.	0	0	0	0 s.f.	0 s.f.
Testing Control Room								
	0	1	290 s.f.	0	0	0	0 s.f.	0 s.f.
Testing Administrator Office								
		1	110 s.f.	0	0	0	0 s.f.	0 s.f.
Broadcast Studio			17136					
	0	2	450 s.f.	0	0	0	0 s.f.	0 s.f.
Applied Instruction Module			17120					
	0	0	- s.f.	0	0	0	0 s.f.	0 s.f.
SUBTOTAL								0 s.f.
SUPPORT SPACE			17120 or 74025					
Vestibule								
	0	0	80 s.f.	0			0 s.f.	0 s.f.
Student Break/Vending Area								
		6%	Subtotal Gross				0 s.f.	0 s.f.
Staff Break Area								
	0		300 s.f.	0			0 s.f.	0 s.f.
Restrooms								
		4%	Subtotal Gross				0 s.f.	0 s.f.
Janitor Closet								
	0	0	48 s.f.	0			0 s.f.	0 s.f.
Mechanical Room								
		5%	Subtotal Gross				0 s.f.	0 s.f.
Electrical Room								
		1.5%	Subtotal Gross				0 s.f.	0 s.f.
Communication Room								
		1.1%	Subtotal Gross				0 s.f.	0 s.f.
General Storage								
		2%	Subtotal Gross				0 s.f.	0 s.f.
Outdoor Storage								
	0	0	120 s.f.	0			0 s.f.	0 s.f.
Total					**0** Students	**0** Staff	**0 Net s.f.**	**0 Gross s.f.**
Gross Area Factor is		1.45						

1	ADMIN Facility	61050	0 GSF
2	General Instruction Building	17120 or 74025	0 GSF
3	Classroom XXI	17136	0 GSF

4.0 APPLICABLE CRITERIA

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

4.1. INDUSTRY CRITERIA

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

Table 1: Industry Criteria

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

	Standard Specifications for Transportation Materials and Methods of Sampling and Testing [Road Construction Materials]
	Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals
	Guide for Design of Pavement Structures, Volumes 1 and 2 [pavement design guide]
	A Policy of Geometric Design of Highways and Streets
American Bearing Manufacturers Association (AFBMA)	
AFBMA Std. 9	Load Ratings and Fatigue Life for Ball Bearings
AFBMA Std. 11	Load Ratings and Fatigue Life for Roller Bearings
American Boiler Manufacturers Association (ABMA)	
ABMA ISEI	Industry Standards and Engineering Information
American Concrete Institute	
ACI 302.2R	Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials
ACI 318	Building Code Requirements for Structural Concrete
ACI SP-66	ACI Detailing Manual
ACI 530	Building Code Requirements for Masonry Structures
ADA Standards for Accessible Design	
See US Access Board	ADA and ABA Accessibility Guidelines for Buildings and Facilities, Chapters 3-10.
American Institute of Steel Construction (AISC)	
	Manual of Steel Construction – 13th Edition (or latest version)
American Iron and Steel Institute	
AISI S100	North American Specification for the Design of Cold-Formed Steel Structural Members

American National Standards Institute 11 (ANSI)	
ANSI Z21.10.1	Gas Water Heaters Vol. 1, Storage water Heaters with Input Ratings of 75,000 Btu per Hour or less
ANSI Z124.3	American National Standard for Plastic Lavatories
ANSI Z124.6	Plastic Sinks
ANSI Z21.45	Flexible Connectors of Other Than All-Metal Construction for Gas Appliances
ANSI/IEEE C2-2007	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

ASHRAE Standard 55	Thermal Environmental Conditions for Human Occupancy (Design portion is applicable, except where precluded by other project requirements.)
American Society of Mechanical Engineers International (ASME)	
ASME BPVC SEC VII	Boiler and Pressure Vessel Code: Section VII Recommended Guidelines for the Care of Power Boilers
ASME A17.1	Safety Code for Elevators and Escalators
ASME B 31 (Series)	Piping Codes
American Water Works Association (AWWA)	
	Standards [standards for water line materials and construction]
American Welding Society	
	Welding Handbook
	Welding Codes and Specifications (as applicable to application, see International Building Code for example)
Architectural Woodwork Institute (AWI)	
Latest Version	AWI Quality Standards
Associated Air Balance Council (AABC)	
AABC MN-1	National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems
	AABC Associated Air Balance Council Testing and Balance Procedures
ASTM International	
ASTM C1060-90(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	The Various BHMA American National Standards
Building Industry Consulting Service International	
	Telecommunications Distribution Methods Manual (TDMM)
	Customer-Owned Outside Plant Design Manual (CO-OSP)
Code of Federal Regulations (CFR)	
49 CFR 192	Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards
10 CFR 430	Energy Conservation Program for Consumer Products
Consumer Electronics Association	
CEA 709.1B	Control Network Protocol Specification
CEA 709.3	Free-Topology Twisted-Pair Channel Specification
CEA 852	Tunneling Component Network Protocols Over Internet Protocol Channels
Electronic Industries Association (EIA)	
ANSI/EIA/TIA 568	Structured Cabling Series
ANSI/EIA/TIA 569	Commercial Building Standard for Telecommunications Pathways and Spaces (includes ADDENDA)
ANSI/TIA/EIA-606	Administrative Standard for the Telecommunications Infrastructure of Commercial Buildings
J-STD EIA/TIA 607	Commercial Building Grounding and Bonding Requirements for Telecommunications
Federal Highway Administration (FHWA)	
	Manual on Uniform Traffic Control Devices for Streets and Highways [signage and pavement markings for streets and highways]
FHWA-NHI-01-021	Hydraulic Engineering Circular No. 22, Second Edition, URBAN DRAINAGE DESIGN MANUAL

Illuminating Engineering Society of North America (IESNA)	
IESNA RP-1	Office Lighting
IESNA RP-8	Roadway Lighting
IESNA Lighting Handbook	Reference and Application
Institute of Electrical and Electronics Engineers Inc. (IEEE)	
	Standard for Use of the International System of Units (SI): the Modern Metric System
Standard 1100	Recommended Practice for Powering and Grounding Sensitive Electronic Equipment
International Code Council (ICC)	
IBC	International Building Code Note: All references in the International Building Code to the International Electrical Code shall be considered to be references to NFPA 70. All references in the International Building Code to the International Fuel Gas Code shall be considered to be references to NFPA 54 and NFPA 58. All references in the International Building Code to the International Fire Code and Chapter 9 shall be considered to be references to Unified Facilities Criteria (UFC) 3-600-01.
IMC	International Mechanical Code – Note: For all references to “HEATING AND COOLING LOAD CALCULATIONS”, follow ASHRAE 90.1 Note: For all references to “VENTILATION”, follow ASHRAE 62.1
IRC	International Residential Code
IPC	International Plumbing Code
IEC	Energy Conservation Code (IEC) –Applicable only to the extent specifically referenced herein. Refer to Paragraph 5, ENERGY CONSERVATION requirements.
IGC	International Gas Code - not applicable. Follow NFPA 54, National Fuel Gas Code and NFPA 58, Liquified Petroleum Gas Code.

International Organization for Standardization (ISO)	
ISO 6781:1983	Qualitative detection of thermal irregularities in building envelopes – infrared method
LonMark International (LonMark)	
LonMark Interoperability Guidelines	(available at www.lonmark.org), including: Application Layer Guidelines, Layer 1-6 Guidelines, and External Interface File (XIF) Reference Guide
LonMark Resource Files	(available at www.lonmark.org), including Standard Network Variable Type (SNVT) definitions
Metal Building Manufacturers Association (MBMA)	
	Metal Building Systems Manual
Midwest Insulation Contractors Association (MICA)	
	National Commercial and Industrial Insulation Standards Manual
National Association of Corrosion Engineers International (NACE)	
NACE RP0169	Control of External Corrosion on Underground or Submerged Metallic Piping Systems
NACE RP0185	Extruded, Polyolefin Resin Coating Systems with Adhesives for Underground or Submerged Pipe
NACE RP0285	Corrosion Control of Underground Storage Tank Systems by Cathodic Protection
NACE RP0286	Electrical Isolation of Cathodically Protected Pipelines
National Electrical Manufacturers Association (NEMA)	
National Environmental Balancing Bureau (NEBB)	
	Procedural Standards Procedural Standards for Testing Adjusting Balancing of Environmental Systems
National Fire Protection Association (NFPA)	
NFPA 10	Standard for Portable Fire Extinguishers
NFPA 13	Installation of Sprinkler Systems

NFPA 13R	Residential Occupancies up to and Including Four Stories in Height Sprinkler Systems
NFPA 14	Standard for the Installation of Standpipes and Hose Systems
NFPA 20	Installation of Centrifugal Fire Pumps
NFPA 24 NFPA 25	Standard for the Installation of Private Fire Service Mains and Their Appurtenances [underground fire protection system design] Inspection, Testing And Maintenance Of Water-Based Fire Protection Systems
NFPA 30	Flammable and Combustible Liquids Code
NFPA 30A	Motor Fuel Dispensing Facilities and Repair Garages
NFPA 31	Installation of Oil Burning Equipment
NFPA 54	National Fuel Gas Code
NFPA 58	Liquefied Petroleum Gas Code
NFPA 70	National Electrical Code
NFPA 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.

4.2.11.1. Draft Guide Specification for Section 27 05 28 PROTECTIVE DISTRIBUTION SYSTEM (PDS) FOR SIPRNET COMMUNICATIONS SYSTEMS, found at https://rfpwizard.cecer.army.mil/HTML/docs/Refs/SECTION_270528-v3.pdf

5.0 GENERAL TECHNICAL REQUIREMENTS

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

5.1. SITE PLANNING AND DESIGN

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

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

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

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

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

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

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

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

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

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

5.2. SITE ENGINEERING

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

5.2.2. SOILS:

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

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

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

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

5.2.3.2. Parking Requirements.

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

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

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

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

5.2.5. UTILITIES: See paragraph 6.4.6 for specific information on ownership of utilities and utility requirements. Meter all utilities (gas, water, and electric, as applicable) to each facility. For Government owned utilities, install meters that are wireless data transmission capable as well as have a continuous manual reading option. All meters will be capable of at least hourly data logging and transmission and provide consumption data for gas, water, and

electricity. Gas and electric meters will also provide demand readings based on consumption over a maximum of any 15 minute period. Configure all meters to transmit at least daily even if no receiver for the data is currently available at the time of project acceptance. For privatized utilities, coordinate with the privatization utility(ies) for the proper meter base and meter installation.

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

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

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

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

5.3. ARCHITECTURE AND INTERIOR DESIGN:

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

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

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

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

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

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

5.3.5. BUILDING INTERIOR

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

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

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

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

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

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

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

5.3.6. COMPREHENSIVE INTERIOR DESIGN

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

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

5.4. STRUCTURAL DESIGN

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

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

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

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

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

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

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

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

5.5. THERMAL PERFORMANCE

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

5.5.2. BUILDING ENVELOPE SEALING PERFORMANCE REQUIREMENT. Design and construct the building envelope for office buildings, office portions of mixed office and open space (e.g., company operations facilities), dining, barracks and instructional/training facilities with a continuous air barrier to control air leakage into, or out of, the conditioned space. Clearly identify all air barrier components of each envelope assembly on construction documents and detail the joints, interconnections and penetrations of the air barrier components. Clearly identify the boundary limits of the building air barriers, and of the zone or zones to be tested for building air tightness on the drawings. Pending the publication of the 2010 version of ASHRAE 90.1, the use of painted interior walls is not an acceptable air barrier method.

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

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

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

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

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

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

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

5.5.2.8. Provide a motorized damper in the closed position and connected to the fire alarm system to open on call and fail in the open position for any fixed open louvers 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) Develop an Air Barrier Quality Assurance plan to assure that a competent air barrier inspector/specialist inspects the critical components prior to them being concealed. At a minimum, three onsite inspections are required during construction to assure the completeness of the construction and design.

(b) Test the completed building and demonstrate that the air leakage rate of the building envelope does not exceed 0.25cfm/ft2 at a pressure differential of 0.3" w.g.(75 Pa) in accordance with ASTM's E 779 (2003) or E-1827-96 (2002). Accomplish tests using 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.

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

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

5.6. PLUMBING

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

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

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

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

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

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

5.6.7. URINALS: Urinals shall be 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 30 percent using IPC fixture performance requirements baseline.

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

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

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

5.7. ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

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

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

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

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

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

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

5.7.5.1. Interior Lighting:

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

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

tile ceilings. Provide an un-switched fixture with emergency ballast shall be provided at each entrance to the building.

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

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

(e) Lighting Controls: ANSI/ASHRAE/IESNA 90.1 has specific lighting controls requirements. Provide a high level of lighting system control by individual occupants or by specific groups in multi-occupant spaces (classrooms, conference rooms) to promote the productivity, comfort and well being of the building occupants. In office spaces, the preferred lighting should be a 30 FC ambient lighting level with occupancy sensor controlled task lighting in the work spaces to provide a composite lighting level of 50 FC on the working surfaces. Consider incorporating daylighting techniques for the benefit of reducing lighting energy requirements while improving the quality of the indoor spaces. If daylight strategies are used, additional coordination is required with the architect and mechanical engineer. Additionally, incorporate electric lighting controls to take advantage of the potential energy savings.

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

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

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

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

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

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

5.8. HEATING, VENTILATING, AND AIR CONDITIONING

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

5.8.2. DESIGN CONDITIONS.

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

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

5.8.2.3. Cooling equipment may be oversized by up to 15 percent to account for recovery from night setforward. Heating equipment may be oversized by up to 30 percent to account for recovery from night setback. Design single zone systems and multi-zone systems to maintain an indoor design condition of 50% relative humidity for cooling only. For heating only where the indoor relative humidity is expected to fall below 20% for extended periods, add humidification to increase the indoor relative humidity to 30%. Provide ventilation air from a separate dedicated air handling unit (DOAU) for facilities using multiple single zone fan-coil type HVAC systems. Do not condition outside air through fan coil units. 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

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 Enhanced commissioning, in accordance with ASHRAE Guideline 1.1, ASHRAE Guideline 0 and LEED. Do not use the sampling techniques discussed in ASHRAE Guideline 1.1 and in ASHRAE Guideline 0. Commission 100% of the HVAC controls and equipment. Hire the Commissioning Authority (CA), certified as a CA by AABC, NEBB, or TABB, as described in Guideline 1.1. The CA will be an independent subcontractor and not an employee of the Contractor nor an employee or subcontractor of any other subcontractor on this project, including the design professionals (i.e., the DOR or their firm(s)). The CA will communicate and report directly to the Government in execution of commissioning activities. The Contracting Officer’s Representative will act as the Owner’s representative in performance of duties spelled out under OWNER in Annex F of ASHRAE Guideline 0. All buildings with Minimum LEED Silver (or better) requirement will earn LEED Credit EA3 Enhanced Commissioning.

5.9. ENERGY CONSERVATION

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

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

5.9.3. Purchase Energy Star products, except use FEMP designated products where FEMP is applicable to the type product. The term “Energy Star product” means a product that is rated for energy efficiency under an Energy Star program. The term “FEMP designated product” means a product that is designated under the Federal Energy Management Program of the Department of Energy as being among the highest 25 percent of equivalent products for energy efficiency. When selecting integral sized electric motors, choose NEMA PREMIUM type motors that conform to NEMA MG 1, minimum Class F insulation system. Motors with efficiencies lower than the NEMA PREMIUM standard may only be used in unique applications that require a high constant torque speed ratio (e.g., inverter duty or vector duty type motors that conform to NEMA MG 1, Part 30 or Part 31).

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

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

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

5.10. FIRE PROTECTION

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

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

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

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

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

5.10.6. Fire Protection Engineer Qualifications: In accordance with UFC 3-600-01, FIRE PROTECTION ENGINEERING FOR FACILITIES**,** the fire protection engineer of record shall be a registered professional engineer (P.E.) who has passed the fire protection engineering written examination administered by the National Council of Examiners for Engineering and Surveys (NCEES), or a registered P.E. in a related engineering discipline with a minimum of 5 years experience, dedicated to fire protection engineering that can be verified with documentation.

5.11. SUSTAINABLE DESIGN

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

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

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

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

5.11.4. COMMISSIONING. See paragraph 5.8.5 COMMISSIONING for commissioning requirements. USACE templates for the required Basis of Design document and Commissioning Plan documents are available at http://en.sas.usace.army.mil (click on 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. Unless determined otherwise by the Installation and noted in paragraphs 3 or 6, the building shall be considered to have areas of uncontrolled public access when designing for progressive collapse.

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

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

6.0 PROJECT SPECIFIC REQUIREMENTS FORT STEWART, GA

6.1. GENERAL

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

6.2. APPROVED DEVIATIONS

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

NONE

6.3. SITE PLANNING AND DESIGN

6.3.1. General:

All the appendices, drawings, and specifications included in the RFP package are additional requirements that apply to this project.

6.3.1.1. Site Plan

A preliminary site layout plan is provided for design and development purposes. The site plan has been approved by the installation and should not be revised except to accommodate final building design. Develop the site plan based on actual building footprints, within the LIMITS OF CONSTRUCTION shown on the drawings.

6.3.1.2. Limits of Construction Overlap

The LIMITS OF CONSTRUCTION between this project and other adjacent projects overlap as indicated on the site plan. Maintain and repair the site, including permits and fees within the LIMITS OF CONSTRUCTION during the construction of the facilities at no additional cost to the Government. Coordinate overlapping and adjoining construction to avoid conflicts and construct a complete, integrated, and useable project. Initiate project coordination between this and other projects within 14 days of receipt of NTP and biweekly there after. Coordinate with other contractors through the Contracting Officer. Adjacent projects that are or will be under construction during this contract's duration are indicated on the drawings.

6.3.1.3. The master plan for adjacent projects is provided for information and coordination. Coordinate project design and construction (e.g., grading, contour lines, finish floor elevations, storm drainage, roads, sidewalks, POV parking, utilities, water, and sewer) with the adjacent projects.

6.3.1.4. On-Post Recycling Center

There is an operating recycling center on-Post. Fort Stewart/Hunter Army Air Field has a mandatory recycling program. The Command Recycling Policy is included in Appendix E. Recyclable materials listed in the mandatory recycling policy generated during the entire term of any construction, demolition, or renovation contract may be turned over to the Ft. Stewart or HAAF Recycling Program. Contractors must contact the COR who will coordinate with the DPW, Environmental Waste Management Section to arrange for turn-in of recyclable materials. In areas where large amounts of scrap metal or cardboard will be generated, it is possible that a collection bin/container could be provided at no cost to deposit these materials.

If any of the materials are recycled by the contractor or taken to a recycling center off post, the contractor will provide copies of all salvage weight/scale tickets showing the in, out, and tare weights of each load to the COR/COTR at the end of each month. The COR/COTR will provide copies of these tickets to the Fort Stewart Waste Management Section.

6.3.1.5. Waters of the U.S. and State Waters

Delineation of Waters of the U.S. (wetlands and streams) is shown on the drawings. As the Designer of Record, contact the Georgia Environmental Protection Division to determine presence of State Waters, and to prepare and submit any Stream Buffer Variance (including request fees) required as a result of specific design layout. Allow time in the schedule for State action of the request and avoid disturbances within the Stream Buffer until the request is approved.

6.3.2. Site Structures and Amenities

6.3.2.1. Storm Drainage System

Construction and material specified for storm drainage installation shall be in accordance with the State's DOT requirements. All storm drainage lines constructed under organizational vehicle hardstand, entrance drives, or surfaces subject to vehicular traffic shall be reinforced concrete pipe with watertight joints.

6.3.2.2. Dumpsters

Dumpster enclosure openings must be a minimum of 11 feet wide per dumpster.

6.3.3. Site Functional Requirements:

6.3.3.1. Stormwater Management (SWM) Systems.

(a) Design and construct an SWM system capable of controlling the runoff. Locate the SWM system within the Limits of Construction shown on the drawings.

(b) Additional information:

Storm water design shall follow the United States Environmental Protection Agencies (USEPA) Technical Guidance on Implementing the Storm water Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act. Utilization of the Coastal Storm water Supplement (CSS) in the Georgia Storm water Management Manual is required.

(c) Provide a Storm Water Pollution Prevention Plan for approval. Keep the approved plan onsite at all times for inspection by EPA, Georgia Department Natural Resources (Georgia DNR), and Fort Stewart/Hunter AAF environmental personnel. To the extent possible within the contract cost limit, post development runoff shall equal predevelopment runoff. Storm water design shall also consider future development upstream and that flows through the project site. Wet detention ponds are not allowed. Grade all sites to drain without ponding of water. See Appendix Dry Detention Pond Specifications.

6.3.3.2. Erosion and Sediment Control

In accordance with Section 01 57 20.00 10, provide an Erosion and Sediment Control Plan, approved by the Georgia Soil and Water Conservation Commission and complying with the requirements set forth in the Fort Stewart/Hunter AAF specification Section 01354 entitled Erosion and Sedimentation Control prior to construction. See Appendix. Any violation to such permits will result in the immediate shutdown of work until corrective measures have been taken at the Contractor's expense. Implement any additional erosion and sediment control measures necessary to retain sediment within the boundaries of the project sites during all phases of construction. Ensure at least one GSWCC certified individual is available on-site during land disturbing activities (LDA). In the event that the GSWCC certified individual leaves the site and is the only individual on-site that is certified, then stop all LDA until the certified individual returns.

6.3.3.2.1. Notice of Intent (NOI) Document

Submit the NOI, and approved Erosion and Sediment Control Plan, and land disturbance fees in the amount of $80/disturbed acre to DPW Environmental Branch.

The DPW will review the NOI package and provide comments to the Contractor. The Contractor shall revise and resubmit the NOI package for DPW signature. The DPW will submit the completed NOI package via certified mail to the State of Georgia. The NOI package must be received by the Georgia Environmental Protection Division at least 14 days prior to any land disturbing activities.

Early project coordination with the representative from the National Resources Conservation Service (NRCS) at Fort Stewart, Mr. Jim Freeman at 912-767-7829 is highly recommended.

6.3.3.2.2. Notice of Termination (NOT) Document

When 70 percent of the permanent vegetation utilized to stabilize 100 percent of the disturbed acreage is established, coordinate a site visit with the Environmental Division [POC, Russell Moncrief, at (912)767-0271] and submit the NOT to:

DPW-Environmental Division
Attn: Russell Moncrief
550 Frank Cochran Dr., Bldg. 1137
Fort Stewart, GA 31314

The DPW will sign and submit the NOT package via certified mail to the State of Georgia, Environmental Protection Division, provided the DPW Environmental Branch concurs with the Contractor's 70 percent established vegetation calculation.

6.3.3.3. Vehicular Circulation. Vehicular Circulation. Eliminate conflicting movements within parking areas and address any traffic impacts within ½ mile of the project limits.

6.4. SITE ENGINEERING

6.4.1. Existing Topographical Conditions

6.4.1.1. See Attachment J for Topographic, conceptual or final Site Layout Drawing and utility survey. Coordinate the design with tie in points provided. Verify the Government-furnished survey and obtain all additional survey information that may be required for design and construction of the project. Bring any discrepancies which are found in the Government furnished survey to the immediate attention of the Government for clarification. Perform any additional surveys required to complete this project at no additional cost to the Government.

6.4.1.2. Bring any discrepancies which are found in the furnished plans to the attention of the Contracting Officer. Complete the Site Layout Plan based on actual building footprints.

6.4.2. Existing Geotechnical conditions:

See Appendix A for a preliminary geotechnical report.

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

6.4.4. Pavement Engineering and Traffic Estimates:

6.4.4.1. A professional engineer, licensed in the State of Georgia, shall design all rigid and flexible pavements in accordance with the Contractor's final geotechnical report.

6.4.4.2. Additional information

MRAP Vehicles to be driven through the EST drive through classrooms on the first floor vary in size and weight. The minimum vehicles which need to be accommodated by this facility are:

MAXPRO, Height 159 inches (13.25') Width 120 inches (10') GVWR 43,500 lbs

RG33, Height 134 inches (11.17') Width 113 inches (9.42') GVWR 40,000 lbs

Caiman, Height 143 inches (11.92') Width 121 inches (10.08') GVWR 50,620 lbs

Cougar, Height 123 inches (10.25') Width 103 inches (8.58') GVWR 52,000 lbs

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

6.4.4.3. Vehicular Parking Areas

(a) Do not use permeable pavements (e.g., segmented pavers, pervious concrete, or pervious asphalt) in vehicular parking and other pavements.

(b) Design parking area surface slopes between 0.5% and 2.0% with a maximum of 3% in the parking stalls.

(c) Design parking areas to avoid ponding.

6.4.4.4. Flexible Pavement Design

(a) Design heavy duty flexible pavements to support H-20 loading.

(b) Design light duty flexible pavements to support 5,000 lb axial loading.

(c) Pavement designs over cohesive soil subgrades require under-drain systems.

(d) The flexible pavement design shall be larger of the calculated flexible design thickness and the minimum flexible design thickness.

6.4.4.5. Rigid Pavement Design

(a) Design rigid pavements to support H-20 loading.

(b) The minimum pavement section shall be 6 inches rigid concrete pavement over 6 inches of compacted aggregate base course.

(c) Pavement designs over cohesive soil subgrades require under drain systems.

(d) Provide a concrete joint layout plan for all concrete pavements. Show joint spacing, joint types, and joint grading.

6.4.4.6. Sidewalks

(a) Locate sidewalks a minimum of 5 feet from main roads and streets. Slope sidewalks to meet all requirements for ADAAG. Construct sidewalks of Portland Cement Concrete.

(b) Emergency vehicle access and service drives shall be a concrete sidewalk (minimum 20 feet wide) designed to support multi-story ladder trucks weighing 75,500 pounds on three axles; two axles are double tired. Install AT/FP access control measures for the service drive meeting the requirements of UFC 4-010-01. Any vehicle control measure must be operable or removable by one person (not to exceed 90 lbs).

6.4.5. Traffic Signage and Pavement Markings. Provide traffic signs and markings per State Department of Transportation requirements and MUTCD.

6.4.6. Base Utility Information

Utilities at Fort Stewart/Hunter AAF are a combination of Government-owned/privately-maintained and completely privatized. The Contractor shall coordinate with the installation and private utilities.

Prior to the start of construction, perform utility coordination meetings with the Contracting Officer, Fort Stewart/Hunter AAF utility personnel, and the privatized utility companies. Do not interrupt utility service for buildings adjacent to this project site, except with installation approval. Coordinate approved outages thru the COR. Use the coordination meetings to identify all utility lines impacted by project construction and verify working status of the existing lines. Coordinate the proposed work on impacted utility lines with the appropriate utility company. Utility impacts to be coordinated shall include, but not be limited to, removals, temporary service and removal, and permanent relocations.

Accomplish any utility relocation to construct the facilities in such a manner as to minimize the impact to other users. The Contractor shall bear the cost of installation and relocation of all utilities except as noted otherwise.

6.4.6.1. Electrical Service

Electrical Service on this installation is privatized. Canoochee EMC is the privatized Utility Company. See paragraph 6.9 for additional information.

6.4.6.2. Communications Service

The Government owns communication service on this installation. Design and install outside plant (OSP) communication infrastructure including cabling. See paragraph 6.9 for additional information.

6.4.6.3. Sanitary Sewer Service

The Government owns the sanitary sewer service on this installation. Government point of contact is Fred Cavedo, 912-767-5499.

Refer to Appendix E for sanitary sewer system permit requirements. Contact Stanley Thomas, Water, Wastewater, and Landfill Compliance Program Manager, Environmental Compliance Branch, Directorate of Public Works 1550 Frank Cochran Drive, Bldg. 1137 Fort Stewart, Georgia 31314-4940; Phone: 912-767-4139.

6.4.6.4. Storm Drainage Service

The Government owns the storm drainage system on this installation. Government point of contact is Fred Cavedo, 912-767-5499.

6.4.6.5. Water Service

The Government owns the water service on this installation. Maps are available through the installation. Government point of contact is Fred Cavedo, 912-767-5499. Design and construct water lines from the connection point to the building. Conceptual or final tie-in points are shown on the drawings. Coordinate with installation Environmental personnel on chlorination requirements. The following are required elements for the water distribution system:

(a) Backflow prevention devices

(b) Lead-free solder on copper pipes

(c) Water service connections must be metered

(d) Water conserving fixtures such as low flow toilets, faucets, and showerheads, and waterless urinals to facilitate compliance with water/waste water permitting requirements

Refer to Appendix E for water system permit requirements. Contact Stanley Thomas, Water, Wastewater, and Landfill Compliance Program Manager, Environmental Compliance Branch, Directorate of Public Works, 1550 Frank Cochran Drive, Bldg. 1137 Fort Stewart, Georgia 31314-4940; Phone: 912-767-4139.

6.4.6.6. Natural Gas Service

Natural gas IS available in the project area. The design, routing, tie-in, and installation of the exterior gas distribution system (up to and including the gas meter/regulator assembly) shall be accomplished by the Design/Build Contractor. Natural gas meters to be provided shall be compatible with the building's DDC system. Fort Stewart purchases natural gas through a Defense Energy Supply Company (DESC). The utility is distributed locally by Atlanta Gas Light. The installation receives natural gas on a firm basis. Point of contact at Fort Stewart for gas service line capacity, size, routing, and points of connection to the gas distribution system is Fred Cavedo, 912-767-5499. The nearest gas line available for use by this project is located as indicated in the Attachments.

6.4.6.7. Hydronic Piping

No existing chilled water or heating water distribution lines are available in or near this project area.

6.4.6.8. Local Telephone Service

The local telephone company will design and install outside plant (OSP) local telephone service (e.g., subscription service to permanent party barracks). Coordinate with the local telephone company to assure ductline entry into the building.

6.4.6.9. Cable TV Service

Cable TV service on this installation is privatized. The local cable company will design and install CATV distribution to and within the project site. Coordinate with the local cable company to assure ductline entry into the building. See paragraph 6.9 for additional information.

6.4.7. Cut and Fill

Earth cut and fill slopes shall not exceed 3 horizontal to 1 vertical. Retaining walls are an option to limit the amount of cut and fill. Locate retaining wall in the following areas:

A three to four foot tall retaining wall is anticipated along the southeast boundary of the site (approximately 160 LF). The western most portion of the existing fence for Building 1808 will need to be relocated above the retaining wall.

A small man-made pond exists on the westerly side of the project. The installation has authorized that this pond can be filled to accomodate the construction of this project.

6.4.8. Borrow Material

6.4.8.1. D5.2 BP1 is the only fill source accessible within the cantonment area without checkpoints/gates and is also NOI permitted requiring NO submittals and/or fees. Additional sources of fill are available outside of the cantonment area. Borrow pits are acquired on a first come, first serve basis. Determination of soil suitability and quantity is the responsibility of project engineer/management. NOTE: Due to location being adjacent to wetlands and high groundwater levels, dewatering of borrow pit(s) must be expected. Work must follow the guidelines within the Georgia's BMP's to prevent silts and sediments from leaving the borrow pit area and entering the waters of the State of Georgia. In addition, any construction projects utilizing/impacting area exceeding 0.75 acres within a borrow pit except for D5.2 BP1 (permitted) must submit a NOI and pay necessary fees. NOI submittal and processing will take approx. 2-3 weeks. In order to avoid project delays, schedule accordingly. If fill material is needed, contact Jesse Coursey @ (912) 767-1211. A Borrow Pit Excavation Application must be completed and approved prior to receiving a Borrow Pit Permit.

6.4.9. Haul Routes and Staging Areas

6.4.9.1. Haul routes are shown on the site drawings. The Installation must approve any requested changes to the haul routes shown. Coordinate with the installation through the COR.

6.4.9.2. Additional Site Requirements

(a) Employee parking. Employees shall park privately owned vehicles in an area designated by the Contracting Officer. This area will be within reasonable walking distance of the construction site. Employee parking shall not interfere with existing and established parking requirements of the Installation.

(b) Temporary Utilities. All temporary utilities (e.g., water, sewer, electrical, and telecommunications) will be at the Contractor's expense and subject to Fort Stewart/Hunter Army Air Field regulations. The utility cost information is located at Appendix K. Negotiate and contract with the privatization utility directly without benefit of the Government.

(c) Storage Area. Trailers, equipment, or materials shall not be open to public view with the exceptions of those items which are in support of ongoing work on any given day. Locate the staging area within the Limits of Construction unless previously approved by the Contracting Officer and the Installation. Comply at all times with the Fort Stewart Command Policy Memorandum, Subject: Design and Maintenance of Contractor Storage Areas. A copy of the memorandum is included in Appendix DD.

6.4.10. Clearing and Grubbing:

6.4.10.1. Tree Removal and Timber Harvesting Requirements

Submit a tree removal plan as soon as possible after receiving Notice-to-Proceed. Show the new tree line on a site layout plan. The new tree line should take into account all buffer requirements, roads, wetlands, streams, etc. Trees on the project site are Government property and therefore the Government through the established Fort Stewart/Hunter AAF timber disposal process will sell all merchantable trees identified and approved for removal. Delineate the clearing limits by surveying and flagging the perimeter trees with red flagging tape. Notify the Government when this has been accomplished. Designate a representative knowledgeable about the clearing limit surveying and flagging to answer any questions that may arise regarding clearing limits. The Government and Contractor will determine the site start point of the clearing operation. Once the Contractor delineates clearing limits , the Government will determine the volume of merchantable timber to be harvested and then advertise, sell, and remove all merchantable timber within 60 days of notification of the clearing limits delineation. Clearing will begin no later than 60 days after the Government and Contractor have agreed on the clearing limits. Merchantable / saleable timber classification is driven by local market conditions and the discretion of the Government timber harvester. Pine and hardwood trees greater than 6 inches in diameter at 4.5 feet above the ground (DBH) and at least 25 feet to a 3-inch diameter top shall be considered as merchantable timber. Trees may be classified as non-merchantable due to size (too small or too large), deformities, accessibility to harvest the trees, metal contamination, and/or any other factor that may affect the Timber Harvest Contractor's ability to efficiently harvest, transport, and sell the trees. Timber harvesting, to include removal of non-merchantable trees as fuel wood, can be implemented before the issuance of a NPDES permit, provided that the guidelines established by the Georgia's Best Management Practices (BMP's) for Forestry Manual are followed, and no ground disturbing activities in areas to be constructed or developed (to include grading and grubbing) occur until the NPDES permit and soil erosion control plan is in order. Ground disturbance activities and guidelines for the stabilization of sites such as, but not limited to, roads, stream crossings, log decks, skid trails, firebreaks and others must follow the Georgia Forestry BMP's manual recommendations. After the Government's Timber Harvest Contractor has cleared a minimum of 5 acres, the Contractor may begin any clearing and grubbing required under the contract once all required environmental permits are in place. Remove all trees or portions of trees remaining after the Timber Harvest Contractor has completed his operations.

6.4.10.2. Timber Harvesting in Wetlands and Streamside Management Zones

If clearing of trees is required within 25 feet of the wrested vegetation of either side of a stream and/or state water, acquire a stream buffer variance from the Georgia Environmental Protection Division (EPD) before the trees can be removed. If at the time of timber harvest, stream buffer variance permits have not been acquired , then the stream buffer areas must remain untouched until the required stream buffer variance permits have been issued. Cut and stockpile all merchantable trees in stream buffer areas. Stockpile all merchantable trees that meet the following criteria on the foot print of the construction site for pick-up by the Government timber harvest contractor.

(a) Pine Sawtimber is a minimum of 10 inches diameter at breast height (DBH) and 25-foot length to an 8-inch top.

(b) Pine Pulpwood is a minimum of 6 inches in DBH and 25-foot length to a 3-inch top.

(c) Hardwood Pulpwood is a minimum of 6 inches DBH and 25-foot length to a 3-inch top.

(d) Hardwood Sawtimber is a minimum of 12 inches DBH and 16.5-foot length to a 12-inch top.

6.4.10.3. Harvesting Streamside Management Zones and Wetlands

(a) Use site-specific equipment and methods to minimize water quality impacts, including high-flotation, low-pressure harvesting equipment, shovel logging, or cable yarding.

(b) Concentrate skid trails and use logging slash, mats or other techniques to minimize soil compaction and rutting.

(c) Use techniques that minimize soil disturbance, such as backing trees out with machine, using low ground pressure equipment, using equipment with a boom or cable winch.

(d) Maintain the integrity of stream banks.

(e) Minimize the exposure of mineral soil by spreading logging slash and using it to drive over.

(f) Follow Federal mandated stream and wetland crossing procedures.

(g) Ruts can not be deeper than 12 inches in wetland areas and stream variance areas

(h) Must Avoid 1) using de-limbing gates or trees as de-limbing gates in the wetlands or stream variance areas or 2) Leaving tops in stream channels.

6.4.10.4. Slash and Residual Tree Removal

Submit a written plan for disposal of all remaining timber at least 15 days prior to any removal. Indicate the method of disposal and the location. The disposal shall occur in one of the following ways unless the Government otherwise approves:

(a) Chip the debris and haul off Fort Stewart/Hunter AAF.

(b) Chip the debris and use as mulch for landscaping. Chips used for this purpose cannot exceed a depth of 3 inches.

(c) Haul debris to a non-Government landfill off of Fort Stewart/Hunter AAF.

6.4.10.5. Clearing and grubbing area must be cleared free of organics to a depth where suitable soil for construction is obtained.

6.4.11. Landscaping:

Comply with the following references:

(a) Specification SECTION 32 93 00, EXTERIOR PLANTS. It is the standard for all Installation-wide landscape plantings.

(b) Plant trees, shrubs and grasses in accordance with Fort Stewart's approved plant list palette (See Appendix I).

(c) Submittals in accordance with Section 01 33 00 SUBMITTAL PROCEDURES shall be provided to the DPW Landscape Architect prior to the installation of any plants, trees, shrubs or grasses for the following:

- SD- 04 Samples
  - Topsoil - submit one pint
  - Mulch - submit one pint
- SD-06 Test Reports
  - Topsoil Composition Tests; Soil Test of proposed landscape planting areas
  - Percolation Test; Percolation Test of proposed landscape planting areas

6.4.12. Turf: All disturbed areas within the Garrison area are to be sodded. All other areas may be seeded.

(a) Use Centipede grass (Eremochloa ophiuroides) for low traffic grass turf areas.

(b) Use Zoysia grass (Zoysia spp) for high traffic grass 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 . 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 Stewarts’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 Stewart’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:

To maintain the current style and character of adjacent facilities as indicated in Fort Stewart IDG(see Appendix F and ZZ for more information).

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 Stewart. 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) Lockset cylinders shall be fully compatible with products of the Best Lock Corporation and shall have interchangeable cores which are removable by a special control key. Cores shall have seven pin tumblers and shall be factory set using the A4 system and E keyway. All locksets and exit devices shall accept the same interchangeable cores.

(c) If the project includes any elevators, provide an elevator inspector, licensed by the State of Georgia, who shall inspect the installation and provide testing of all new elevators and certify in writing that they meet all requirements.

(d) Color match all exterior louvers, vents, exhaust grilles, etc. to the surrounding building finish material, unless otherwise specified by the Installation.

(e) Use standard size brick (or standard size brick veneer) for all exterior brick facades.

(f) Submit exterior finishes for (Installation Master Planning Division, DPW) Government approval (GA).

6.5.3. Programmable Electronic Key Card Access Systems:

The Installation does not have a standard post-wide key card system.

6.5.4. INTERIOR DESIGN

Interior design services will include providing unique pieces (similar to those currently in use) specifically designed for the use of soldiers in the various training simulations (such as padded platforms for soldiers to lie in the prone position as well as devices to hold specific weapons to be used in the simulations). **Contractors shall be responsible for all costs associated with providing the required platforms.**

Interior building signage requirements:

No additional requirements.

6.6. STRUCTURAL DESIGN

6.6.1. Foundation

Treat subgrades under all facility foundation to resist subterranean and other wood destroying insects known to exist in the vicinity of the site. Such treatment shall be in accordance with the environmental criteria referenced in this document.

6.6.2. Slabs on Grade

Provide all interior slabs on grade, including storage and mechanical rooms, garages, and carports with a moisture vapor barrier consisting of lapped polyethylene sheeting having a minimum thickness of 6 mils and a minimum 4-inch thick capillary water barrier. Provide capillary water barrier of clean, washed, sand, poorly graded rock, crushed gravel, or natural gravel. Conform to ASTM C 33 for fine aggregate grading with a maximum of 3 percent by weight passing ASTM D 1140, No. 200 sieve (wash), or coarse aggregate size Nos. 57, 67, 7, 78, or 89.

6.6.3. Structural Loading

(a) For Seismic and Wind Load Analysis, the occupancy factor shall be II, as indicated in the most recent version of ASCE 7.

(b) The wind analysis shall be based on a minimum design wind speed of 110 mph for Ft Stewart and 120 mph for Hunter AAF.

(c) For seismic design (Site Class B), the maximum considered earthquake (MCE) spectral response acceleration at short periods and 1 second period shall be, Ss= 29 %g for Ft Stewart and 38 %g for Hunter AAF and S_1 = 10 %g for Ft Stewart and 12 %g for Hunter AAF..

(d) Snow load is Zero.

(e) Roof Live Loads (20 psf minimum)

(f) Frost Penetration is Zero.

6.7. THERMAL PERFORMANCE

No additional requirements

6.8. PLUMBING

6.8.1. For barracks buildings: In all toilet areas requiring water closets, provide elongated floor mounted vitreous china flush tank type with vitreous china lid.

6.9. SITE ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.9.1. General.

6.9.1.1. See Appendix C: UTILITY CONNECTIONS for additional information and points of contact.

6.9.1.2. Hold site coordination meetings at the start of design and when necessary thereafter. Meet with all applicable parties, including the installation Network Enterprise Center (NEC), the privatized electric Utility Company, the local cable television (CATV) company, and the Contracting Officer's Representative (COR). Address all design, demolition, and construction work including schedules, capacities, equipment selection, equipment locations, utility routing, connection points and final connection responsibilities..Route all coordination including exchanges of information between the Design-Build Contractor and the installation DPW, NEC, the Utility Company, the local CATV company information and other utility entities through the COR. Coordinate the installation of all privatized utilities to avoid conflicts and ensure all utilities are in place prior to landscaping

6.9.2. Exterior Electrical Distribution System

6.9.2.1. General. Canoochee EMC owns, manages, and maintains the primary distribution system at Ft. Stewart The existing primary power distribution system is a 24900/14400 volts, three-phase, four-wire, grounded wye system. The Utility Company will design and construct site electrical primary distribution infrastructure, cabling,equipment, provide and install meters and the service transformer(s). The Utility Company will install secondary service cable from the point of metering to the service transformer. The Utility Company will demolish existing exterior primary lines and equipment no longer required on the project site(s). For all services, the utility will install the cable terminators and connect to the transformer. The Utility Company's work will be under separate contract with the Government and is not part of this contract.

6.9.2.2. Coordination of Schedules. Develop a schedule with the Utility Company concerning transformer delivery times and any offsite utility upgrade projects required to provide power to this project. Coordinate all schedules to insure that all projects are completed without compromising the Beneficial Occupancy Date.

6.9.2.3. Outages. Schedule outages on the existing systems for off peak times (nights and weekends) and obtain approval from DPW. Give a minimum of 2 weeks advance notification of outage. Make full preparations before the outage, in order to minimize the downtime duration.

6.9.2.4. Secondary Service and Exterior Circuits.

(a) Design and construct the site electrical secondary distribution (e.g., site electrical service entrance ducts, site electrical service entrance conductors between the building service equipment and the point of metering, and site feeder and circuit conduit and conductors for sump pumps, irrigation pumps and other electrical and mechanical equipment.)

(b) Coordinate the location for the meter with the Utility Company. Services greater than 600 amp capacity are typically metered at the service transformer.

(c) Secondary service ductlines shall be direct-burial, thick wall type, Provide concrete encasement in areas subject to vehicular traffic. Transitions from below-grade to above-grade shall be galvanized rigid steel. Fittings for steel conduit shall be steel threaded or compression type. Secondary service ductlines shall include a minimum of one spare duct, sized to match the filled ducts.

(d) Provide a 1-inch conduit from the electric utility meter to a data collection point located inside the building communications room.

6.9.2.5. Service Transformer. Furnish demand load data to the utility and the COR in a timely manner to facilitate Utility Company's transformer procurement. Determine the secondary voltage and provide that information to the

Utility Company. Obtain transformer impedances from the Utility Company to perform electrical calculations Coordinate the location of the service transformer with the Utility Company.

6.9.2.6. See Appendix AA: CANOOCHEE EMC RESPONSIBILITIES, and Appendix BB : CONTRACTOR/CANOOCHEE DEMARCATION LINE for additional information. The Contractor (identified as GC in the appendices) shall comply with all requirements within these appendices unless otherwise indicated.

6.9.3. Exterior Lighting

6.9.3.1. Design all site lighting within the project site. The design shall comply with the recommendations of the Illuminating Engineering Society of North America (IESNA) and shall be based on standard full-cutoff fixtures of the Utility Company approved for use at Fort Stewart. Coordinate the lighting design and conduit routing with Canoochee EMC to ensure timely procurement and installation of equipment by the Utility Company. See Appendix AA for additional exterior lighting design and construction responsibilities.

6.9.3.2. The Utility Company owns and maintains site lighting, defined as all exterior lighting outside of the building 5 foot line, Site lighting includes but is not limited to roadway, walkway, parking, hardstand, physical training (PT) field, sports and area lighting.

6.9.3.3. The Contractor is responsible for design and construction of exterior lighting mounted on the new buildings. Wall mounted site lighting fixtures shall be the fully shrouded, full cut-off type, compatible with the building architecture. The Contractor is responsible for lighting of walkways within 5-feet of the building. Lighting shall be controlled automatically.

6.9.3.4. Calculate the site lighting power densities and demonstrate compliance with the requirements of ASHRAE 90.1 and LEED (where applicable). Coordinate with the Utility Company to obtain information required to calculate the site lighting power densities.

6.9.3.5. The Utility Company will demolish existing lighting structures and associated site conduit and wiring no longer required on the project site(s).

6.9.3.6. All Electric Utility Company work will be under a separate contract with the Government. Such work is NOT part of this contract.

6.9.3.7. For additional guidance regarding the separation of responsibilities between the Contractor and the Utility Company (Canoochee EMC), see APPENDIX AA: CANOOCHEE EMC RESPONSIBILITIES and APPENDIX BB: CONTRACTOR/CANOOCHEE DEMARCATION LINE.

6.9.4. Exterior Communication Services

6.9.4.1. Coordinate and obtain approval for the telecommunications design from the NEC Quality Assurance Officer prior to construction.

6.9.4.2. Connect to the OSP, extending a new ductline, manhole and cable system to the building main communications room. Coordinate the sizes and quantities of the conduits between manholes with the installation NEC. Terminate cables on protected entrance terminal blocks in the building main communications room. Coordinate the duct bank and OSP cabling design and construction with the installation NEC, The NEC will provide location of duct bank and OSP cabling connection point.

6.9.4.3. All ductlines shall include one duct with 3-way Maxcell innerduct.

6.9.4.4. Provide a minimum of 4 weeks advance notification to NEC through the COR prior to any demolition of communication lines or equipment.

6.9.4.5. Provide 50 feet of service loop at the building communications room and in each manhole and hand hole. Tag all cables.

Provide pull strings in all conduits and/or inner duct sufficient for the use of pulling required communication cables into the facilities main communication room.

6.9.5. Cable Television (CATV) Service

6.9.5.1. Comcast Cable is the local cable television (CATV) company at Fort Stewart. Comcast will provide and install service cabling throughout the project site, terminating at the head-end equipment in each building under separate contract with the Government. That work is not part of this contract.

6.9.5.2. Coordinate site work and site/facility interfaces with Comcast Cable. Coordination shall include interface requirements between the building CATV system and the site CATV system.

6.9.5.3. Comcast will provide and install head-end equipment. Coordinate head-end equipment locations with Comcast and NEC.

6.9.5.4. Extend one 4-inch duct from the CATV backboard location to a location specified by Comcast

6.9.6. Cathodic Protection. Obtain soil resistivity data on site to assist in determining the cathodic protection requirements.

6.10. FACILITY ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.10.1. Telecommunications Systems

6.10.1.1. LAN hubs and other communication electronics shall be Government-furnished, Government-installed (GFGI); all other equipment shall be Contractor-furnished, Contractor-installed (CFCI). Connect the BCS with the outside plant (OSP) Notify the Contracting Officer and the NEC Quality Assurance Officer 14 days prior to connection between the BCS and OSP. Representatives of the Contracting Officer and the NEC Quality Assurance Officer will witness the connection.

6.10.1.2. Coordinate design with the Network Enterprise Center (NEC) Quality Assurance Officer. The NEC and the US Army Information Systems Engineering Command (ISEC) must concur with the design prior to construction See Appendix C, UTILITY CONNECTIONS for NEC points of contact.

6.10.2. Intrusion Detection System

6.10.2.1. Where an Intrusion Detection System (IDS) is required by paragraph 3, the Design-Build Contractor shall provide power, communication, and signal circuits including all wiring, conduit, and boxes for the IDS system. The Government willprovide and install the actual sensors (door alarm sensor, passive infrared motion sensor, and the duress alarm sensor, etc) and the Control Unit.

6.10.2.2. Provide a dedicated 20A, 120VAC circuit with a ground wire to the IDS Control Unit enclosure. The conduit for the IDS telephone line shall originate at the communications backboard and terminate in the IDS Control Unit enclosure. The enclosure shall be GFCI. Coordinate with the Physical Security Division (912) 767-8490.

6.10.2.3. Each alarm sensor shall report to the IDS Control Unit. Wiring for the balanced magnetic switch (door alarm sensor) and the duress alarm sensor(s) shall each be a 22 AWG, 2-conductor, stranded wire. Wiring for the PIR motion sensor(s) shall be a 22 AWG, 4-conductor stranded wire. Terminate wiring and conduit for the door alarm sensor near the opening side of the door, adjacent to the ceiling with a 4-inch square metal box. Coordinate locations and connection points with the Installation Physical Security Officer during design. Coordinate the IDS requirements including final sensor box locations with the Fort Stewart Physical Security Division (912) 767-8490. The Government's ICIDS contractor will complete the installation of the sensors and program the control unit to put the system on-line at the monitor station.

6.10.3. Cable Television System

6.10.3.1. Where cable television (CATV) is required, design and install the complete building CATV system in accordance with the I3A. Provide cable television outlets in each reception area, private office, open office, lounge, conference room, training room, classroom, snack bar and elsewhere as appropriate.

6.10.3.2. Coordinate CATV requirements with the local CATV company, Comcast Cable. Coordination includes interface requirements between the building CATV system and the site CATV system. See Appendix C: UTILITY CONNECTIONS for Comcast points of contact.

6.11. HEATING, VENTILATING, AND AIR CONDITIONING

6.11.1. Utility Monitoring and Control System (UMCS)

Integrate the control system to the installation's existing UMCS. The existing UMCS is a Johnson Controls (Metasys) UMCS, which is a web-based system. The UMCS is located in Building 1134 and is capable of handling both BacNet and LonWorks protocols. The point of contact for UMCS is Energy Engineer, Mr. Fred Lewis (912-767-5034). The building level controllers shall utilize LonWorks technology. A contractor certified by Johnson Controls (Metasys) shall install and integrate the building control system. Submit certification documentation for the proposed control system. Before starting the design, meet with the operating staff to discuss the installation's requirements for graphics and programming.

Provide M&C Software with a license for no less than 0 clients

Provide M&C Software with a license for no less than 0 points.

6.12. ENERGY CONSERVATION

6.12.1. 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 energy conservation requirements, other than those stated in paragraph three(3) and paragraph five(5) are necessary for this project.

6.13. FIRE PROTECTION

6.13.1. The building fire alarm and detection system (FADS) shall be an addressable Class A system fully compatible with the base-wide Monaco D21 central fire alarm system. Coordinate fire alarm zone descriptions and number with the fire department. (Single-story buildings typically require a minimum of 8 to 11 fire alarm zones; each floor above the first floor requires an additional 6 fire alarm zones.)The FADS shall include an integrated radio transceiver, Monaco BT-X or approved equal. Manual pull stations shall be metal, double action type, and shall not use break rods. Key the FADS to the LS-300 keying standard in all cases. Coordinate the fire alarm requirements with the Fort Stewart Fire Chief [Donald Hollis at (912) 767-2636, email address: donald.hollis2@us.army.mil].

6.13.2. Provide a Knox 3200 Series recessed wall mounted key vault for Fire Department use at each building exterior. Locate adjacent to the main building entrance. Coordinate purchase of key vault through the Installation Fire Department for purchase order information and forms.

6.13.3. Provide an exterior post indicator valve with tamper switch reporting to the fire alarm control panel (FACP) on the sprinkler service main.

6.13.4. Protection of Piping Against Earthquake Damage: Protect sprinkler and fire pump piping systems against damage from earthquakes. Seismic protection shall include both flexible and rigid couplings, sway bracing, seismic separation assemblies where piping crosses building seismic separation joints, and other features as required by NFPA 13.

6.13.5. Fire Pump: Determine if a fire pump is required based on fire flow test data and fire protection system design requirements. If a fire pump is required, provide a complete fire pump system installation.

6.13.6. Fire Extinguisher Cabinets and Brackets: Provide semi-recessed cabinets in finished areas and provide brackets in non-finished areas (such as utility rooms, shops, and vehicle bays). Note the location of cabinets and brackets on the architectural drawings. Size cabinets and brackets to accommodate a minimum of a 10-pound ABC extinguisher.

6.13.7. Mass Notification System (MNS): Provide a combined system or equivalentthat performs both as an individual building MNS and as the building Fire Alarm voice evacuation system.

6.13.7.1. The MNS shall be fully compatible with and integrated into the basewide Mass Notification System manufactured by Acoustic Technology Inc. (ATI) and shall be capable of accepting all pre-recorded messages as well as live messages from a remote site by way of dry contacts and 600 ohm audio inputs.

6.13.7.2. Coordinate work and site/facility interfaces with ATI Systems. Procure and install the ATI interface ATI Systems uses a wireless Motorola radio system. Coordinate interface requirements between the building MNS system and the site MNS system. Key the MNS to the LS-300 keying standard in all cases. The ATI Systems point of contact for procurement and installation is Antonio Cracchiolo at (617) 567-4969 x307. The contact for coordination of the tie-in at Fort Stewart is Eric Waters at (912) 767-3417.

6.14. SUSTAINABLE DESIGN

6.14.1. LEED Rating Tool Version. This project shall be executed using LEED-NC Version 2.2.

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.

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

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 NOT meets the criteria for this credit.

SS Credit 3 Brownfield Redevelopment.

Project site DOES NOT meets the criteria for this credit.

SS Credit 4.1 Public Transportation Access.

Project site DOES NOT meets the criteria for this credit.

EA Credit 6 Green Power.

35% of the project's electricity WILL NOT 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 does not have an on-post recycling facility available for Contractor's use.

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

Project has been registered under LEED Version 2.2 by the Government. Project administrstion will be transferred to contractor after award.

6.15. ENVIRONMENTAL

6.15.1. Comply with all Federal, State, and local environmental requirements to include all requirements of the Fort Stewart Directorate of Public Works Environmental Division as outlined in the Appendix E regarding disposal, borrow pit usage, storm water management, air quality, water quality, storage tanks, cultural resources, and forestry. Refer to Appendix E for the project's Environmental Assessment (EA).

6.15.2. Site Evaluation

No site Evaluation.

6.15.3. Contractual Responsibilities of All Parties in the Event of Encounter with Contamination

If the Contractor encounters materials or conditions which indicate that there may be contamination on the site, stop all work on the job site and report the discovery of the contaminants to the Contracting Officer's Representative (COR). The Contracting Officer will issue a written order to resume work or to suspend, delay, or interrupt all or any part of the work of this contract for the period of time that the Contracting Officer determines appropriate for the convenience of the Government as provided in FAR 52.242-14 - SUSPENSION OF WORK. The Government will be responsible for making an assessment of the contaminated site if this course of action is determined to be appropriate. After the assessment has been completed, the Government reserves the right to the following courses of action:

(a) Direct the Contractor to resume work.

(b) Contain, clean up or institute avoidance action at the contaminated site prior to directing the Contractor to resume work. The COR will determine whether the containment or cleanup is to be accomplished by others or the Contractor.

(c) Relocate the project site.

(d) Terminate the contract for the convenience of the Government as provided in FAR 52.249-1 - TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (FIXED-PRICE) (SHORT FORM) or FAR 52.249-2 - TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (FIXED-PRICE) - ALTERNATE I as applicable.

6.16. PERMITS

6.16.1. General

6.16.1.1. The Government has not obtained any permits/licenses related to this project. Obtain all permits/licenses required for this project. Comply with all permit requirements. Submit copies of the permits and any amendments. Determine the fee basis and pay all filing fees. The known permit forms are provided in an Appendix.

6.16.1.2. Prepare permit/license applications; provide all required information and supporting documentation in a form ready for signature by the Owner and submittal to the applicable agency. Should the permitting agency require additional clarification or information during the review process, provide all necessary assistance to resolve the outstanding issue. The appropriate address for all permit/license applications will be provided at the Post Award Conference or otherwise, after contract award.

6.16.1.3. Comply with provisions of Installation permits, compliance agreements, and plans with regulating authorities/agencies.

6.16.2. Soil Borrow Permits. If Installation Borrow pits are available for this contract (see paragraph 6.4.8) a permit is required for their use. Soil borrow pit permits are processed with the DPW Environmental Division. Permits are issued for the life of the Contract. Borrow materials may be used only on the project for which the permits are issued. Keep a copy of the completed permit with the vehicle throughout the Contract borrow operation.

6.16.3. Site Excavation (Disturbance) and Utility Location Permits. Present DPW approved Site Excavation and Utility Location Permits prior to any excavation or drilling that penetrates the ground by 6 or more inches. Keep a signed copy of the digging permit shall be kept on site at all times. A sample of this form can be obtained from the Contracting Officer or DPW upon request. The DPW POC contact information will be provided at the Post award conference.

6.16.4. State of Georgia Required Applications and Permits. Prepare, sign, and submit the following list of commonly required State of Georgia applications and permits for Fort Stewart/Hunter AAF projects. Obtain any additional applications and permits not listed as required for the construction of this project.

Erosion and Sedimentation Control permit

General Permit to Discharge Stormwater under the National Pollutant Discharge Elimination System

Stormwater Management Permit Application Form

Notice of Intent (NOI) and Notice of Termination (NOT) Documents. The Contractor shall prepare, sign, and submit the NOI and NOT documents to the State Georgia.

6.16.5. Air Permits. Coordinate with Fort Stewart/Hunter AAF's Environmental Management Division (EMD) staff in obtaining all required and applicable permits as part of the design process. Secure all permits necessary for construction of this project. Fort Stewart/Hunter AAF operates under a Title V Air Permit for air quality requirements. Perform a regulatory review of all air sources in the project and submit for approval to the EMD. Each Congressional Appropriation is defined as one project. Additionally, new sources must be reviewed for NESHAP (National Emissions Standards for Hazardous Air Pollutants) applicability. Develop required air permit application(s) and/or coordinate with EMD on any on-going permit applications. Pay all air permitting fees and obtain all required permits prior to construction of any new sources. Comply with all State regulatory requirements for boilers fired by either natural gas or distillate oil. Ensure that the boiler(s) is included in the Installations Title V Air Permit. New boilers with an input greater than 10 million btu/hr shall meet 40 CFR Part 60, New Source Performance Standards. All new boilers shall include low NOx burners. An air permit is required for each type of material (i.e. concrete, rock crushing, asphalt batch plants) that will produce dust and other harmful particulates within the boundaries of the installation. The Contractor can not unilaterally change the Installation's Title V Air Permit. Coordinate any and all changes/modifications through the designated EMD staff.

6.16.5.1. Air Permit Submittal Requirements (Boilers and Domestic Water Heaters). Pursuant to satisfying requirements under the Clean Air Act, at or before the Interim design stage, submit the following to the installation's environmental office:

(1) a listing of boilers and domestic hot water heaters that will be fired by natural gas, propane, and/or fuel oil

(2) the fuel or fuels (primary and backup, if applicable) that will be utilized for each piece of equipment

(3) the quantity of each particulate size

(4) the respective input firing rate. Provide a point of contact and an alternate point of contact, should the environmental office require additional information from the designer of record during the permitting process. Send two copies of the document to the Savannah District, one to the Project Manager for placement in Central Files, and another to the Mechanical Section.

(5) Do not send this document prematurely, since any increase in boiler sizing subsequent to submission of the document will require revision to the permitting process. In any event, if there is a change in equipment sizing during refinement of the design process, submit an updated copy of said document per the guidance above.

(6) Incorporate into the design the equipment accessories required for compliance with the governing environmental laws. This includes, but is not limited to, determining the need for individual metering and the level of emissions monitoring required. The Interim design narrative shall specifically address those features that will be incorporated into the boiler system design to assure compliance with the applicable environmental laws of the State.

(7) Prior to the submission of form DD 1354 Acceptance of Real Property, submit to EMD copies of all required Federal and/or State certifications associated with emission units, i.e. visible emissions certifications. Note the dates that the certifications are turned into EMD in the remarks section of form DD 1354.

6.16.5.2. Construction Permit. Be aware that, normally, for fast track design-build contracts, the construction permit will not have been obtained prior to award of the design-build contract. No construction associated with the building(s) housing the boiler(s) or other source(s) of contaminant can be done prior to obtaining the required permit. Generally, only the following things can be done prior to possession of the permit: clearing and grading, access roads, driveways, parking lots, underground utilities up to the 5-foot line of the buildings, and ancillary structures (structures not associated with housing the sources of contaminants).

6.16.6. Utility Marking Permit (Required for Excavation). Submit all requests for underground utility locations at Fort Stewart/Hunter AAF shall be submitted through the Georgia Utility Protection Center (UPC). The UPC will accept locate requests either by telephone or on-line. The phone number is (800) 282-7411. The UPC web address is www.gaupc.com. Once at the web site, click on IRTH login. To submit a request online, registration is required. The excavating Contractor must mark the boundaries of the proposed excavation site using either white paint, flags or stakes. DPW has responsibility for the accuracy of the locates pertaining to gas and fuel lines, water lines, electrical lines to include secondary electricity, airfield lighting, low voltage , fire systems, sewer lines, roof drain lines, storm drainage lines, industrial waste lines, chilled water lines, high temperature water lines, irrigation systems and DPW non-fiber optic computer lines. Forward requests to all utility companies with services in the vicinity of the excavation site. Permits will be issued within 48 hours of the next business day following the receipt of the request by the UPC. Permits will only be valid for 21 days. Submit renewal requests a minimum of 3 days prior to expiration. Requesting contractors are responsible for maintaining marks during the 21 day period. If after acquiring a permit, a utility is damaged during excavation, please notify the appropriate utility company. DPW‘s utilities are listed above. The DPW point of contact for utilities at Fort Stewart or at HAAF will be provided at the Post Award Conference. The excavating contractor should be prepared to submit proof of a valid permit when calling about damaged utilities.

6.17. DEMOLITION

6.17.1. Demolition of structures requires 50 percent by weight diversion of material from the landfill. Remove all construction debris in the way of construction from the site and dispose of off of the installation. Demolish all existing structures as required to develop the project site within the limits of construction. Remove and/or relocate utilities as required to develop the project site within the limits of construction. Coordinate utility removals and/or relocation with the privatized utilities. .

6.17.2. Remove all hazardous building materials (HBM) from buildings to be demolished. HBMs are defined as asbestos (friable and non friable), mercury containing or contaminated items, PCB containing or contaminated items (including hydraulic systems fluids, light ballasts, and caulk), electronic boards (fire/smoke alarm systems, HVAC control systems, fire suppression dump systems, MNS, IDS, etc.), radioactive sources (smoke detectors), poured lead items (stair rail anchors, roofing weights, window counterweights, sink/shower pastes, pipe joints), and

other materials identified in the Asbestos and HBM Surveys in Appendix XX. Lead-based paint (LBP) is a hazardous material when:

- The Toxicity Characteristic Leaching Procedure (TCLP) of demolition waste is exceeded for wastes going into a construction and debris landfill. This applies to all non-housing structures. Housing and barracks are not required to adhere to this requirement when debris is scheduled to be landfilled.
- Used as riprap or fill material. No painted materials may be used for environmental stabilization regardless of lead content.
- When targeted to be used for recycling for uses other than batch feed for hot asphalt or concrete. (Grinding of LBP painted concrete for batch feed must include plans with requirements to control lead contaminated dust, rain run-off, and worker protection. The Contractor is responsible for all permits associated with this activity.

6.17.3. Project Specific Requirements:

No demolition of existing structures or paving is required as part of this project.

6.18. ADDITIONAL FACILITIES

No additional facilities are required as part of this project.

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

1.2. QUALIFICATIONS

Designate an authorized representative who shall be responsible for the preparation of the schedule and all required updating (statusing) and preparation of reports. The authorized representative shall be experienced in scheduling projects similar in nature to this project and shall be experienced in the use of the scheduling software that meets the requirements of this specification.

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

3.1.1. Submit a project schedule as specified herein for approval showing the sequence in which the Contractor proposes to perform the work and dates on which the Contractor contemplates starting and completing all schedule activities. The scheduling of the entire project, including the design and construction sequences is required. Contractor management personnel shall actively participate in its development. Designers, subcontractors and suppliers working on the project shall also contribute in developing an accurate project schedule. The schedule must be a forward planning as well as a project monitoring tool. The approved project schedule shall be used to measure the progress of the work and to aid in evaluating requests for excusable time extensions. The schedule shall be cost loaded and activity coded as specified herein. The schedule will provide the basis for all progress payments. If the Contractor fails to submit any schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments until the Contractor submits the required schedule

3.1.2. Status the schedule on at least a monthly basis, as specified herein. If in the opinion of the Contracting Officer, the Contractor falls behind the approved schedule, the Contractor shall take steps necessary to improve its progress including those that may be required by the Contracting Officer, without additional cost to the Government. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained. See paragraph 3.7.4.

3.1.3. Failure of the Contractor to comply with the requirements of the Contracting Officer shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the default terms of the contract.

3.2. BASIS FOR PAYMENT AND COST LOADING

The schedule shall be the basis for determining contract earnings during each update period and therefore the amount of each progress payment. Lack of an approved schedule update or qualified scheduling personnel will result in an inability of the Contracting Officer to evaluate contract earned value for the purposes of payment. Failure of the Contractor to provide all information, as specified herein will result in the disapproval of the preliminary, initial and subsequent schedule updates. In the event schedule revisions are directed by the Contracting Officer and those revisions have not been included in subsequent revisions or updates, the Contracting Officer may hold retainage up to the maximum allowed by contract, each payment period, until such revisions to the project schedule have been made. Activity cost loading shall be reasonable as determined by the Contracting Officer. The aggregate value of all activities coded to a contract CLIN as specified herein shall equal the value of the CLIN on the Schedule.

3.3. PROJECT SCHEDULE DETAILED REQUIREMENTS

The computer software system utilized to produce and update the project schedule shall be capable of meeting all requirements of this specification. Failure of the Contractor to meet the requirements of this specification will result in the disapproval of the schedule. Scheduling software that meets the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER-1-1-11(1995) referenced herein are Primavera Project Planner (P3) by Primavera, and Open Plan by Deltek.

3.3.1. Use of the Critical Path Method

Use the Critical Path Method (CPM) of network calculation to generate the project schedule. Prepare the project schedule using the Precedence Diagram Method (PDM).

3.3.2. Level of Detail Required

Develop the project schedule to an appropriate level of detail. Failure to develop the project schedule to an appropriate level of detail, as determined by the Contracting Officer, will result in its disapproval. The Contracting Officer will consider, but is not limited to, the following characteristics and requirements to determine appropriate level of detail:

3.3.2.1. Activity Durations

Reasonable activity durations are those that allow the progress of ongoing activities to be accurately determined between update periods. Less than 2 percent of all non-procurement activities shall have Original Durations (OD) greater than 20 work days or 30 calendar days. Procurement activities are defined herein.

3.3.2.2. Design and Permit Activities

Include design and permit activities, including necessary conferences and follow-up actions and design package submission activities. Include the design schedule in the project schedule, showing the sequence of events involved in carrying out the project design tasks within the specific contract period. This shall be at a detailed level of scheduling sufficient to identify all major design tasks, including those that control the flow of work. Include review and correction periods associated with each item.

3.3.2.3. Procurement Activities

Include activities associated with the submittal, approval, procurement, fabrication and delivery of long lead materials, equipment, fabricated assemblies and supplies. Long lead procurement activities are those with an anticipated procurement sequence of over 90 calendar days. A typical procurement sequence includes the string of activities: submit, approve/review, procure, fabricate, and deliver.

3.3.2.4. Mandatory Tasks

Include and properly schedule the following tasks (See also the Sample Preliminary Submittal Register Input Form):

3.3.2.4.1. Submission, review and acceptance of design packages, including BIM

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 the contract commissioning requirements.

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. Government Activities. Show Government and other agency activities that could impact progress. These activities include but are not limited to: approvals, design reviews, review conferences, release for construction of design package(s), environmental permit approvals by State regulators, inspections, utility tie-ins, Government Furnished Property/Equipment (GFP) and Notice to Proceed for phasing requirements, if any.

3.3.2.6. Activity Responsibility Coding (RESP)

Assign Responsibility Code for all activities to the Prime Contractor, Subcontractor or Government agency responsible for performing the activity. Activities coded with a Government Responsibility code include, but are not limited to: Government approvals, Government design reviews, environmental permit approvals by State regulators, Government Furnished Equipment (GFE) and Notice to Proceed (NTP) for phasing requirements. Code all activities not coded with a Government Responsibility Code to the Prime Contractor or Subcontractor responsible to perform the work. Activities shall not have more than one Responsibility Code. Examples of acceptable activity code values are: DOR (for the designer of record); ELEC (for the electrical subcontractor); MECH (for the mechanical subcontractor); and GOVT (for USACE). Unacceptable code values are abbreviations of the names of subcontractors.

3.3.2.7. Activity Work Area Coding (AREA)

Assign Work Area code to activities based upon the work area in which the activity occurs. Define work areas based on resource constraints or space constraints that would preclude a resource, such as a particular trade or craft work crew from working in more than one work area at a time due to restraints on resources or space. Examples of Work Area Coding include different areas within a floor of a building, different floors within a building, and different buildings within a complex of buildings. Activities shall not have more than one Work Area Code. Not all activities are required to be Work Area coded. A lack of Work Area coding will indicate the activity is not resource or space constrained.

3.3.2.8. Contract Changes/Requests for Equitable Adjustment (REA) Coding (MODF)

Assign Activity code to any activity or sequence of activities added to the schedule as a result of a Contract Modification, when approved by Contracting Officer, with a Contract Changes/REA Code. Key all Code values to

the Government's modification numbering system. Any activity or sequence of activities added to the schedule as a result of alleged constructive changes made by the Government may be added to a copy of the current schedule, subject to the approval of the Contracting Officer. Assign Activity codes for these activities with a Contract Changes/REA Code. Key the code values to the Contractor's numbering system. Approval to add these activities does not necessarily mean the Government accepts responsibility and therefore liability for such activities and any associated impacts to the schedule, but rather the Government recognizes such activities are appropriately added to the schedule for the purposes of maintaining a realistic and meaningful schedule. Such activities shall not be Responsibility Coded to the Government unless approved. An activity shall not have more than one Contract Changes/REA Code

3.3.2.9. Contract Line Item (CLIN) Coding (BIDI)

Code all activities to the CLIN on the Contract Line Item Schedule to which the activity belongs. An activity shall not contain more than one CLIN Item Code. CLIN Item code all activities, even when an activity is not cost loaded.

3.3.2.10. Phase of Work Coding (PHAS)

Assign Phase of Work Code to all activities, based upon the phase of work in which the activity occurs. Code activities to either a Design Phase or a Construction Phase. Code fast track design and construction phases proposed by the Contractor to allow filtering and organizing the schedule by fast track design and construction packages. If the contract specifies construction phasing with separately defined performance periods, identify a Construction Phase Code to allow filtering and organizing the schedule accordingly. Each activity shall have only one Phase of Work code.

3.3.2.11. Category of Work Coding (CATW)

Assign Category of Work code to all Activities based upon the category of work which the activity belongs. Category of Work Code must include, but is not limited to: Design, Design Submittal, design reviews, review conferences, Construction Submittal, Approvals (if any), Acceptance, Procurement, Fabrication, Delivery, Weather Sensitive Installation, Non-Weather Sensitive Installation, Start Up, Test, and Turnover. Assign a Category of Work code to each activity. Each activity shall have only one Category of Work Code.

3.3.2.12. Definable Features of Work Coding (FOW1, FOW2, FOW3)

Assign a Definable Feature of Work Code to appropriate activities based on the definable feature of work to which the activity belongs. Definable Feature of Work is defined in Specification Section 01 45 04.00 10, Contractor Quality Control. An activity shall not have more than one Definable Feature of Work Code. Not all activities are required to be Definable Feature of Work Coded.

3.3.3. Scheduled Project Completion and Activity Calendars

The schedule interval shall extend from NTP date to the required contract completion date. The contract completion activity (End Project) shall finish based on the required contract duration, as adjusted for any approved contract time extensions. The first scheduled work period shall be the day after NTP is acknowledged by the Contractor. Schedule activities on a calendar to which the activity logically belongs. Activities may be assigned to a 7 day calendar when the contract assigns calendar day durations for the activity such as a Government Acceptance activity. If the Contractor intends to perform physical work less than seven days per week, schedule the associated activities on a calendar with non-work periods identified including weekends and holidays. Assign the Category of Work Code - Weather Sensitive Installation to those activities that are weather sensitive. Original durations must account for anticipated normal adverse weather. The Government will interpret all work periods not identified as non-work periods on each calendar as meaning the Contractor intends to perform work during those periods.

3.3.3.1. Project Start Date

The schedule shall start no earlier than the date on which the NTP was acknowledged. Include as the first activity in the project schedule an activity called "Start Project" or "NTP". The "Start Project" activity shall have an "ES" constraint date equal to the date that the NTP was acknowledged, with a zero day duration.

3.3.3.2. Schedule Constraints and Open Ended Logic

Constrain completion of the last activity in the schedule by the contract completion date. Schedule calculations shall result in negative float when the calculated early finish date of the last activity is later than the contract completion date. Include as the last activity in the project schedule an activity called "End Project". The "End Project" activity shall have an "LF" constraint date equal to the contract completion date for the project, and with a zero day duration or by using the “project must finish by” date in the scheduling software. The schedule shall have no constrained dates other than those specified in the contract. The use of artificial float constraints such as “zero fee float” or “zero total float” are typically prohibited. There shall only be 2 open ended activities: Start Project (or NTP) with no predecessor logic and End Project with no successor logic.

3.3.3.3. Early Project Completion

In the event the Preliminary or Initial project schedule calculates an early completion date of the last activity prior to the contract completion date, the Contractor shall identify those activities that it intends to accelerate and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. The last activity shall have a late finish constraint equal to the contract completion date and the schedule will calculate positive float. The Government will not approve an early completion schedule with zero float on the longest path. The Government is under no obligation to accelerate activities for which it is responsible to support a proposed early contract completion.

3.3.4. Interim Completion Dates

Constrain contractually specified interim completion dates to show negative float when the calculated early finish date of the last activity in that phase is later than the specified interim completion date.

3.3.4.1. Start Phase

Include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The “Start Phase X" activity shall have an "ES" constraint date equal to the date on which the NTP was acknowledged, and a zero day duration.

3.3.4.2. End Phase

Include as the last activity for a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have an "LF" constraint date equal to the specified completion date for that phase and a zero day duration.

3.3.4.3. Phase “X” Hammock

Include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" hammock activity shall be logically tied to the earliest and latest activities in the phase.

3.3.5. Default Progress Data Disallowed

Do not automatically update Actual Start and Finish dates with default mechanisms that may be included in the scheduling software. Activity Actual Start (AS) and Actual Finish (AF) dates assigned during the updating process shall match those dates provided from Contractor Quality Control Reports. Failure of the Contractor to document the AS and AF dates on the Daily Quality Control report for every in-progress or completed activity, and failure to ensure that the data contained on the Daily Quality Control reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's updated schedule and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. Updating of the percent complete and the remaining duration of any activity shall be independent functions. Disable program features which calculate one of these parameters from the other.

3.3.6. Out-of-Sequence Progress

Activities that have progressed before all preceding logic has been satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case basis subject to approval by the Contracting Officer. Propose logic corrections to eliminate all out of sequence progress or justify not changing the sequencing for approval prior to submitting an

updated project schedule. 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

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. Include detailed design and permitting activities, including but not limited to identification of individual design packages, design submission, reviews and conferences; permit submissions and any required Government actions; and long lead procurement activities required prior to design completion. The Initial Project Schedule shall include the entire construction sequence and all fast track construction activities, with as much detail as is known at the time but, as a minimum, shall include all construction start and completion milestone activities, and detailed construction activities through the dry-in milestone, including all activity coding and cost loading. Include the remaining construction, including cost loading, but it may be scheduled summary in nature. As the design proceeds and design packages are developed, fully detail the remaining construction activities concurrent with the monthly schedule updating process. Constrain construction activities by Government acceptance of associated

designs. When the design is complete, incorporate into the then approved schedule update all remaining detailed construction activities that are planned to occur after the dry-in milestone.

3.4.3. Design Package Schedule Submission:

With each design package submitted to the Government, submit a frag-net schedule extracted from the then current Preliminary, Initial or Updated schedule which covers the activities associated with that Design Package including construction, procurement and permitting activities.

3.4.4. Periodic Schedule Updates

Based on the result of the meeting specified in PERIODIC SCHEDULE UPDATE MEETINGS, submit periodic schedule updates. These submissions shall enable the Contracting Officer to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgment of the Contracting Officer or authorized representative is necessary for verifying the Contractor's progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made. Update the schedule to include detailed lower WBS activities procurement and construction activities as the design progresses, but not later than the submission of the final, un-reviewed design submission for each separate design package. The Contracting Officer may require submission of detailed schedule activities for any distinct construction that is started prior to submission of a final design submission, if such activity is authorized.

3.4.5. Standard Activity Coding Dictionary

Use the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11, Appendix A. This exact structure is mandatory, even if some fields are not used. A template SDEF compatible schedule backup file (sdef.prx) is available on the QCS website: 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. Depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.5.1. Continuous Flow

Show a continuous flow from left to right with no arrows from right to left. Show the activity number, description, duration, and estimated earned value on the diagram.

3.5.5.2. Project Milestone Dates

Show dates on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.5.5.3. Critical Path

Clearly show the critical path.

3.5.5.4. Banding

Organize activities as directed to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.

3.5.5.5. S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

3.6. PERIODIC SCHEDULE UPDATE MEETINGS

Conduct periodic schedule update meetings for the purposes of reviewing the Contractor’s proposed out of sequence corrections, determining causes for delay, correcting logic, maintaining schedule accuracy and determining earned value. Meetings shall occur at least monthly within five days of the proposed schedule data date and after the Contractor has updated the schedule with Government concurrence respecting actual start dates, actual finish dates, remaining durations and percent complete for each activity it intend to status. Match the acutal start and finish dates with the dates exported, as described in paragraph 3.3.5. Provide a computer with the scheduling software loaded and a projector during the meeting which allows all meeting participants to view the proposed schedule update during the meeting. The meeting and resultant approvable schedule update shall be a condition precedent to a formal submission of the update as described in SUBMISSION REQUIREMENTS and to the submission of an invoice for payment. The meeting will be a working interactive exchange which will allow the Government and the Contractor the opportunity review the updated schedule on a real time and interactive basis. The Contractor’s authorized scheduling representative will organize, sort, filter and schedule the update as requested by the Government. The meeting will last no longer than 8 hours. A rough draft of the proposed activity logic corrections and narrative report shall be provided to the Government 48 hours in advance of the meeting. The Contractor's Project Manager and Authorized Scheduler shall attend the meeting with the Authorized Representative of the Contracting Officer.

3.6.1. Update Submission Following Progress Meeting

Submit a complete update of the project schedule containing all approved progress, revisions, and adjustments, pursuant to paragraph SUBMISSION REQUIREMENTS not later than 4 working days after the periodic schedule update meeting, reflecting only those changes made during the previous update meeting.

3.6.2. Staus of Activities

Update statusing information, including Actual Start Dates (AS), Actual Finish Dates (AF), Remaining Durations (RD) and Percent Complete shall be subject to the approval of the Government prior to the meeting. As a minimum, address the following items on an activity by activity basis during each progress meeting:

3.6.2.1. Actual Start and Finish Dates

Accurately status the AS and/or AF dates for each activity currently in-progress or completed since the last update The Government may allow an AF date to be assigned with the percent complete less than 100% to account for the value of work remaining but not restraining successor activities. Only assign AS dates when actual progress occurs on an activity.

3.6.2.2. Remaining Duration

Update the estimated RD for all incomplete activities independent of Percent Complete. Remaining durations may exceed the activity OD or may exceed the activity's prior update RD if the Government considers the current OD or RD to be understated based on current progress, insufficient work crews actually manning the job, unrealistic OD or deficiencies that must be corrected that restrain successor activities.

3.6.2.3. Percent Complete

Update the percent complete for each activity started, based on the realistic assessment of earned value. Activities which are complete but for remaining minor punch list work and which do not restrain the initiation of successor activities may be statused 100 percent complete. To allow for proper schedule management, cost load the correction of punch list from Government pre-final inspection activity(ies) not less than 1% of the total contract value, which activity(ies) may be declared 100 percent complete upon completion and correction of all punch list work identified during Government pre-final inspection(s).

3.6.2.4. Logic Changes

Specifically identify and discuss all logic changes pertaining to NTP on change orders, change orders to be incorporated into the schedule, contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, and other changes that have been made pursuant to contract provisions. The Government will only approve logic revisions for the purpose of keeping the schedule valid in terms of its usefulness in calculating a realistic completion date, correcting erroneous logic ties, and accurately sequencing the work.

3.6.2.5. Other Changes

Other changes required due to delays in completion of any activity or group of activities include: 1) delays beyond the Contractor's control, such as strikes and unusual weather. 2) delays encountered due to submittals, Government Activities, deliveries or work stoppages which make re-planning the work necessary. 3) Changes required to correct a schedule that does not represent the actual or planned prosecution and progress of the work.

3.7. REQUESTS FOR TIME EXTENSIONS

In the event the Contractor believes it is entitled to an extension of the contract performance period, completion date, or any interim milestone date, furnish the following for a determination by the Contracting Officer: justification, project schedule data, and supporting evidence as the Contracting Officer may deem necessary. Submission of proof of excusable delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is a condition precedent to any approvals by the Government. In response to each Request For Proposal issued by the Government, the Contractor shall submit a schedule impact analysis demonstrating whether or not the change contemplated by the Government impacts the critical path.

3.7.1. Justification of Delay

The project schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with its request. The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in effect for the time period in question, and other factual information.

Actual delays that are found to be caused by the Contractor's own actions, which result in a calculated schedule delay, will not be a cause for an extension to the performance period, completion date, or any interim milestone date.

3.7.2. Submission Requirements

Submit a justification for each request for a change in the contract completion date of less than 2 weeks based upon the most recent schedule update at the time of the NTP or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

3.7.2.1. A list of affected activities, with their associated project schedule activity number.

3.7.2.2. A brief explanation of the causes of the change

3.7.2.3. An analysis of the overall impact of the changes proposed.

3.7.2.4. A sub-network of the affected area

Identify activities impacted in each justification for change by a unique activity code contained in the required data file.

3.7.3. Additional Submission Requirements

The Contracting Officer may request an interim update with revised activities for any requested time extension of over 2 weeks. Provide this disk within 4 days of the Contracting Officer's request.

3.7.4. If Progress Falls Behind the Approved Project Schedule

3.7.4.1. Should progress fall behind the approved schedule (more than 20 work days of negative float) due to Contractor generated problems, promptly provide a supplemental recovery or completion schedule that illustrates its efforts to regain time to assure a completion by the required contract completion date.

3.7.4.2. The supplemental recovery or completion schedule will not replace the original, approved schedule as the official contract schedule. Continue to update the original, approved schedule on at least a monthly basis. In addition, the Contractor and the Contracting Officer will monitor the supplemental recovery or completion schedule on at least a bi-weekly basis to determine its effect on regaining the rate of progress to assure project completion by the contractually required completion date.

3.7.4.3. Do not artificially improve progress by simply revising the schedule logic, modifying or adding constraints, or shortening future work activity durations. Resource and manpower load the supplemental recovery schedule or completion schedule with crew size and productivity for each remaining activity, indicating overtime, weekend work, and/or double shifts needed to regain the schedule, in accordance with FAR 52.236.15, without additional cost to the Government. Indicate assumptions made and the basis for any logic, constraint, or duration changes used in the creation of the supplemental recovery or completion schedule in a narrative submitted for the Contracting Officer’s approval. Any additional resources or manpower must be evident at the work site. Do not modify the official contract schedule to include these assumptions.

3.7.4.4. Failure to perform work and maintain progress in accordance with the supplemental recovery or completion schedule may result in an interim and final unsatisfactory performance rating and/or may result in corrective action by the Contracting Officer in accordance with FAR 52.236-15.

3.8. DIRECTED CHANGES

If the NTP is issued for changes prior to settlement of price and/or time, submit proposed schedule revisions to the Contracting Officer within 2 weeks of the NTP being issued. The Contracting Officer will approve proposed revisions to the schedule prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor with suggested revisions to the project schedule. The Contractor shall include these revisions in the project schedule until revisions are submitted and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, advise the Contracting Officer within 2 weeks of receipt of the revisions. Regardless of the objections, the Contractor shall continue to update the schedule with the Contracting Officer's revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit alternative revisions within 2 weeks of

receipt of the Contracting Officer's proposed revisions, the Contractor will be deemed to have concurred with the Contracting Officer's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

3.9. WEEKLY PROGRESS MEETINGS

3.9.1. The Government and the Contractor shall meet weekly (or as otherwise mutually agreed to) between the meetings described in paragraph PERIODIC SCHEDULE UPDATE MEETINGS for the purpose of jointly reviewing the actual progress of the project as compared to the as planned progress and to review planned activities for the upcoming two weeks. The then current and approved schedule update shall be used for the purposes of this meeting and for the production and review of reports. The Contractor’s Project Manager and the Authorized Representative of the Contracting Officer shall attend. The weekly progress meeting will address the status of RFI’s, RFP’s and Submittals.

3.9.2. Provide a bar chart produced by the scheduling software, organized by Total Float and Sorted by Early Start Date, and a two week “look-ahead” schedule by filtering all schedule activities to show only current ongoing activities and activities schedule to start during the upcoming two weeks, organized by Work Area Code (AREA) and sorted by Early Start Date.

3.9.3. The Government and the Contractor shall jointly review the reports. If it appears that activities on the longest path(s) which are currently driving the calculated completion date (driving activities), are not progressing satisfactorily and therefore could jeopardize timely project completion, corrective action must be taken immediately. Corrective action includes but is not limited to: increasing the number of work crews; increasing the number of work shifts; increasing the number of hours worked per shift; and determining if Government responsibility coded activities require Government corrective action.

3.10. OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

3.11. TRANSFER OF SCHEDULE DATA INTO RMS/QCS

Download and upload the schedule data into the Resident Management System (RMS) prior to RMS databases being transferred to the Government and is considered to be additional supporting data in a form and detail required by the Contracting Officer pursuant to FAR 52.232-5 - Payments under Fixed-Price Construction Contracts. The receipt of a proper payment request pursuant to FAR 52.232-27 - Prompt Payment for Construction Contracts is contingent upon the Government receiving both acceptable and approvable hard copies and electronic export from QCS of the application for progress payment.

End of Section 01 32 01.00 10

SECTION 01 33 00
SUBMITTAL PROCEDURES

1.0 GENERAL

1.1. DEFINITIONS

1.2. NOT USED

1.3. SUBMITTAL CLASSIFICATION

1.4. APPROVED OR CONCURRED WITH SUBMITTALS

1.5. DISAPPROVED SUBMITTALS

1.6. WITHHOLDING OF PAYMENT

1.7. GENERAL

1.8. SUBMITTAL REGISTER

1.9. SCHEDULING

1.10. TRANSMITTAL FORM (ENG FORM 4025)

1.11. SUBMITTAL PROCEDURES

1.12. CONTROL OF SUBMITTALS

1.13. GOVERNMENT APPROVED SUBMITTALS

1.14. INFORMATION ONLY SUBMITTALS

1.15. STAMPS

1.0 GENERAL

1.1. DEFINITIONS

1.1.1. Submittal

Contract Clauses "FAR 52.236-5, Material and Workmanship," paragraph (b) and "FAR 52.236-21, Specifications and Drawings for Construction," paragraphs (d), (e), and (f) apply to all "submittals."

1.1.2. Submittal Descriptions (SD)

Submittals requirements are specified in the technical sections. Submittals are identified by SD numbers and titles as follows.

SD-01 Preconstruction Submittals

- Certificates of insurance.
- Surety bonds.
- List of proposed subcontractors.
- List of proposed products.
- Construction Progress Schedule.
- Submittal register.
- Schedule of prices.
- Accident Prevention Plan.
- Work plan.
- Quality control plan.
- Environmental protection plan.

SD-02 Shop Drawings

- Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.
- Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.
- Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

- Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials or equipment for some portion of the work.
- Samples of warranty language when the contract requires extended product warranties.

SD-04 Samples

- Physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged.
- Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project.
- Field samples and mock-ups constructed on the project site establish standards by which the ensuring work can be judged. Includes assemblies or portions of assemblies that are to be incorporated into the project and those which will be removed at conclusion of the work.

SD-05 Design Data

- Calculations, mix designs, analyses or other data pertaining to a part of work.
- Design submittals, design substantiation submittals and extensions of design submittals.

SD-06 Test Reports

- Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must

have been within three years of date of contract award for the project.)

- Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.
- Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.
- Investigation reports.
- Daily checklists.
- Final acceptance test and operational test procedure.

SD-07 Certificates

- Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.
- Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.
- Confined space entry permits.
- Text of posted operating instructions.

SD-08 Manufacturer's Instructions

- Preprinted material describing installation of a product, system or material, including special notices and Material Safety Data sheets concerning impedances, hazards and safety precautions.

SD-09 Manufacturer's Field Reports

- Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- Factory test reports.

SD-10 Operation and Maintenance Data

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

SD-11 Closeout Submittals

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

1.1.3. Approving Authority

Office authorized to approve submittal.

1.1.4. Work

As used in this section, on- and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.2. NOT USED

1.3. SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.3.1. Designer of Record Approved (DA)

1.3.1.1. Designer of Record (DOR) approval is required for all extensions of design, critical materials, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings". Provide the Government the number of copies designated hereinafter of all DOR approved submittals, after the DOR has taken appropriate action. The DOR shall ensure that submittals conform to the Solicitation, the Accepted Proposal and the completed design, however see below for those submittals proposing a deviation to the contract or a substitution of a material, system, or piece of equipment that was identified by manufacturer, brand name or model description in the accepted contract proposal.

1.3.1.2. The DOR shall ensure that the submittals comply with all applicable Buy American Act and Trade Agreement Act clauses in the contract. The DOR may confer with the Contracting Officer's Representative for advice and interpretation of those clauses, as necessary.

1.3.1.3. The Government may, but is not required to, review any or all DOR approved submittals for conformance to the solicitation, accepted proposal and the completed design. Except for submittals designated as deviating from the Solicitation, the Accepted Proposal or completed design, the Contractor may proceed with acquisition and installation upon DOR approval. Government Approved (GA)

1.3.2. Government Approved (GA)

Government approval is required for any item specifically designated as requiring Government approval in the Solicitation, for internal and external color finish selections and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.3.3. Government Conformance Review of Design (CR)

The Government will review all intermediate and final design submittals for conformance with the technical requirements of the solicitation. Section 01 33 16 **DESIGN AFTER AWARD** covers the design submittal and review process in detail. Review will be only for conformance with the applicable codes, standards and contract requirements. Design data includes the design documents described in Section 01 33 16 **DESIGN AFTER AWARD**. Generally, design submittals should be identified as SD-05 Design Data submittals.

1.3.4. Designer of Record Approved/Government Conformance Review (DA/CR)

1.3.4.1. Deviations to the Accepted Design. Designer of Record approval and the Government’s concurrence are required for any proposed deviation from the accepted design which still complies with the contract (the Solicitation and Accepted Proposal) before the Contractor is authorized to proceed with material acquisition or installation. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings.” If necessary to facilitate the project schedule, the Contractor and the DOR may discuss a submittal proposing a deviation with the Contracting Officer's Representative prior to officially submitting it to the Government. However, the Government reserves the right to review the submittal before providing an opinion, if it deems it necessary. In any case, the Government will not formally agree to or provide a preliminary opinion on any deviation without the DOR's approval or recommended approval. The Government reserves the right to non-concur with any deviation from the design, which may impact furniture, furnishings, equipment selections or operations decisions that were made, based on the reviewed and concurred design.

1.3.4.2. Substitutions. Unless prohibited or provided for otherwise elsewhere in the Contract, where the accepted contract proposal named products, systems, materials or equipment by manufacturer, brand name and/or by model number or other specific identification, and the Contractor desires to substitute manufacturer or model after award, submit a requested substitution for Government concurrence. Include substantiation, identifying information and the DOR’s approval, as meeting the contract requirements and that it is equal in function, performance, quality and salient features to that in the accepted contract proposal.

1.3.5. Designer of Record Approved/Government Approved (DA/GA)

Any proposed deviation to the solicitation and/or the accepted proposal constitutes a change to the contract. In addition to the above stated requirements for proposed deviations to the accepted design, both Designer of Record and Government Approval and, where applicable, a contract modification are required before the Contractor is

authorized to proceed with material acquisition or installation for any proposed deviation to the contract. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings". The Government reserves the right to accept or reject any such proposed deviation at its discretion.

1.3.6. Information Only

All submittals not requiring Designer of Record or Government approval will be for information only. Provide the Government “For Information Only” copies of all submittals not requiring Government approval or concurrence, after the Designer of Record has taken the appropriate action.

1.4. APPROVED OR CONCURRED WITH SUBMITTALS

Do not construe the Contracting Officer's approval of or concurrence with submittals as a complete check, but only that design, general method of construction, materials, detailing and other information appear to meet the Solicitation and Accepted Proposal. Approval or concurrence will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for design, dimensions, all design extensions, such as the design of adequate connections and details, etc., and the satisfactory construction of all work. The Government won’t consider re-submittals for the purpose of substituting previously approved materials or equipment unless accompanied by an explanation of why a substitution is necessary.

1.5. DISAPPROVED SUBMITTALS

Make all corrections required by the Contracting Officer, obtain the Designer of Record's approval when applicable, and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. Resubmit any "information only" submittal found to contain errors or unapproved deviations from the Solicitation or Accepted Proposal as one requiring "approval" action, requiring both Designer of Record and Government approval. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, provide prompt notice in accordance with the Contract Clause "Changes" to the Contracting Officer.

1.6. WITHHOLDING OF PAYMENT

No payment for materials incorporated in the work will be made if all required Designer of Record or required Government approvals have not been obtained. No payment will be made for any materials incorporated into the work for any conformance review submittals or information only submittals found to contain errors or deviations from the Solicitation or Accepted Proposal.

1.7. GENERAL

Make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, the Contractor’s Quality Control (CQC) System Manager and the Designer of Record, if applicable, shall check, approve, sign, and stamp all items, indicating action taken. Clearly idenify proposed deviations from the contract requirements. Include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Schedule and make submittals requiring Government approval prior to the acquisition of the material or equipment covered thereby. Pick up and dispose of samples remaining upon completion of the work in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.8. SUBMITTAL REGISTER (GA)

Develop a complete list of submittals, including each separate design package submittal. Submit the initial submittal register within 15 days after Notice to Proceed, including, as a minimum, the design packages and other initial submittals required elsewhere in the contract. The Designer of Record shall identify required submittals in the

specifications, and use the list to prepare the Submittal Register, utilizing the government-provided software, QCS (see Section 01 45 01.10), to create the ENG Form 4288. Appendix 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 four (4) copies of the submittal and return ten (10) 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

1.0 GENERAL INFORMATION

1.1. INTRODUCTION

1.2. DESIGNER OF RECORD

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. PRE-WORK ACTIVIES & CONFERENCES

3.1.1. Design Quality Control Plan

3.1.2. Post Award Conference

3.1.3. Partnering & Project Progress Processes

3.1.4. Initial Design Conference

3.1.5. Pre-Construction Conference

3.2. STAGES OF DESIGN SUBMITTALS AND OVER THE SHOULDER PROGRESS REVIEWS

3.2.1. Site/Utilities

3.2.2. Interim Design Submittals

3.2.3. Over-the-Shoulder Progress Reviews

3.2.4. Final Design Submissions

3.2.5. Design Complete Submittals

3.2.6. Holiday Periods for Government Review or Actions

3.2.7. Late Submittals and Reviews

3.3. DESIGN CONFIGURATION MANAGEMENT

3.3.1. Procedures

3.3.2. Tracking Design Review Comments

3.3.3. Design and Code Checklists

3.4. INTERIM DESIGN REVIEWS AND CONFERENCES

3.4.1. General

3.4.2. Procedures

3.4.3. Conference Documentation

3.5. INTERIM DESIGN REQUIREMENTS

3.5.1. Drawings

3.5.2. Design Analyses

3.5.3. Geotechnical Investigations and Reports

3.5.4. LEED Documentation

3.5.5. Energy Conservation

3.5.6. Specifications

3.5.7. Building Rendering

3.5.8. Interim Building Design Contents

3.6. FINAL DESIGN REVIEWS AND CONFERENCES

3.7. FINAL DESIGN REQUIREMENTS

3.7.1. Drawings

3.7.2. Design Analysis

3.7.3. Specifications

3.7.4. Submittal Register

3.7.5. Preparation of DD Form 1354 (Transfer of Real Property)

3.7.6. Acceptance and Release for Construction

3.8. DESIGN COMPLETE CONSTRUCTION DOCUMENT REQUIREMENTS

3.9. SUBMITTAL DISTRIBUTION, MEDIA AND QUANTITIES

3.9.1. Submittal Distribution and Quantities

3.9.2. Web based Design Submittals

3.9.3. Mailing of Design Submittals

3.10. AS-BUILT DOCUMENTS

ATTACHMENT A STRUCTURAL INTERIOR DESIGN (SID) REQUIREMENTS

ATTACHMENT B FURNITURE, FIXTURES AND EQUIPMENT REQUIREMENTS

ATTACHMENT C TRACKING COMMENTS IN DRCHECKS

ATTACHMENT D SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW

ATTACHMENT E LEED SUBMITTALS

ATTACHMENT F BUILDING INFORMATION MODELING REQUIREMENTS

ATTACHMENT G DESIGN SUBMITTAL DIRECTORY AND SUBDIRECTORY FILE ARRANGEMENT

1.0 GENERAL INFORMATION

1.1. INTRODUCTION

1.1.1. The information contained in this section applies to the design required after award. After award, the Contractor will develop the accepted proposal into the completed design, as described herein.

1.1.2. The Contractor may elect to fast track the design and construction that is, proceed with construction of parts of the sitework and facilities prior to completion of the overall design. To facilitate fast tracking, the Contractor may elect to divide the design into no more than six (6) design packages per major facility type and no more than three (3) design packages for site and associated work. Designate how it will package the design, consistent with its overall plan for permitting (where applicable) and construction of the project. See Sections 01 33 00 SUBMITTAL PROCEDURES and 01 32 01.00 10 PROJECT SCHEDULE for requirements for identifying and scheduling the design packaging plan in the submittal register and project schedule. See also Sections 01 10 00 STATEMENT OF WORK and 01 57 20.00 10 ENVIRONMENTAL PROTECTION for any specified permit requirements. If early procurement of long-lead item construction materials or installed equipment, prior to completion of the associated design package, is necessary to facilitate the project schedule, also identify those long-lead items and how it will assure design integrity of the associated design package to meet the contract requirements (The Contract consists of the Solicitation requirements and the accepted proposal). Once the Government is satisfied that the long-lead items meet the contract requirements, the Contracting Officer will allow the Contractor to procure the items at its own risk.

1.1.3. The Contractor may proceed with the construction work included in a separate design package after the Government has reviewed the final (100%) design submission for that package, review comments have been addressed and resolved to the Government's satisfaction and the Contracting Officer (or the Administrative Contracting Officer) has agreed that the design package may be released for construction.

1.1.4. INTEGRATED DESIGN. To the maximum extent permitted for this project, use a collaborative, integrated design process for all stages of project delivery with comprehensive performance goals for siting, energy, water, materials and indoor environmental quality and ensures incorporation of these goals. Consider all stages of the building lifecycle, including deconstruction.

1.2. DESIGNER OF RECORD

Identify, for approval, the Designer of Record (“DOR”) that will be responsible for each area of design. One DOR may be responsible for more than one area. Listed, Professional Registered, DOR(s) shall account for all areas of design disciplines 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.

3.5.2.13. Air Barrier System: Provide a narrative of the design and installation requirements for the Air Barrier system. As part of the design quality control process an air barrier consultant shall review drawing details to assure that details of critical Air Barrier components are properly detailed and incorporated during the design drawings and process (i.e. window flashing details, penetration in air barrier details, door flashing details, roofing/ceiling barrier interface details and etc.). Furnish the Government written review details and results.

3.5.3. Geotechnical Investigations and Reports:

3.5.3.1. The contractor’s licensed geotechnical engineer shall prepare a final geotechnical evaluation report, to be submitted along with the first foundation design submittal. Make this information available as early as possible during the over-the-shoulder progress review process. Summarize the subsurface conditions and provide recommendations for the design of appropriate utilities, foundations, floor slabs, retaining walls, embankments, and pavements. Include compaction requirements for fill and backfill under buildings, sidewalks, other structures and open areas. Recommend foundation systems to be used, allowable bearing pressures for footings, lateral load

resistance capacities for foundation systems, elevations for footings, grade beams, slabs, etc. Provide an assessment of post-construction settlement potential including total and differential. Provide recommendations regarding lateral earth pressures (active, at-rest, passive) to be used in the design of retaining walls. Include the recommended spectral accelerations and Site Class for seismic design along with an evaluation of any seismic hazards and recommendations for mitigation, if required. Include calculations to support the recommendations for bearing capacity, settlement, and pavement sections. Include supporting documentation for all recommended design parameters such as Site Class, shear strength, earth pressure coefficients, friction factors, subgrade modulus, California Bearing Ratio (CBR), etc. Provide earthwork recommendations, expected frost penetration, expected groundwater levels, recommendations for dewatering and groundwater control and the possible presence of any surface or subsurface features that may affect the construction of the project such as sinkholes, boulders, shallow rock, old fill, old structures, soft areas, or unusual soil conditions. Include pH tests, salinity tests, resistivity measurements, etc., required to design corrosion control and grounding systems. Include the raw field data. Arrange a meeting with the Government subsequent to completion and evaluation of the site specific geotechnical exploration to outline any differences encountered that are inconsistent with the Government provided preliminary soils information. Clearly outline differences which require changes in the foundation type, or pavement and earthwork requirements from that possible and contemplated using the Government furnished preliminary soils investigation, which result in a change to the design or construction. Any equitable adjustment is subject to the provisions of the contract's Differing Site Conditions Clause.

3.5.3.2. Vehicle Pavements: The Contractor's geotechnical report shall contain flexible and rigid pavement designs, as applicable for the project, including design CBR and modulus of subgrade reaction and the required compaction effort for subgrades and pavement layers. Provide Information on the types of base course materials available in the area and design strengths.

3.5.3.3. The Contractor and the professional geotechnical engineer consultant shall certify in writing that the design of the project has been developed consistent with the Contractor's final geotechnical report. The certification shall be stamped by the consulting professional geotechnical engineer and shall be submitted with the first design submission. If revisions are made to the initial design submission, a new certification shall be provided with the final design submission.

3.5.4. LEED Documentation:

Assign a LEED Accredited Professional, responsible to track LEED planning, performance and documentation for each LEED credit through construction closeout. Incorporate LEED credits in the plans, specifications and design analyses. Develop LEED supporting documentation as a separable portion of the Design Analysis and provide with each required design submittal. Include the LEED Project checklist for each non-exempt facility (one checklist may be provided for multiple facilities in accordance with the LEED-NC Application Guide for Multiple Buildings and On-Campus Building Projects and the LEED SUBMITTALS (Attachment E, herein) with each submittal. Final design submittal for each portion of the work must include all required design documentation relating to that portion of work (example - all site credit design documents with final site design). Submittal requirements are as indicated in Attachment E, LEED SUBMITTALS. Submit all documentation indicated on Attachment E as due at final design at final design submittal (for fast-track projects with multiple final design submittals, this shall be at the last scheduled final design submittal). All project documentation related to LEED shall conform to USGBC requirements for both content and format, including audit requirements and be separate from other design analyses. Maintain and update the LEED documentation throughout project progress to construction closeout and shall compile product data, receipts, calculations and other data necessary to substantiate and support all credits claimed. The Government may audit any or all individual credits. Audit documentation is not required to be submitted unless requested. These requirements apply to all projects. If the project requires the Contractor to obtain USGBC certification, the Contractor shall also be responsible for obtaining USGBC certification and shall provide written evidence of certification with the construction closeout LEED documentation submittal. Install the USGBC building plaque at the location indicated by the Government upon receipt. If Contractor obtains USGBC interim design review, submit the USGBC review to the Government within 30 days of receipt for information only.

3.5.4.1. LEED Documentation for Technology Solution Set. If the Solicitation provides a Prescriptive Technology Solution Set, use of the Technology Solution set has no effect on LEED documentation requirements. Provide all required LEED documentation, including energy analysis, in accordance with LEED requirements when using the Technology Solution Set.

3.5.5. Energy Conservation:

3.5.5.1. Refer to Section 01 10 00, Paragraph 5. Interim and Final Design submittals shall demonstrate that each building including the building envelope, HVAC systems, service water heating, power, and lighting systems meet the Mandatory Provisions and the Prescriptive Path requirements of ASHRAE 90.1. Use Compliance Documentation forms available from ASHRAE and included in the ASHRAE 90.1 User's Manual for this purpose. The Architectural Section of the Design Analysis shall include completed forms titled "Building Envelope Compliance Documentation Parts I and II". The Heating Ventilating and Air Conditioning (HVAC) Section of the Design Analysis shall include a completed form titled "HVAC Simplified Approach Option - Part I" if this approach is allowed by the Standard. Otherwise, the HVAC Section of the Design Analysis shall include completed forms titled "HVAC Mandatory Provisions - Part II" and "HVAC Prescriptive Requirements - Part III". The Plumbing Section of the Design Analysis shall include a completed form titled "Service Water Heating Compliance Documentation". The Electrical Section of the Design Analysis shall include an explanatory statement on how the requirements of ASHRAE 90.1-2004 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

(k) Air Barrier Design: Details of all Air Barrier components, (i.e. window flashing details, penetrations in air barrier details, door flashing details, roofing/ceiling barrier interface details and etc.)

3.5.8.4. Structural Systems. Include:

(a) Drawings showing principal members for roof and floor framing plans as applicable

(b) Foundation plan showing main foundation elements where applicable

(c) Typical sections for roof, floor, and foundation conditions

3.5.8.5. Plumbing Systems

(a) Show locations and general arrangement of plumbing fixtures and major equipment

(b) Plan and isometric riser diagrams of all areas including hot water, cold water, waste and vent piping. Include natural gas (and meter as required), (natural gas and meter as required), (LP gas), (fuel oil) and other specialty systems as applicable.

(c) Include equipment and fixture connection schedules with descriptions, capacities, locations, connection sizes and other information as required

3.5.8.6. HVAC Systems

(a) Mechanical Floor Plans: The floor plans shall show all principle architectural features of the building which will affect the mechanical design. The floor plans shall also show the following:

(1) Room designations.

(2) Mechanical legend and applicable notes.

(3) Location and size of all ductwork and piping.

(4) Location and capacity of all terminal units (i.e., registers, diffusers, grilles, hydronic baseboards).

(5) Pre-Fabricated Paint Spray Booth (where applicable to project scope)

(6) Paint Preparation Area (where applicable to project scope)

(7) Exhaust fans and specialized exhaust systems.

(8) Thermostat location.

(9) Location of heating/cooling plant (i.e., boiler, chiller, cooling tower, etc).

(10) Location of all air handling equipment.

(11) Air balancing information.

(12) Flue size and location.

(13) Piping diagram for forced hot water system (if used).

(b) Equipment Schedule: Provide complete equipment schedules. Include:

(1) Capacity

(2) Electrical characteristics

(3) Efficiency (if applicable)

(4) Manufacturer's name

(5) Optional features to be provided

(6) Physical size

(7) Minimum maintenance clearances

(a) Details: Provide construction details, sections, elevations, etc., only where required for clarification of methods and materials of design.

(b) HVAC Controls: Submit complete HVAC controls equipment schedules, sequences of operation, wiring and logic diagrams, Input/Output Tables, equipment schedules, and all associated information. See the Statement of Work for additional specific requirements.

3.5.8.7. Fire Protection and Life Safety.

(a) Provide plan for each floor of each building that presents a compendium of the total fire protection features being incorporated into the design. Include the following types of information:

(1) The location and rating of any fire-resistive construction such as occupancy separations, area separations, exterior walls, shaft enclosures, corridors, stair enclosures, exit passageways, etc.

(2) The location and coverage of any fire detection systems

(3) The location and coverage of any fire suppression systems (sprinkler risers, standpipes, etc.)

(4) The location of any other major fire protection equipment

(5) Indicate any hazardous areas and their classification

(6) Schedule describing the internal systems with the following information: fire hazard and occupancy classifications, building construction type, GPM/square foot sprinkler density, area of operation and other as required

(b) Working plans and all other materials submitted shall meet NFPA 13 requirements, with respect to required minimum level of detail.

3.5.8.8. Elevators. Provide:

(a) Description of the proposed control system

(b) Description, approximate capacity and location of any special mechanical equipment for elevators.

3.5.8.9. Electrical Systems.

(a) Electrical Floor Plan(s): Show all principle architectural features of the building which will affect the electrical design. Show the following:

(1) Room designations.

(2) Electrical legend and applicable notes.

(3) Lighting fixtures, properly identified.

(4) Switches for control of lighting.

(5) Receptacles.

(6) Location and designation of panelboards. Clearly indicate type of mounting required (flush or surface) and reflect accordingly in specifications.

(7) Service entrance (conduit and main disconnect).

(8) Location, designation and rating of motors and/or equipment which requires electrical service. Show method of termination and/or connection to motors and/or equipment. Show necessary junction boxes, disconnects, controllers (approximate only), conduit stubs, and receptacles required to serve the motor and/or equipment.

(b) Building Riser Diagram(s) (from pad-mounted transformer to unit load center panelboard): Indicate the types and sizes of electrical equipment and wiring. Include grounding and metering requirements.

(c) Load Center Panelboard Schedule(s): Indicate the following information:

(1) Panelboard Characteristics (Panel Designation, Voltage, Phase, Wires, Main Breaker Rating and Mounting.

(2) Branch Circuit Designations.

(3) Load Designations.

(4) Circuit Breaker Characteristics. (Number of Poles, Trip Rating, AIC Rating)

(5) Branch Circuit Connected Loads (AMPS).

(6) Special Features

(d) Lighting Fixture Schedule(s): Indicate the following information:

(1) Fixture Designation.

(2) General Fixture Description.

(3) Number and Type of Lamp(s).

(4) Type of Mounting.

(5) Special Features.

(e) Details: Provide construction details, sections, elevations, etc. only where required for clarification of methods and materials of design.

3.5.8.10. Electronic Systems including the following responsibilities:

(a) Fire Detection and Alarm System. Design shall include layout drawings for all devices and a riser diagram showing the control panel, annunciator panel, all zones, radio transmitter and interfaces to other systems (HVAC, sprinkler, etc.)

(b) Fire Suppression System Control. Specify all components of the Fire Suppression (FS) System in the FS section of the specifications. Clearly describe how the system will operate and interact with other systems such as the fire alarm system. Include a riser diagram on the drawings showing principal components and interconnections with other systems. Include FS system components on drawing legend. Designate all components shown on floor plans “FS system components” (as opposed to “Fire Alarm components”). Show location of FS control panels, HVAC control devices, sensors, and 120V power panel connections on floor plans. Indicate zoning of areas by numbers (1, 2, 3) and detectors sub-zoned for cross zoning by letter designations (A and B). Differentiate between ceiling mounted and under floor detectors with distinct symbols and indicate sub-zone of each.

(c) Public Address System

(d) Special Grounding Systems. Completely reflect all design requirements in the specifications and drawings. Specifications shall require field tests (in the construction phase), witnessed by the Government, to determine the effectiveness of the grounding system. Include drawings showing existing construction, if any.

(e) Cathodic Protection.

(f) Intrusion Detection, Card Access System

(g) Central Control and Monitoring System

(h) Mass Notification System

(i) Electrical Power Distribution Systems

3.5.8.11. Separate detailed Telecommunications drawings for Information Systems including the following responsibilities:

(a) Telecommunications Cabling

(b) Supporting Infrastructure

(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. Use DrChecks or other acceptable comment tracking system during the ITR and submit the results with each final design package

3.7.1. Drawings

3.7.1.1. Submit drawings complete with all contract requirements incorporated into the documents to provide a 100% design for each package submitted.

3.7.1.2. Prepare all drawings with the Computer-Aided Design and Drafting (CADD)/Computer-Aided Design (CAD) system, organized and easily referenced electronically, presenting complete construction information.

3.7.1.3. Drawings shall be complete. The Contractor is encouraged to utilize graphics, views, notes, and details which make the drawings easier to review or to construct but is also encouraged to keep such materials to those that are necessary.

3.7.1.4. Provide detail drawings that illustrate conformance with the contract. Include room finish schedules, corresponding color/finish/special items schedules, and exterior finish schedules that agree with the submitted SID binders.

3.7.1.5. The design documents shall be in compliance with the latest version of the A/E/C CAD Standard, available at https://cadbim.usace.army.mil/CAD. Use the approved vertical Corps of Engineers title blocks and borders on all drawings with the appropriate firm name included within the title block area.

3.7.1.6. CAD System and Building Information Modeling (BIM) (NOTE: If this is a Single Award or Multiple Award, Indefinite Delivery/Indefinite Quantity Contract, this information will be provided for each task order.)

All CAD files shall be fully compatible with MicroStation V8 or higher. Save all design CAD files as MicroStation V8 or higher files. All submitted BIM Models and associated Facility Data shall be fully compatible with Bentley BIM file format and the USACE Bentley BIM v8 Workspace.

(a) CAD Data Final File Format: During the design development capture geo-referenced coordinates of all changes made to the existing site (facility footprint, utility line installations and alterations, roads, parking areas, etc) as a result of this contract. There is no mandatory methodology for how the geo-referenced coordinates will be captured, however, Engineering and Construction Bulletin No. 2006-15, Subject: Standardizing Computer Aided Design (CAD) and Geographic Information Systems (GIS) Deliverables for all Military Design and Construction Projects identifies the format for final as-built drawings and data sets to be delivered to the government. Close-out requirements at the as-built stage; require final geo-referenced GIS Database of the new facility along with all exterior modifications. The Government will incorporate this data set into the Installation's GIS Masterplan or Enterprise GIS System. See also, Section 01 78 02.00 10 Closeout Submittals.

(b) Electronic Drawing Files: In addition to the native CAD design files, provide separate electronic drawing files (in editable CAD format and Adobe Acrobat PDF version 7.0 or higher) for each project drawing.

(c) Each file (both CAD and PDF) shall represent one complete drawing from the drawing set, including the date, submittal phase, and border. Each drawing file shall be completely independent of any data in any other file, including fonts and shapes not included with the basic CAD software program utilized. Fonts that are not included as part of the default CAD software package installation or recognized as an allowable font by the A/E/C CAD Standard are not acceptable in delivered CAD files. All displayed graphic elements on all levels of the drawing files shall be part of the project drawing image. The drawing files shall not contain any graphic element that is not part of the drawing image.

(d) Deliver BIM Model and associated Facility Data files in their native format. At a minimum, BIM files shall address major architecture design elements, major structural components, mechanical systems and electrical/communication distribution and elements as defined in Attachment F. See Attachment F for additional BIM requirements.

(e) Drawing Index: Provide an index of drawings sheet in CAD as part of the drawing set, and an electronic list in Microsoft Excel of all drawings on the CD. Include the electronic file name, the sheet reference number, the sheet number, and the sheet title, containing the data for each drawing.

(f) Hard Copies: Plot submitted hard copy drawings directly from the "electronic drawing files" and copy for quantities and sizes indicated in the distribution list at the end of this specification section. The Designers of Record shall stamp, sign and date original hard copy sheets as Released For Construction, and provide copies for distribution from this set.

3.7.2. Design Analyses

3.7.2.1. The designers of record shall update, finalize and present design analyses with calculations necessary to substantiate and support all design documents submitted.

3.7.2.2. The responsible DOR shall stamp, sign and date the design analysis. Identify the software used where, applicable (name, version, vendor). Generally, provide design analyses, individually, in an original (file copy) and one copy for the assigned government reviewer.

3.7.2.3. All disciplines review the LEED design analysis in conjunction with their discipline-specific design analysis; include a copy of the separable LEED design analysis in all design analysis submittals.

3.7.2.4. Do not combine multi-disciplined volumes of design-analysis, unless multiple copies are provided to facilitate multiple reviewers (one copy per each separate design analysis included in a volume).

3.7.3. Specifications

Specifications shall be 100% complete and in final form.

3.7.4. Submittal Register

Prepare and update the Submittal Register and submit it with the 100% design specifications (see Specification Section 01 33 00, SUBMITTAL PROCEDURES) with each design package. Include the required submittals for each specification section in a design package in the submittal register.

3.7.5. Preparation of DD Form 1354 (Transfer of Real Property)

This form itemizes the types, quantities and costs of various equipment and systems that comprise the project, for the purpose of transferring the new construction project from the Corps Construction Division to the Installation's inventory of real property. The Government will furnish the DB Contractor's design manager a DD Form 1354 checklist to use to produce a draft Form 1354. Submit the completed checklist and prepared draft Form DD 1354 with the 100% design in the Design Analysis. The Corps will use these documents to complete the final DD 1354 upon completion of construction.

3.7.6. Acceptance and Release for Construction

3.7.6.1. At the conclusion of the Final Design Review (after resolutions to the comments have been agreed upon between DOR and Government reviewers), the Contracting Officer or the ACO will accept the Final Design Submission for the design package in writing and allow construction to start for that design package. The Government may withhold acceptance until all major corrections have been made or if the final design submission requires so many corrections, even though minor, that it isn't considered acceptably complete.

3.7.6.2. Government review and acceptance of design submittals is for contract conformance only and shall not relieve the Contractor from responsibility to fully adhere to the requirements of the contract, including the Contractor’s accepted contract proposal, or limit the Contractor’s responsibility of design as prescribed under Special Contract Requirement: “Responsibility of the Contractor for Design” or limit the Government’s rights under the terms of the contract. The Government reserves the right to rescind inadvertent acceptance of design submittals containing contract deviations not separately and expressly identified in the submittal for Government consideration and approval.

3.8. DESIGN COMPLETE CONSTRUCTION DOCUMENT REQUIREMENTS

After the Final Design Submission and Review Conference and after Government acceptance of the Final Design submission, revise the design documents for the design package to incorporate the comments generated and resolved in the final review conference, perform and document a back-check review and submit the final, design complete documents. Label the final design complete documents “FOR CONSTRUCTION” or use similar language. In addition to the final drawings and specifications, the following deliverables are required for distribution and field use. The deliverable includes all documentation and supporting design analysis in final form, as well as the final review comments, disposition and the back-check. As part of the quality assurance process, the Government may perform a back-check of the released for construction documentation. Promptly correct any errors or omissions found during the Government back-check. The Government may withhold retainage from progress payments for work or materials associated with a final design package until this submittal has been received and the Government determines that it is complete.

3.9. SUBMITTAL DISTRIBUTION, MEDIA AND QUANTITIES

3.9.1. Submittal Distribution and Quantities

General: The documents which the Contractor shall submit to the Government for each submittal are listed and generally described in preceding paragraphs in this Section. Provide copies of each design submittal and design substantiation as follows (NOTE: If this is a Single Award or Multiple Award, Indefinite Delivery/Indefinite Quantity Contract, this information will be provided for each task order):

Activity and Address	Drawing Size (Full Size) **ANSI D** Full Sets/ *Partial Sets	Design Analyses & Specs Full Sets/ *Partial Sets	Drawing Size (Half Size) **half size** Full Sets/ *Partial Sets	Non-BIM Data CD-ROM or DVD as Necessary (PDF& **.dgn**)	Furniture Submittal (Per Attachment B)	Structural Interior Design Submittal	BIM Data DVD (Per Attach F)
Commander, U.S.Army Engineer District **USACE Savannah District**	2/0	14/0	14/0	2	1	2	1
Commander, U.S.Army Engineer District, Center of Standardization **Norfolk District**	0/0	5/0	5/0	2	N/A	2	1
Installation	1/0	4/0	4/0	1	2	1	1
U.S.Army Corps of Engineers Construction Area Office	1/0	2/0	2/0	1	1	1	1
Information Systems Engineering Command (ISEC)	0/0	0/1	0/0	1	N/A	N/A	1
Other Offices	1/0	1/0	1/0	0	N/A	0	0

***NOTE: For partial sets of drawings, specifications and design analyses, see paragraph 3.9.3.3, below.**

****NOTE: When specified below in 3.9.2, furnish Installation copies of Drawings as paper copies, in lieu of the option to provide secure web-based submittals.**

3.9.2. Web based Design Submittals

Except for full or half-sized drawings for Installation personnel, as designated in the Table above, Web based design submittals will be acceptable as an alternative to the paper copies listed in the Table above, provided a single hard-copy PDF based record set is provided to the Contracting Officer for record purposes. Where the contract requires the Contractor to submit documents to permitting authorities, still provide those authorities paper copies (or in an alternate format where required by the authority). Web based design submittal information shall be provided with adequate security and availability to allow unlimited access those specifically authorized to Government reviewers while preventing unauthorized access or modification. File sizes must be of manageable

size for reviewers to quickly download or open on their computers. As a minimum, drawings shall be full scale on American National Standards Institute (ANSI) D sheets (34" x 22"). In addition to the optional website, provide the BIM data submission on DVD to each activity and address noted above in paragraph 3.9.1 for each BIM submission required in Attachment F.

3.9.3. Mailing of Design Submittals

3.9.3.1. Mail all design submittals to the Government during design and construction, using an overnight mailing service. The Government will furnish the Contractor addresses where each copy shall be mailed to after award of the contract (or individual task order if this is an indefinite delivery/indefinite quantity, task order contract). Mail the submittals to six (6) 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 four copies of the final and complete FF&E information and samples in 8 ½" x 11" format using three ring binders with pockets on the inside of the cover upon completion of the final architectural submittal or ten months prior to the contract completion date (whichever comes first). Use more than one binder when there are numerous pages with thick samples. Large D-ring binders are preferred to O-ring binders. Use page protectors that are strong enough to keep pages from tearing out for upholstery and finish boards. Anchor large or heavy samples with mechanical fasteners, Velcro, or double-faced foam tape rather than rubber cement or glue. Fold out items must have a maximum spread of 25 ½". Provide cover and spine inserts sheets identifying the document as "Furniture, Fixtures & Equipment" package and include the project title and location, project number, Contractor/A/E name and phone number(s), submittal stage and date.

Provide electronic copies of all documents upon completion of the final architectural submittal or ten months prior to the contract completion date (whichever comes first), to ensure adequate time for furniture acquisition. Provide six compact disks with all drawings files needed to view the complete drawings unbound and in the latest version AutoCAD. Provide six additional compact disks of all text documents in Microsoft Word or Excel.

Design submittal requirements include, but are not limited to:

1.1.1. Narrative of Interior Design Objectives

Provide a narrative description of the furniture, to include functional, safety and ergonomic considerations, durability, sustainability, aesthetics, and compatibility with the building design.

1.1.2. Furniture Order Form

Prepare one Furnishings Order Form for each item specified in the design. This form identifies all information required to order each individual item. In addition to the project name and location, project number, and submittal phase, the order form must include:

(a) Furniture item illustration and code

(b) Furniture item name

(c) Job name, location, and date

(d) General Services Administration (GSA) FSC Group, part, and section

(e) 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 specificy modesty panels at walls to be of a height or be hinged to allow access to building wall electrical outlets and communication jacks. Provide desks, storage and tables with leveling devices to compensate for uneven floors.

1.4.2. Specify workstations and storage of steel construction. 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, provide lockable desks and workstations, filing cabinets and storage. Key all locks within a one person office the same; key all one person offices within a building differently. If an office or open office area has more than one workstation, key all the workstations differently, but key all locks within an individual workstation the same. Use tempered glass glazing when glazing is required. Use light-emitting diode (LED)/solid state lighting where task lighting is required in furniture.

1.5. FINISHES AND UPHOLSTERY

1.5.1. Specify neutral colors for casegoods, furniture systems, storage and tables. Specify desk worksurfaces and table tops that are not too light or too dark in color and have a pattern to help hide soiling. Accent colors are

allowed in break and lounge areas. Keep placement of furniture systems panel fabric accent colors to a minimum. All finishes shall be cleanable with ordinary household cleaning solutions.

1.5.2. Use manufacturer's standard fabrics; including textile manufacturers fabrics that have been graded into the furniture manufactures fabric grades and are available through their GSA Schedule. Customers Own Material (COM) can be used in headquarter buildings in command suites with executive furniture. Coordinate specific locations with Corps of Engineers Interior Designer.

1.5.3. Specify seating upholstery that meets Wyzenbeek Abrasion Test, 55,000 minimum rubs. Specify a soil retardant finish for woven fabrics if Crypton or vinyl upholstery is not provided for seating in dining areas. Use manufacturer's standard fabrics. This includes textile manufacturers fabrics that have been graded into the furniture manufactures fabric grades and are available through their GSA Schedule. Specify upholstery and finish colors and patterns that help hide soiling. Specify finishes that can be cleaned with ordinary household cleaning solutions.

1.6. ACCESSORIES

1.6.1. Specify all accessories required for completely finished furniture installation. Provide filing cabinets and storage for office supplies. Provide tack surfaces at workstations with overhead storage. Provide tackable surfaces at workstations with overhead storage.

1.6.2. Not Used.

1.6.3. Workstations are to be equipped with stable keyboard trays that have height adjustability, tilting capability, including negative tilt, have a mouse pad at same height as the keyboard tray that can accommodate both left and right handed users, and retractable under worksurface.

1.7. MISSION UNIQUE EQUIPMENT

Funding for FF&E furniture items and mission unique equipment (MUE) items are from two different sources. Separate the designs and procurement documentation for FFE items and MUE. MUE includes, but is not limited to, items such as 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 v2.2 Submittals (OCT09REV)**		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use (OCT09REV)
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
GENERAL							
	GENERAL - All calculations shall be in accordance with LEED 2.2 Reference Guide.						
	GENERAL: Obtain excel version of this spreadsheet at http://en.sas.usace.army.mil/enWeb, "Engineering Criteria". OCT09REV						
	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. OCT09REV						
	OCT09REV 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
OCT09REV			**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
OCT09REV			**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
OCT09REV			**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
OCT09REV			**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
OCT09REV			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: LEED Site vicinity plan showing project site, mass transit stops and pedestrian path to them with path distance noted.		CIV
			Final Design		Option 2: LEED Site vicinity plan showing project site, bus stops and pedestrian path to them with path distance noted.		CIV
SS4.2		Alternative Transportation: Bicycle Storage & Changing Rooms	Final Design		FTE calculation. Bicycle storage spaces calculation. Shower/changing facilities calculation.		CIV
			Final Design		List of drawings that show the location(s) of bicycle storage areas. Statement indicating distance from building entrance.		CIV
			Final Design		List of drawings that show the location(s) of shower/changing facilities and, if located outside the buiding, statement indicating distance from building entrance.		ARC
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
OCT09REV			**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

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v2.2 Submittals (OCT09REV)		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use (OCT09REV)
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
			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
OCT09REV			**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
OCT09REV			**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
OCT09REV			**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
OCT09REV			**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
OCT09REV			**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
OCT09REV			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
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

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			Final Design OCT09REV		Option 1: List of specified roof materials indicating, for each, product type, manufacturer, product name and identification if known, SRI value and roof slope. OCT09REV		ARC
			**Closeout OCT09REV		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 OCT09REV		Option 3: List of specified roof materials indicating, for each, product type, manufacturer, product name and identification if known, SRI value and roof slope. OCT09REV		
			**Closeout OCT09REV		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 that turn off non-essential lighting during non-business hours.		ELEC
OCT09REV			**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							
WE1.1		Water Efficient Landscaping: Reduce by 50%	Final Design		Statement indicating which option for compliance applies.		CIV
OCT09REV			**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

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			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
WE3.1		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
			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
WE3.2		Water Use Reduction: 30% Reduction	Same as WE3.1		Same as WE3.1		MEC
CATEGORY 3 – ENERGY AND ATMOSPHERE							
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

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			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
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 2.2 Reference Guide Example Calculations		MEC
			Final Design		Narrative describing any special circumstances or explanatory remarks OCT09REV		
			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		PE
			Closeout		**Scope of work for post-occupancy implementation of M&V 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 75% 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 95% of Existing Walls, Floors & Roof	Same as MR1.1		Same as MR1.1		ARC
MR1.3		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
					OCT09REV		
			**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. OCT09REV		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 OCT09REV		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal. OCT09REV		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 OCT09REV		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal. OCT09REV		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. OCT09REV		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
CATEGORY 5 – 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
			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

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			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: Carpet Systems	Closeout		Spreadsheet indicating, for each indoor carpet 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 CRI 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 OCT09REV		Spreadsheet indicating, for each permanent entryway system used, the manufacturer, product name/model number and description of system. Roll-up and carpet systems requiring weekly cleaning to earn this credit are not a permitted option for Army projects.		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
			Closeout OCT09REV		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

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	**LEED-NC v2.2 Submittals (OCT09REV)**		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use (OCT09REV)
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
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
EQ8.1		Daylight & Views: Daylight 75% of Spaces	Final Design		Option 1: Table indicating all regularly occupied spaces with space area and space area with 2% daylighting factor. Sum of regularly occupied areas and regularly occupied areas with 2% daylighting factor. Percentage calculation of areas with 2% daylighting factor to total regularly occupied areas.		ARC
			Final Design		Option 1: Glazing factor calculation table		ARC
			Final Design		Option 2: Simulation model method, software and output data		ARC
			Final Design		Option 2: 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.		ARC
			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 and glazing performance properties.		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
CATEGORY 6 – FACILITY DELIVERY PROCESS							
IDc1.1		Innovation in Design	Final Design OCT09REV		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 OCT09REV				
IDc1.3		Innovation in Design	Final Design OCT09REV				
IDc1.4		Innovation in Design	Final Design OCT09REV				
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 07-07-2010

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. For each Center of Standardization (CoS) facility type included in this project, all BIM Models and associated Facility Data shall be submitted in Bentley Systems BIM [Not Supplied - SubmittalReqCADDSystem : BENTLEY_VERSION] with associated USACE Bentley BIM Workspace (which includes specific standard BIM libraries and definitions). This Workspace can be downloaded from the CAD/BIM Technology Center. [Where available, the workspace will be specific to this CoS Facility Standard Design. The Contractor will be provided a baseline multi-discipline BIM Project Model for the CoS Facility Standard Design type, where such a model exists (for the purposes of site adaptation).] The USACE Bentley BIM Workspace is dependent on specific versions of the Bentley BIM suite of products and only the versions of the software that are listed in the Contractor instructions included with the USACE BIM Workspace are permitted to be used.

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 Savannah 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 be fully interoperable, compatible, and editable with the Bentley BIM tools. Use the specified version of the USACE Bentley BIM Workspace and 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. Checking 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, Workspace and CAD Data files in native Bentley BIM/CAD.

- 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 will confirm acceptability of all submittals identified in Section 3 in coordination with the USACE USACE Savannah 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 Geographic District BIM Manager will coordinate with the USACE CoS BIM Manager to 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. 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, 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. 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 Project Manager of Geographic district will provide this information.. Inquire of the District or Division sponsoring the course for fees and other expenses involved, if any, for attendance at this course.

3.4.6. Organizational Changes

When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5. SUBMITTALS AND DELIVERABLES

Make submittals as specified in Section 01 33 00 ***SUBMITTAL PROCEDURES***. The CQC organization shall certify that all submittals and deliverables are in compliance with the contract requirements.

3.6. CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. The CQC organization shall conduct at least three phases of control for each definable feature of the construction work as follows:

3.6.1. Preparatory Phase

Perform this phase prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

3.6.1.1. A review of each paragraph of applicable specifications, reference codes, and standards. Make a copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field at the preparatory inspection. Maintain these copies in the field, available for use by Government personnel until final acceptance of the work.

3.6.1.2. A review of the contract drawings.

3.6.1.3. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

3.6.1.4. Review of provisions that have been made to provide required control inspection and testing.

3.6.1.5. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

3.6.1.6. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

3.6.1.7. A review of the appropriate activity hazard analysis to assure safety requirements are met.

3.6.1.8. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

3.6.1.9. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

3.6.1.10. Discussion of the initial control phase.

3.6.1.11. Notify the Government at least 24 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. Document the results of the preparatory phase actions by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2. Initial Phase

Accomplish this phase at the beginning of a definable feature of work. Include the following actions:

3.6.2.1. Check work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

3.6.2.2. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

3.6.2.3. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

3.6.2.4. Resolve all differences.

3.6.2.5. Check safety to include compliance with and upgrading of the Accident Prevention plan and activity hazard analysis. Review the activity analysis with each worker.

3.6.2.6. Notify the Government at least 24 hours in advance of beginning the initial phase. The CQC System Manager shall prepare and attach to the daily CQC report separate minutes of this phase. Indicate exact location of initial phase for future reference and comparison with follow-up phases.

3.6.2.7. Repeat the initial phase any time acceptable specified quality standards are not being met.

3.6.3. Follow-up Phase

Perform daily checks to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Conduct final follow-up checks and correct deficiencies prior to the start of additional features of work which may be affected by the deficient work. Do not build upon nor conceal non-conforming work.

3.6.4. Additional Preparatory and Initial Phases

Conduct additional preparatory and initial phases on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7. TESTS

3.7.1. Testing Procedure

Perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements and project design documents. Upon request, furnish to the Government

duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory, or establish an approved testing laboratory at the project site. The Contractor may elect to use a laboratory certified and accredited by the Concrete and cement Reference Laboratory (CCRL) or by AASHTO Materials Reference Laboratory (AMRL) for testing procedures that those organizations certify. The Contractor shall perform the following activities and record and provide the following data:

3.7.1.1. Verify that testing procedures comply with contract requirements and project design documents.

3.7.1.2. Verify that facilities and testing equipment are available and comply with testing standards.

3.7.1.3. Check test instrument calibration data against certified standards.

3.7.1.4. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

3.7.1.5. Include results of all tests taken, both passing and failing tests, recorded on the CQC report for the date taken. Include specification paragraph reference, location where tests were taken, and the sequential control number identifying the test. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. Provide an information copy of tests performed by an offsite or commercial test facility directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2. Testing Laboratories

3.7.2.1. Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.2.2. Capability Recheck

If the selected laboratory fails the capability check, the Government will assess the Contractor a charge of $1,375 to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

3.7.3. Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.7.4. Furnishing or Transportation of Samples for Government Quality Assurance Testing

The Contractor is responsible for costs incidental to the transportation of samples or materials. Deliver samples of materials for test verification and acceptance testing by the Government to the Corps of Engineers Laboratory, f.o.b., at the following address:

- For delivery by mail:

  Not Applicable.

  NA

  NA

  NA
- For other deliveries:

  Not Applicable.

NA

NA

NA

The area or resident office will coordinate, exact delivery location, and dates for each specific test.

3.8. COMPLETION INSPECTION

3.8.1. Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. Prepare a punch list of items which do not conform to the approved drawings and specifications and include in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2. Pre-Final Inspection

As soon as practicable after the notification above, the Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Correct any items noted on the Pre-Final inspection in a timely manner. Accomplish these inspections and any deficiency corrections required by this paragraph within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3. Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall attend the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups and major commands may also attend. The Government will formally schedule the final acceptance inspection based upon results of the Pre-Final inspection. Provide notice to the Government at least 14 days prior to the final acceptance inspection and include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

3.9. DOCUMENTATION

3.9.1. Maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers using government-provided software, QCS (see Section 01 45 01.10). The report includes, as a minimum, the following information:

3.9.1.1. Contractor/subcontractor and their area of responsibility.

3.9.1.2. Operating plant/equipment with hours worked, idle, or down for repair.

3.9.1.3. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.

3.9.1.4. Test and/or control activities performed with results and references to specifications/drawings requirements. Identify the applicable control phase (Preparatory, Initial, Follow-up). List deficiencies noted, along with corrective action.

3.9.1.5. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

3.9.1.6. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

3.9.1.7. Offsite surveillance activities, including actions taken.

3.9.1.8. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

3.9.1.9. Instructions given/received and conflicts in plans and/or specifications.

3.9.1.10. Provide documentation of design quality control activities. For independent design reviews, provide, as a minimum, identity of the ITR team, the ITR review comments, responses and the record of resolution of the comments.

3.9.2. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. Furnish the original and one copy of these records in report form to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, submit one report for every 7 days of no work and on the last day of a no work period. Account for all calendar days throughout the life of the contract. The first report following a day of no work shall be for that day only. The CQC System Manager shall sign and date reports. The report shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel. The Contractor may submit these forms electronically, in lieu of hard copy.

3.10. NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

End of Section 01 45 04.00 10

SECTION 01 50 02
TEMPORARY CONSTRUCTION FACILITIES

1.0 OVERVIEW

1.1. GENERAL REQUIREMENTS

1.2. AVAILABILITY AND USE OF UTILITY SERVICES

1.3. BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.4. PROTECTION AND MAINTENANCE OF TRAFFIC

1.5. MAINTENANCE OF CONSTRUCTION SITE

1.6. GOVERNMENT FIELD OFFICE

1.0 OVERVIEW

1.1. GENERAL REQUIREMENTS

1.1.1. Site Plan

Prepare a site plan indicating the proposed location and dimensions of any area to be fenced and used by the Contractor, the number of trailers to be used, avenues of ingress/egress to the fenced area and details of the fence installation. Identify any areas which may have to be graveled to prevent the tracking of mud. Also indicate if the use of a supplemental or other staging area is desired.

1.2. AVAILABILITY AND USE OF UTILITY SERVICES

1.2.1. See Section 00 72 00, Contract Clauses and Section 00 73 00, Special Contract Requirements, for Utility Availability requirements.

1.2.2. Sanitation

Provide and maintain within the construction area minimum field-type sanitary facilities approved by the Contracting Officer. Government toilet facilities will not be available to Contractor's personnel.

1.2.3. Telephone

Make arrangements and pay all costs for desired telephone facilities.

1.3. BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.3.1. Bulletin Board

Immediately upon beginning of onsite work, provide a weatherproof glass-covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and other information approved by the Contracting Officer. Locate the bulletin board at the project site in a conspicuous place easily accessible to all employees, as approved by the Contracting Officer. Display legible copies of the aforementioned data until work is completed. Remove the bulletin board from the site upon completion of the project.

1.3.2. Project and Safety Signs

Erect a project sign and a site safety sign with informational details as provided by the Government at the Post award conference, within 15 days prior to any work activity on project site. Update the safety sign data daily, with light colored metallic or non-metallic numerals. Remove the signs from the site upon completion of the project. Engineer Pamphlet EP 310-1-6a contains the standardized layout and construction details for the signs. It can be found through a GOOGLE Search or try 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.

1.6. GOVERNMENT FIELD OFFICE

1.6.1. Resident Engineer's Office

Provide the Government Resident Engineer with an office, approximately 120 square feet in floor area, co-located on the project site with the Contractor’s office and providing space heat, air conditioning, electric light and power, power and communications outlets and toilet facilities consisting of at least one lavatory and at least one water closet complete with connections to water and sewer mains. Provide a mail slot in the door or a lockable mail box mounted on the surface of the door. Provide outlets for 1 government phones and same number of LAN connections for Government computers. Coordinate with the Resident Engineer for locations. Provide a conference room with space large enough for 4 personnel to hold meetings. Provide a minimum of two outlets per government work station and at least one outlet per 10 feet of wall space for other government equipment. Provide at least twice weekly janitorial service. Remove the office facilities upon completion of the work and restore those areas. Connect and disconnect utilities in accordance with local codes and to the satisfaction of the Contracting Officer.

1.6.2. Trailer-Type Mobile Office

The Contractor may, at its option, furnish and maintain a trailer-type mobile office acceptable to the Contracting Officer and providing as a minimum the facilities specified above Securely anchor the trailer to the ground at all four corners to guard against movement during high winds, per EM 385-1-1.

End of Section 01 50 02

SECTION 01 57 20.00 10
ENVIRONMENTAL PROTECTION

1.0 GENERAL REQUIREMENTS

1.1. SUBCONTRACTORS

1.2. ENVIRONMENTAL PROTECTION PLAN

1.3. PROTECTION FEATURES

1.4. ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

1.5. NOTIFICATION

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION

3.1. LAND RESOURCES

3.2. WATER RESOURCES

3.3. AIR RESOURCES

3.4. CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

3.5. RECYCLING AND WASTE MINIMIZATION

3.6. HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

3.7. BIOLOGICAL RESOURCES

3.8. INTEGRATED PEST MANAGEMENT

3.9. PREVIOUSLY USED EQUIPMENT

3.10. MILITARY MUNITIONS

3.11. TRAINING OF CONTRACTOR PERSONNEL

3.12. POST CONSTRUCTION CLEANUP

1.0 GENERAL REQUIREMENTS

Minimize environmental pollution and damage that may occur as the result of construction operations. Protect the environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire duration of this contract. Comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations

1.1. SUBCONTRACTORS

Ensure compliance with this section by subcontractors.

1.2. ENVIRONMENTAL PROTECTION PLAN

1.2.1. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Define issues of concern within the Environmental Protection Plan as outlined in this section. Address each topic in the plan at a level of detail commensurate with the environmental issue and required construction task(s). Identify and discuss topics or issues which are not identified in this section, but which the Contractor considers necessary, after those items formally identified in this section. Prior to commencing construction activities or delivery of materials to the site, submit the Plan for review and Government approval. The Contractor shall meet with the Government prior to implementation of the Environmental Protection Plan, for the purpose of discussing the implementation of the initial plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. Maintain and keep the Environmental Protection Plan current onsite.

1.2.2. Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.2.3. Contents

The plan shall include, but shall not be limited to, the following:

1.2.3.1. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

1.2.3.2. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable

1.2.3.3. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel

1.2.3.4. Description of the Contractor's environmental protection personnel training program

1.2.3.5. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. Include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.

1.2.3.6. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site

1.2.3.7. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.

1.2.3.8. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

1.2.3.9. Drawing showing the location of on-installation borrow areas.

1.2.3.10. A spill control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The spill control plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

(a) The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Government and the local Fire Department in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

(b) The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup

(c) Training requirements for Contractor's personnel and methods of accomplishing the training

(d) A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

(e) The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency

(f) The methods and procedures to be used for expeditious contaminant cleanup

1.2.3.11. A solid waste management plan identifying waste minimization, collection, and disposals methods, waste streams (type and quantity), and locations for solid waste diversion/disposal including clearing debris and C&D waste that is diverted (salvaged, reused, or recycled). Detail the contractor's actions to comply with, and to participate in, Federal, state, regional, local government, and installation sponsored recycling programs to reduce the volume of solid waste at the source. Identify any subcontractors responsible for the transportation, salvage and disposal of solid waste. Submit licenses or permits for solid waste disposal sites that are not a commercial operating facility. Attach evidence of the facility's ability to accept the solid waste to this plan. A construction and demolition waste management plan, similar to the plan specified in the UFGS 01 74 19 (formerly 01572) may be used as the non-hazardous solid waste management plan. Provide a Non-Hazardous Solid Waste Diversion Report. Submit the report on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and each quarter thereafter (e.g. the first working day of January, April, July, and October) until the end of the project. Additionally, a summary report, with all data fields, is required at the end of the project. The report shall indicate the total type and amount of waste generated, total type and amount of waste diverted, type and amount of waste sent to waste-to-energy facility and alternative daily cover, in tons along with the percent that was diverted. Maintain, track and report construction and demolition waste data in a manner such that the installation can enter the data into the Army SWAR database, which separates data by type of material. A cumulative report in LEED Letter Template format may be used but must be modified to include the date disposed of/diverted and include the above stated diversion data. NOTE: The Solid Waste Diversion Reports are separate documentation than the LEED documentation.

1.2.3.12. DELETED.

1.2.3.13. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.

1.2.3.14. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of

these materials. In accordance with EM 385-1-1, include a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time in the contaminant prevention plan. Update the plan as new hazardous materials are brought on site or removed from the site. Reference this plan in the storm water pollution prevention plan, as applicable.

1.2.3.15. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented and any required permits. If surface discharge will be the method of disposal, include a copy of the permit and associated documents as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, include documentation that the waste water treatment plant Operator has approved the flow rate, volume, and type of discharge.

1.2.3.16. A historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. Include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Government.

1.2.3.17. A pesticide treatment plan, updated, as information becomes available. Include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements as well as any additional Installation specific requirements. Follow AR 200-1, Chapter 5, Pest Management, Section 5-4, “Program Requirements” for data required to be reported to the Installation.

1.3. PROTECTION FEATURES

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

1.4. ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Government and may require an extended review, processing, and approval time. The Government reserves the right to disapprove alternate methods, even if they are more cost effective, if the Government determines that the proposed alternate method will have an adverse environmental impact.

1.5. NOTIFICATION

The Government will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Government of the proposed corrective action and take such action when approved by the Government. The Government may issue an order stopping all or part of the

work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Government may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION

3.1. LAND RESOURCES

Confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. Do not attach or fasten any ropes, cables, or guys to any trees for anchorage unless specifically authorized. Provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Remove all stone, soil, or other materials displaced into uncleared areas..

3.1.1. Work Area Limits

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

3.1.2. Landscape

Clearly identify trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved by marking, fencing, or wrapping with boards, or any other approved techniques. Restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.1.3. Erosion and Sediment Controls

Provide erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. Coordinate with approving authorities (federal, state, etc.) for specific requirements to be included in the plan. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. Keep the area of bare soil exposed at any one time by construction operations to a minimum necessary. Construct or install temporary and permanent erosion and sediment control best management practices (BMPs). BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. Remove any temporary measures after the area has been stabilized.

3.1.4. Contractor Facilities and Work Areas

Place field offices, staging areas, stockpile storage, and temporary buildings in areas designated on the drawings or as directed by the Government. Make only approved temporary movement or relocation of Contractor facilities. Provide erosion and sediment controls for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Control temporary excavation and embankments for plant and/or work areas to protect adjacent areas.

3.2. WATER RESOURCES

Monitor construction activities to prevent pollution of surface and ground waters. Do not apply toxic or hazardous chemicals to soil or vegetation unless otherwise indicated. Monitor all water areas affected by construction activities. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by state or federally issued Clean Water Act permits.

3.2.1. Stream Crossings

Stream crossings shall allow movement of materials or equipment without violating water pollution control standards of the Federal, State, and local governments or impede state-designated flows.

3.2.2. Wetlands

Do not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

3.3. AIR RESOURCES

Comply with all Federal and State air emission and performance laws and standards for equipment operation, activities, or processes.

3.3.1. Particulates

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

3.3.2. Odors

Control odors from construction activities at all times. Odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.3.3. Sound Intrusions

Keep construction activities under surveillance and control to minimize environment damage by noise. Comply with the provisions of the state and Installation rules.

3.3.4. Burning

Burning is not allowed on the project site unless specified in other sections of the specifications or by written authorization. Specific times, locations, and manners of burning shall be subject to approval.

3.4. CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.4.1. Solid Wastes

Place solid wastes (excluding clearing debris) in containers which are emptied on a regular schedule. Conduct handling, storage, and disposal to prevent contamination. Employ segregation measures so that no hazardous or toxic waste will become co-mingled with solid waste. Transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. The minimum acceptable off-site solid waste disposal option is a Subtitle D RCRA permitted landfill. Verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. Comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

3.4.2. Chemicals and Chemical Wastes

Dispense chemicals, ensuring no spillage to the ground or water. Perform and document periodic inspections of dispensing areas to identify leakage and initiate corrective action. The Government may periodically review this documentation. Collect chemical waste in corrosion resistant, compatible containers. Monitor and remove collection drums to a staging or storage area when contents are within 6 inches of the top. Classify, manage, store, and dispose of wastes in accordance with Federal, State, and local laws and regulations.

3.4.3. Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable state and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. At a minimum, manage and store hazardous waste in compliance with 40 CFR 262. Take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. Segregate hazardous waste from other materials and wastes; protect it from the weather by placing it in a safe covered location and take precautionary measures, such as berming or other appropriate measures, against accidental spillage. Store, describe, package, label, mark, and placard hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, state, and local laws and regulations. Transport Contractor generated hazardous waste off Government property in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. Dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Immediately report spills of hazardous or toxic materials to the Government and the Facility Environmental Office. Contractor will be responsible for cleanup and cleanup costs due to spills. Contractor is responsible for the disposition of Contractor generated hazardous waste and excess hazardous materials.

3.4.4. Fuel and Lubricants

Conduct storage, fueling and lubrication of equipment and motor vehicles in a manner that affords the maximum protection against spill and evaporation. Manage and store fuel, lubricants and oil in accordance with all Federal, State, Regional, and local laws and regulations.

3.5. RECYCLING AND WASTE MINIMIZATION

Participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project. Line and berm fueling areas and establish storm water control structures at discharge points for site run-off. Keep a liquid containment clean-up kit available at the fueling area.

3.6. HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Existing historical, archaeological, and cultural resources within the Contractor's work area are shown on the drawings. Protect and preserve these resources during the life of the Contract. Temporarily suspend all activities that may damage or alter such resources, if any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found during excavation or other construction activities. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, notify the Government so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. Cease all activities that may result in impact to or the destruction of these resources. Secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.7. BIOLOGICAL RESOURCES

Minimize interference with, disturbance to, and damage to fish, wildlife, and plants, including their habitat. Protect threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.8. INTEGRATED PEST MANAGEMENT

Coordinate, through the Government, with the Installation Pest Management Coordinator (IPMC) at the earliest possible time prior to pesticide application, in order to minimize impacts to existing fauna and flora. Discuss

integrated pest management strategies with the IPMC and receive concurrence from the IPMC, through the COR, prior to the application of any pesticide associated with these specifications. Give IMPC personnel the opportunity to be present at all meetings concerning treatment measures for pest or disease control and during application of the pesticide. The use and management of pesticides are regulated under 40 CFR 152 - 186.

3.8.1. Pesticide Delivery and Storage

Deliver pesticides, approved for use on the Installation, to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses.

3.8.2. Qualifications

Use the services of a subcontractor for pesticide application whose principal business is pest control. The subcontractor shall be licensed and certified in the state where the work is to be performed.

3.8.3. Pesticide Handling Requirements

Formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions.

3.8.4. Application

A state certified pesticide applicator shall apply pesticides in accordance with EPA label restrictions and recommendations.

3.9. PREVIOUSLY USED EQUIPMENT

Clean all previously used construction equipment prior to bringing it onto the project site. Ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. Consult with the USDA jurisdictional office for additional cleaning requirements.

3.10. MILITARY MUNITIONS

Immediately stop work in that area and immediately inform the Government, in the event military munitions, as defined in 40 CFR 260, are discovered or uncovered.

3.11. TRAINING OF CONTRACTOR PERSONNEL

Train personnel in all phases of environmental protection and pollution control. Conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Conduct additional meetings for new personnel and when site conditions change. The training and meeting agenda shall include methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.12. POST CONSTRUCTION CLEANUP

Clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". Unless otherwise instructed in writing , obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. Grade, fill and seed the entire disturbed area, unless otherwise indicated.

SECTION 01 62 35
RECYCLED/RECOVERED MATERIAL

1.0 GENERAL

1.1. REFERENCES

1.2. OBJECTIVES

1.3. EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

1.4. EPA PROPOSED ITEMS INCORPORATED IN THE WORK

1.5. EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

1.0 GENERAL

1.1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

- U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
- 40 CFR 247 Comprehensive Procurement Guideline for Products Containing Recovered Materials

1.2. OBJECTIVES

Government procurement policy is to acquire, in a cost effective manner, items containing the highest percentage of recycled and recovered materials practicable consistent with maintaining a satisfactory level of competition without adversely affecting performance requirements or exposing suppliers' employees to undue hazards from the recovered materials. The Environmental Protection Agency (EPA) has designated certain items which must contain a specified percent range of recovered or recycled materials. The Contractor shall make all reasonable efforts to use recycled and recovered materials in providing the EPA designated products and in otherwise utilizing recycled and recovered materials in the execution of the work.

1.3. EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

Materials that have been designated by EPA as being products which are or can be made with recovered or recycled materials, when incorporated into the work under this contract, shall contain at least the minimum percentage of recycled or recovered materials indicated by EPA unless adequate justification (non-availability) for non-use is provided. When a designated item is specified as an option to a non-designated item, the designated item requirements apply only if the designated item is used in the work.

1.4. EPA PROPOSED ITEMS INCORPORATED IN THE WORK

Products other than those designated by EPA are still being researched and are being considered for future Comprehensive Procurement Guideline (CPG) designation. It is recommended that these items, when incorporated in the work under this contract, contain the highest practicable percentage of recycled or recovered materials, provided specified requirements are also met.

1.5. EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

There are many products listed in 40 CFR 247 which have been designated or proposed by EPA to include recycled or recovered materials that may be use by the Contractor in performing the work but will not be incorporated into the work. These products include office products, temporary traffic control products, and pallets. It is recommended that these non-construction products, when used in the conduct of the work, contain the highest practicable percentage of recycled or recovered materials and that these products be recycled when no longer needed.

End of Section 01 62 35

SECTION 01 78 02.00 10
CLOSEOUT SUBMITTALS

1.0 OVERVIEW

1.1. SUBMITTALS

1.2. PROJECT RECORD DOCUMENTS

1.3. EQUIPMENT DATA

1.4. CONSTRUCTION WARRANTY MANAGEMENT

1.5. MECHANICAL TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

1.6. OPERATION AND MAINTENANCE MANUALS

1.7. FIELD TRAINING

1.8. PRICING OF CONTRACTOR-FURNISHED AND INSTALLED PROPERTY AND GOVERNMENT-FURNISHED CONTRACTOR-INSTALLED PROPERTY

1.9. LEED REVIEW MEETINGS

1.10. RED ZONE MEETING

1.11. FINAL CLEANING

1.12. INTERIM FORM DD1354 "TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

EXHIBIT 1 SAMPLE RED ZONE MEETING CHECKLIST

1.0 OVERVIEW

1.1. SUBMITTALS

Government approval is required for any submittals with a "G" designation; submittals not having a "G" designation are for Designer of Record approval or for information only. Submit the following in accordance with Section 01 33 00 submittals***:***

SD-02 Shop Drawings

– As-Built Drawings - G

▪ Drawings showing final as-built conditions of the project. Provide electronic drawing files as specified in Section 01 33 16, 3 sets of blue-line prints and one set of the approved working as-built drawings.

SD-03 Product Data

– As-Built Record of Equipment and Materials

▪ Two copies of the record listing the as-built materials and equipment incorporated into the construction of the project.

– Construction Warranty Management Plan

▪ Three sets of the construction warranty management plan containing information relevant to the warranty of materials and equipment incorporated into the construction project, including the starting date of warranty of construction. Furnish with each warranty the name, address, and telephone number of each of the guarantor's representatives nearest to the project location.

– Warranty Tags

▪ Two record copies of the warranty tags showing the layout and design.

– Final Cleaning

▪ Two copies of the listing of completed final clean-up items.

1.2. PROJECT RECORD DOCUMENTS

1.2.1. As-Built Drawings – G

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

1.2.2. Maintenance of As-Built Drawings

1.2.2.1. The Configuration Management Plan shall describe how the Contractor will maintain up-to-date drawings, how it will control and designate revisions to the drawings and specifications (In accordance with Special Contract Requirement: ***Deviating from the Accepted Design*** and Section 01 33 16: ***Design after Award***, the Designer of Record's approval is necessary for any revisions to the accepted design).

1.2.2.2. Make timely updates, carefully maintaining a record set of working as-built drawings at the job site, marked in red, of all changes and corrections from the construction drawings. Enter changes and corrections on drawings promptly to reflect "Current Construction". Perform this update no less frequently than weekly for the blue line drawings and update no less frequently than quarterly for the CADD/CAD and BIM files, which were prepared previously in accordance with Section 01 33 16. Include a confirmation that the as-builts are up to date with the submission of the monthly project schedule.

1.2.2.3. If the DB Contractor fails to maintain the as-built drawings as required herein, the Government will retain from the monthly progress payment, an amount representing the estimated monthly cost of maintaining the as-built drawings. Final payment with respect to separately priced facilities or the contract as a whole will be withheld until the Contractor submits acceptable as-built drawings and the Government approves them.

1.2.2.4. The marked-up set of drawings shall reflect any changes, alterations, adjustments or modifications. Changes must be reflected on all sheets affected by the change. Changes shall include marking the drawings to reflect structural details, foundation layouts, equipment sizes, and other extensions of design.

1.2.2.5. Typically, room numbers shown on the drawings are selected for design convenience and do not represent the actual numbers intended for use by the end user. Final as-built drawings shall reflect actual room numbers adopted by the end user.

1.2.2.6. If there is no separate contract line item (CLIN) for as-built drawings, the Government will withhold the amount of $35,000, or 1% of the present construction value, whichever is the greater, until the final as-built drawing submittal has been approved by the Government.

1.2.3. Underground Utilities

The drawings shall indicate, in addition to all changes and corrections, the actual location, kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, the as-built drawings shall show, by offset dimensions to two permanently fixed surface features, the end of each run including each change in direction. Locate Valves, splice boxes and similar appurtenances by dimensioning along the utility run from a reference point. Record average elevation of the top of each run or underground structure..

1.2.4. Partial Occupancy

For projects where portions of construction are to be occupied or activated before overall project completion, including portions of utility systems, supply as-built drawings for those portions of the facility being occupied or activated at the time the facility is occupied or activated. Show this same as-built information previously furnished on the final set of as-built drawings.

1.2.5. As-Built Conditions That are Different From the construction Drawings

Accurately reflect all as-built conditions that are different, such as dimensions, road alignments and grades, and drainage and elevations, from the construction drawings on each drawing. If the as-built condition is accurately reflected on a shop drawing, then furnish that shop drawing in CADD format. Reference the final as-built construction drawing the shop drawing file that includes the as-built information. In turn, the shop drawing shall reference the applicable construction as-built drawing. Delete any options shown on drawings and not selected clearly reflect options selected on final as-built drawings.

1.2.6. Additional As-Built Information that Exceeds the Detail Shown on the construction Drawings:

These as-built conditions include those that reflect structural details, foundation layouts, equipment, sizes, mechanical and electrical room layouts and other extensions of design, that were not shown in the project design documents because the exact details were not known until after the time of approved shop drawings. It is recognized that these shop drawing submittals (revised showing as-built conditions) will serve as the as-built record without actual incorporation into the construction drawings, piping, and equipment drawings. Include locations of all explorations, logs of all explorations, and results of all laboratory testing, including those provided by the Government. Furnish all such shop drawings in CADD /CADformat. Include fire protection details, such as wiring, performed for the design of the project.

1.2.7. Final As-Built Drawings

Submit final as-built CADD/CAD and BIM Model(s) and Facility Data files at the time of Beneficial Occupancy of the project or at a designated phase of the project. In the event the Contractor accomplishes additional work after this submittal, which changes the as-built conditions, submit a new DVD with all drawing sheets and three blue-line copies of affected sheets which depict additional changes.

1.2.8. Title Blocks

In accordance with the configuration management plan, clearly mark title blocks to indicate final as-built drawings.

1.2.9. Other As-Built Documents

Provide scans of all other documents such as design analysis, catalog cuts, certification documents that are not available in native electronic format in an organized manner in Adobe.pdf format.

1.2.9.1. LEED Documentation

Update LEED documentation on at least a monthly basis and have it available for review by the Government on the jobsite at all times during construction. Submit the final LEED Project Checklist(s), final LEED submittals checklist and complete project documentation, verifying the final LEED score and establishing the final rating. Provide full support to the validation review process, including credit audits. See also the LEED documentation requirements in Section 01 33 16, DESIGN AFTER AWARD.

1.2.9.2. GIS Documentation

Provide final geo-referenced GIS database of the new building footprint along with any changes made to exterior of the building. The intent of capturing the final building footprint and exterior modifications in a GIS database is to provide the installation with a data set of the comprehensive changes made to the landscape as a result of the construction project. The Government will incorporate this data set into the installations existing GIS MasterPlan or Enterprise GIS system. The GIS database deliverable shall follow a standard template provided to the Contractor by the Government, adhere to detailed specifications outlined in ECB No 2006-15, and be documented using the Federal Geographic Data Committee (FGDC) metadata standard.

1.3. EQUIPMENT DATA

1.3.1. Real Property Equipment

Provide an Equipment-in-Place list of all installed equipment furnished under this contract. Include all information usually listed on manufacturer's name plate. Include the cost of each piece of installed property F.O.B. construction site. For each of the items which is specified herein to be guaranteed for a specified period from the date of acceptance thereof, provide the following information: The name, serial and model number address of equipment supplier, or manufacturer originating the guaranteed item. The Contractor's guarantee to the Government of these items will not be limited by the terms of any manufacturer's guarantee to the Contractor. Furnish the list as one (1) reproducible and three (3) copies thirty (30) calendar days before completion of any segment of the contract work which has an incremental completion date.

1.3.2. Maintenance and Parts Data

Furnish a brochure, catalog cut, parts list, manufacturer's data sheet or other publication showing detailed parts data on all other equipment subject to repair and maintenance procedures not otherwise required in Operations and Maintenance Manuals specified elsewhere in this contract. Distribution of directives shall follow the same requirements as listed in paragraph above.

1.3.3. Construction Specifications

Furnish permanent electronic files of final as-built construction specifications, including modifications thereto, with the as-built drawings.

1.4. CONSTRUCTION WARRANTY MANAGEMENT

1.4.1. Prior to the end of the one year warranty, the Government may conduct an infrared roof survey on any project involving a membrane roofing system. This survey will be conducted in accordance with ASTM C1153-90, "Standard Practice for Location of Wet Insulation in Roofing Systems Using Infrared Imaging". The Contractor shall replace all damaged materials and locate and repair sources of moisture penetration.

1.4.2. Management

1.4.2.1. Warranty Management Plan

Develop a warranty management plan containing information relevant to the clause ***Warranty of Construction*** in FAR 52.246-21. Submit the warranty management plan for Government approval at least 30 days before the planned pre-warranty conference. In the event of phased turn-over of the contract, update the Warranty Management Plan as necessary to include latest information required. Include all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan shall be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below shall include due date and whether item has been submitted or was accomplished. Submit warranty information made available during the construction phase prior to each monthly pay estimate. Assemble information in a binder and turn over to the Government upon acceptance of the work. The construction warranty period shall begin on the date of project acceptance and shall continue for the full product warranty period. The Contractor, Government, including the Customer Representative shall jointly conduct warranty inspections, 4 months and 9 months, after acceptance. The warranty management plan shall include, but shall not be limited to, the following information:

(1) Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the contractors, subcontractors, manufacturers or suppliers involved.

(2) Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.

(3) A list for each warranted equipment, item, feature of construction or system indicating:

(i) Name of item.

(ii) Model and serial numbers.

(iii) Location where installed.

(iv) Name and phone numbers of manufacturers or suppliers.

(v) Names, addresses and telephone numbers of sources of spare parts.

(vi) Warranties and terms of warranty. Include one-year overall warranty of construction. Indicate those items, which have extended warranties with separate warranty expiration dates.

(vii) Cross-reference to warranty certificates as applicable.

(viii) Starting point and duration of warranty period.

(ix) Summary of maintenance procedures required to continue the warranty in force.

(x) Cross-reference to specific pertinent Operation and Maintenance manuals.

(xi) Organization, names and phone numbers of persons to call for warranty service.

(xii) Typical response time and repair time expected for various warranted equipment.

(4) The Contractor's plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.

(5) Procedure and status of tagging of all equipment covered by extended warranties.

(6) Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

1.4.3. Performance Bond

1.4.3.1. The Contractor's Performance Bond will remain effective throughout the construction warranty period.

1.4.3.2. In the event the Contractor or his designated representative(s) fails to commence and diligently pursue any work required under this clause, and in a manner pursuant to the requirements thereof, the Government shall have

a right to demand that said work be performed under the Performance Bond by making written notice on the surety. If the surety fails or refuses to perform the obligation it assumed under the Performance Bond, the Government shall have the work performed by others, and after completion of the work, may make demand for reimbursement of any or all expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.

1.4.3.3. In the event sufficient funds are not available to cover the construction warranty work performed by the Government at the Contractor's expense, the Government will have the right to recoup expenses from the bonding company.

1.4.3.4. Following oral or written notification of required warranty repair work, the Contractor will respond as dictated by para. 1.4.5. Written verification will follow oral instructions. Failure of the Contractor to respond will be cause for the Government to proceed against the Contractor as outlined in the paragraph 1.4.5.5 and/or above.

1.4.4. Pre-Warranty Conference

Prior to contract completion, or completion of any phase or portion of contract to be turned over, and at a time designated by the Contracting Officer, the Contractor shall meet with the Government to develop a mutual understanding with respect to the requirements of this clause. Communication procedures for Contractor notification of warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Government for the execution of the construction warranty shall be established/reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, the Contractor will furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warrantied construction, will be continuously available, and will be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of his responsibilities in connection with other portions of this provision.

1.4.5. Contractor's Response to Warranty Service Requirements.

Following Government oral or written notification, which may include authorized installation maintenance personnel, the Contractor shall respond to warranty service requirements in accordance with the "Warranty Service Priority List" and the three categories of priorities listed below. Submit a report on any warranty item that has been repaired during the warranty period. The report shall include the cause of the problem, date reported, corrective action taken, and when the repair was completed. If the Contractor does not perform the construction warranty within the timeframe specified, the Government will perform the work and backcharge the construction warranty payment item established.

1.4.5.1. First Priority Code 1 Perform onsite inspection to evaluate situation, and determine course of action within 4 hours, initiate work within 6 hours and work continuously to completion or relief.

1.4.5.2. Second Priority Code 2 Perform onsite inspection to evaluate situation, and determine course of action within 8 hours, initiate work within 24 hours and work continuously to completion or relief.

1.4.5.3. Third Priority Code 3 All other work to be initiated within 3 work days and work continuously to completion or relief.

1.4.5.4. The "Warranty Service Priority List" is as follows:

- Code 1 - Air Conditioning System

(a) Buildings with computer equipment.

(b) Barracks, mess halls (entire building down).

- Code 2 - Air Conditioning Systems

(a) Recreational support.

(b) Air conditioning leak in part of building, if causing damage.

(c) Air conditioning system not cooling properly

(d) Admin buildings with Automated Data Processing (ADP) equipment not on priority list.

- Code 1 - Doors

(a) Overhead doors not operational.

- Code 1 - Electrical

(a) Power failure (entire area or any building operational after 1600 hours).

(b) Traffic control devices.

(c) Security lights.

(d) Smoke detectors and fire alarm systems

(e) Power or lighting failure to an area, facility, portion of a facility, which may adversely impact health, safety, security, or the installation's mission requirement, or which may result in damage to property.

- Code 2 - Electrical

(a) Power failure (no power) for unoccupied buildings or portions thereof or branch circuits within occupied buildings, not listed as Code 1.

(a) Receptacle and lights, not listed as code 1.

- Code 3 - Electrical

(a) Street, parking area lights

- Code 1 - Gas

(a) Leaks and breaks.

(b) No gas to cantonment area.

- Code 1 - Heat

(a) Area power failure affecting heat.

(b) Heater in unit not working.

- Code 2 Heat

(a) All heating system failures not listed as Code 1.

- Code 3 - Interior

(a) Floor damage

(b) Paint chipping or peeling

- Code 1 - Intrusion Detection Systems - N/A.
- Code 2 - Intrusion Detection Systems other than those listed under Code 1
- Code 1 - Kitchen Equipment

(a) Dishwasher.

(b) All other equipment hampering preparation of a meal.

- Code 2 - Kitchen Equipment

(a) All other equipment not listed under Code 1.

- Code 2 - Plumbing

(a) Flush valves not operating properly

(b) Fixture drain, supply line commode, or water pipe leaking.

(c) Commode leaking at base.

- Code 3 - Plumbing

(a) Leaking faucets

- Code 1 - Refrigeration

(a) Mess Hall.

(b) Medical storage.

- Code 2 - Refrigeration

(a) Mess hall - other than walk-in refrigerators and freezers.

- Code 1 - Roof Leaks

(a) Temporary repairs will be made where major damage to property is occurring.

- Code 2 - Roof Leaks

(a) Where major damage to property is not occurring, check for location of leak during rain and complete repairs on a Code 2 basis.

- Code 1 - Sprinkler System

(a) All sprinkler systems, valves, manholes, deluge systems, and air systems to sprinklers.

- Code 1 - Tank Wash Racks (Bird Baths)

(a) All systems which prevent tank wash.

- Code 1 - Water (Exterior)

(a) Normal operation of water pump station.

- Code 2 - Water (Exterior)

(a) No water to facility.

- Code 1 - Water, Hot (and Steam)

(a) Barracks (entire building).

- Code 2 - Water, Hot

(a) No hot water in portion of building listed under Code 1

1.4.5.5. Should parts be required to complete the work and the parts are not immediately available, the Contractor shall have a maximum of 12 hours after arrival at the job site to provide the Government, with firm written proposals for emergency alternatives and temporary repairs for Government participation with the Contractor to provide emergency relief until the required parts are available on site for the Contractor to perform permanent warranty repair. The Contractors proposals shall include a firm date and time that the required parts shall be available on site to complete the permanent warranty repair. The Government will evaluate the proposed alternatives and negotiate the alternative considered to be in the best interest of the Government to reduce the impact of the emergency condition. Alternatives considered by the Government will include the alternative for the Contractor to "Do Nothing" while waiting until the required parts are available to perform permanent warranty repair. Negotiating a proposal which will require Government participation and the expenditure of Government funds shall constitute a separate procurement action by the using service.

1.4.6. Equipment Warranty Identification Tags

1.4.6.1. Provide warranty identification tags at the time of installation and prior to substantial completion shall provide warranty identification tags on all Contractor and Government furnished equipment which the Contractor has installed.

(a) The tags shall be suitable for interior and exterior locations, resistant to solvents, abrasion, and to fading caused by sunlight, precipitation, etc. These tags shall have a permanent pressure-sensitive adhesive back, and they shall be installed in a position that is easily (or most easily) noticeable. Tag each component of contractor furnished equipment that has differing warranties on its components.

(b) Submit sample tags, representing how the other tags will look, for Government review and approval.

(c) Tags for Warrantied Equipment: The tag for this equipment shall be similar to the following: Exact format and size will be as approved.

EQUIPMENT WARRANTY - CONTRACTOR FURNISHED EQUIPMENT

MFG NAME MODEL NO.

SERIAL NO.

CONTRACT NO.

CONTRACTOR NAME

CONTRACTOR WARRANTY EXPIRES

MFG WARRANTY(IES) EXPIRE

EQUIPMENT WARRANTY - GOVERNMENT FURNISHED EQUIPMENT

MFG NAME MODEL NO.

SERIAL NO.

CONTRACT NO.

DATE EQUIP PLACED IN SERVICE

MFG WARRANTY(IES) EXPIRE

(d) If the manufacturer's name (MFG), model number and serial number are on the manufacturer's equipment data plate and this data plate is easily found and fully legible, this information need not be duplicated on the equipment warranty tag

1.4.6.2. Execution: Complete the required information on each tag and install these tags on the equipment by the time of and as a condition of final acceptance of the equipment.

1.5. MECHANICAL TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

Submit; all reports, statements, certificates, and completed checklists for testing, adjusting, balancing, and commissioning of mechanical systems prior to final inspection and transfer of the completed facility for approval, as specified in applicable technical specification sections.

1.6. OPERATION AND MAINTENANCE MANUALS

1.6.1. General Requirements

1.6.1.1. Inasmuch as the operations and maintenance manuals are required to operate and maintain the facility, the operations and maintenance (O&M) manuals will be considered a requirement prior to substantial completion of any facility to be turned over to the Government. Beneficial occupancy of all or portions of a facility prior to substantial completion will not relieve the Contractor of liquidated damages, if substantial completion exceeds the required completion date.

1.6.1.2. Provide one permanent electronic copy on CD-ROM and 2 hard copies of the Equipment Operating, Maintenance, and Repair Manuals. Provide separate manuals for each utility system as defined hereinafter. Submit Operations and Maintenance manuals for approval before field training or 90 days before substantial completion (whichever occurs earlier). If there is no separate CLIN for O&M Manuals, the Government will withhold an amount representing $20,000, as non-progressed work, until submittal and approval of all O&M manuals are complete.

1.6.2. Definitions

1.6.2.1. Equipment

A single piece of equipment operating alone or in conjunction with other equipment to accomplish a system function.

1.6.2.2. System

A combination of one or more pieces of equipment which function together to accomplish an intended purpose (i.e. HVAC system is composed of many individual pieces of equipment such as fans, motors, compressors, valves, sensors, relays, etc.)

1.6.3. Hard Cover Binders

The manuals shall be hard cover with posts, or 3-ring binders, so sheets may be easily substituted. Print the following identification on the cover: the words "EQUIPMENT OPERATING, MAINTENANCE, AND REPAIR MANUALS," the project name, building number, and an indication of utility or systems covered, the name of the Contractor, and the Contract number. Manuals shall be approximately 8-1/2 by 11-inches with large sheets folded in and capable of being easily pulled out for reference. All manuals for the project must be similar in appearance, and be of professional quality.

1.6.4. Warning Page

Provide a warning page to warn of potential dangers (if they exist, such as high voltage, toxic chemicals, flammable liquids, explosive materials, carcinogens, high pressures, etc.). Place the warning page inside the front cover and in front of the title page. Include any necessary Material Safety Data Sheets (MDSD) here.

1.6.5. Title Page

The title page shall include the same information shown on the cover and show the name of the preparing firm and the date of publication.

1.6.6. Table of Contents

Each volume of the set of manuals for this project shall include a table of contents, for the entire set, broken down by volume.

1.6.7. GENERAL

Organize manuals according to the following format, and include information for each item of equipment Submit a draft outline and table of contents for approval at 50% contract completion.

TABLE OF CONTENTS

PART I: Introduction

- Equipment Description
- Functional Description
- Installation Description

PART II: Operating Principles

PART III: Safety

PART IV: Preventive Maintenance

- Preventive Maintenance Checklist, Lubrication
- Charts and Diagrams

PART V: Spare Parts Lists

- Troubleshooting Guide
- Adjustments
- Common Repairs and Parts Replacement

PART VI: Illustrations

1.6.7.1. Part I-Introduction

Part I shall provide an introduction, equipment or system description, functional description and theory of operation, and installation instructions for each piece of equipment. Include complete instructions for uncrating, assembly, connection to the power source and pre-operating lubrication in the installation instructions as applicable. Illustrations, including wiring and cabling diagrams, are required as appropriate in this section. Include halftone pictures of the equipment in the introduction and equipment description, as well as system layout drawings with each item of equipment located and marked. Do not use copies of previously submitted shop drawings in these manuals.

1.6.7.2. Part II-Operating Principles

Part II shall provide complete instructions for operating the system, and each piece of equipment. Illustrations, halftone pictures, tables, charts, procedures, and diagrams are required when applicable. This will include step-by-step procedures for start-up and shutdown of both the system and each component piece of equipments, as well as adjustments required to obtain optimum equipment performance, and corrective actions for malfunctions. Show performance sheets and graphs showing capacity data, efficiencies, electrical characteristics, pressure drops, and flow rates here, also. Marked-up catalogs or catalog pages do not satisfy this requirement. Present performance information as concisely as possible with only data pertaining to equipment actually installed. Include actual test data collected for Contractor performance here.

1.6.7.3. Part III-Safety

Part III shall contain the general and specific safety requirements peculiar to each item of equipment. Repeat safety information as notes cautions and warnings in other sections where appropriate to operations described.

1.6.7.4. Part IV-Preventive Maintenance

Part IV shall contain a troubleshooting guide, including detailed instructions for all common adjustments and alignment procedures, including a detailed maintenance schedule. Also include a diagnostic chart showing symptoms and solutions to problems. Include test hookups to determine the cause, special tools and test equipment, and methods for returning the equipment to operating conditions. Information may be in chart form or in tabular format with appropriate headings. Include instructions for the removal, disassembly, repair, reassembly, and replacement of parts and assemblies where applicable and the task is not obvious.

1.6.7.5. Part V-Spare Parts List

Part V shall contain a tabulation of description data and parts location illustrations for all mechanical and electrical parts. The heading of the parts list shall clearly identify the supplier, purchase order number, and equipment. Include the unit price for each part. List parts by major assemblies, and arrange the listing in columnar form. Include names and addresses of the nearest manufacturer's representatives, as well as any special warranty information. Provide a list of spare parts that are recommended to be kept in stock by the Government installation.

1.6.7.6. Part VI-Illustrations

Part VI shall contain assembly drawings for the complete equipment or system and for all major components. Include complete wiring diagrams and schematics. Other illustrations, such as exploded views, block diagrams, and cutaway drawings, are required as appropriate.

1.6.8. Framed Instructions

Post framed instructions are required for substantial completion. Post framed instructions under glass or in laminated plastic, including wiring and control diagrams showing the complete layout of the entire system, including equipment, ductwork, piping valves, dampers, and control sequence at a location near the equipment described. Prepare condensed operating instructions explaining preventive maintenance procedures methods of checking the system for normal safe operation, valve schedule and procedures for safely starting and stopping the system in type form, framed as specified above for the wiring and control diagrams and posted beside the diagrams. Submit proposed diagrams, instructions, and other sheets prior to posting. Post the framed instructions before field training.

1.6.9. (Reserved. See 1.7 for Field Training)

1.6.10. System/Equipment Requirements

1.6.10.1. Facility Heating System

Provide information on the following equipment: boilers, water treatment, chemical feed pumps and tanks, converters, heat exchangers, pumps, unit heaters, fin-tube radiation, air handling units (both heating only and heating and cooling), and valves (associated with heating systems).

1.6.10.2. Air-Conditioning Systems

Provide information in chillers, packaged air-conditioning equipment, towers, water treatment, chemical feed pumps and tanks, air-cooled condensers, pumps, compressors, air handling units, and valves (associated with air-conditioning systems).

1.6.10.3. Temperature Control and HVAC Distribution Systems

Provide all information described for the following equipment: valves, fans, air handling units, pumps, boilers, converters and heat exchangers, chillers, water cooled condensers, cooling towers, and fin-tube radiation, control air compressors, control components (sensors, controllers, adapters and actuators), and flow measuring equipment.

1.6.10.4. Central Heating Plants

Provide the information described for the following equipment: boilers, converters, heat exchangers, pumps, fans, steam traps, pollution control equipment, chemical feed equipment, control systems, fuel handling equipment, de-aerators, tanks (flash, expansion, return waters, etc.), water softeners, and valves.

1.6.10.5. Heating Distribution Systems

Provide the information described for the following equipment: valves, fans, pumps, converters and heat exchangers, steam traps, tanks (expansion, flash, etc.), and piping systems.

1.6.10.6. Exterior Electrical Systems

Provide information on the following equipment: power transformers, relays, reclosers, breakers, and capacitor bank controls.

1.6.10.7. Interior Electrical Systems

Provide information on the following equipment: relays, motor control centers, switchgear, solid state circuit breakers, motor controller, EPS lighting systems, wiring diagrams and troubleshooting flow chart on control systems, and special grounding systems.

1.6.10.8. Energy Monitoring and Control Systems

The maintenance manual shall include descriptions of maintenance for all equipment, including inspection, periodic preventative maintenance, fault diagnosis, and repair or replacement of defective components.

1.6.10.9. Domestic Water Systems

Provide the identified information on the following equipment: tanks, unit process equipment, pumps, motors, control and monitoring instrumentation, laboratory test equipment, chemical feeders, valves, switching gear, and automatic controls.

1.6.10.10. Wastewater Treatment Systems

Provide the identified information on the following equipment: tanks, unit process equipment, pumps, motors, control and monitoring instrumentations, laboratory test equipment chemical feeders, valves, scrapers, skimmers, comminutors, blowers, switching gear, and automatic controls.

1.6.10.11. Fire Protection Systems

Provide information on the following equipment: alarm valves, manual valves, regulators, foam and gas storage tanks, piping materials, sprinkler heads, nozzles, pumps, and pump drivers.

1.6.10.12. Fire Alarm and Detection Systems

(1) The maintenance manual shall include description of maintenance for all equipment, including inspection, periodic preventive maintenance, fault diagnosis, and repair or replacement of defective components.

(2) Provide all software; database with complete identification of programmable portions of system equipment and devices, and all other system programming data on all modes of the system; connecting cables; and proprietary equipment necessary for the operation, maintenance, testing, repair and programming, etc. of the system and that may be required for implementation of future changes to the fire system (additional and/or relocated initiating devices, notification devices, etc.

(3) Provide all system and equipment technical data and computer software with the requisite rights to Government use, in accordance with the applicable contract clauses.

(4) Training shall include software and programming required for the effective operation, maintenance, testing, diagnostics and expansion of the system.

1.6.10.13. Plumbing Systems

Provide information on the following equipment: water heaters, valves, pressure regulators backflow preventors, piping materials, and plumbing fixtures.

1.6.10.14. Liquid Fuels Systems

Provide information on the following equipment: tanks, automatic valves manual valves, filter separators, pumps, mechanical loading arms, nozzles, meters, electronic controls, electrical switch gear, and fluidic controls.

1.6.10.15. Cathodic Protection Systems

Provide information on the following material and equipment: rectifiers, meters, anodes, anode backfill, anode lead wire, insulation material and wire size, automatic controls (if any), rheostats, switches, fuses and circuit breakers, type and size of rectifying elements, type of oil in oil-immersed rectifiers, and rating of shunts.

1.6.10.16. Generator Installations

Provide information on the following equipment: generator sets, automatic transfer panels, governors, exciters, regulators starting systems, switchgear, and protective devices.

1.6.10.17. Miscellaneous Systems

Provide information on the following: communication and ADP systems, security and intrusion alarm, elevators, material handling, active solar, photovoltaic, nurse call, paging, intercom, closed circuit TV, irrigation, sound and material delivery systems, kitchen, refrigeration, disposal, ice making equipment, and other similar type special systems not otherwise specified.

1.6.10.18. Laboratory, Environmental and Pollution Control Systems

Provide information on the following equipment: wet scrubbers, quench chambers, scrub tanks, liquid oil separators, and fume hoods.

1.7. FIELD TRAINING

Field Training is a requirement for substantial completion. Conduct a training course for the operating staff for each particular system. Conduct the training is to be conducted during hours of normal working time after the system is functionally complete. The field instructions shall cover all of the items contained in the Equipment Operating, Maintenance and Repair Manuals. The training will include both classroom and "hands-on" training. Submit a lesson plan outlining the information to be discussed during training periods. Submit this lesson plan for approval 90 days before contract completion before the field training occurs. Record training on DVD and furnish to the Government within ten (10) days following training. Document all training and furnish a list of all attendees.

1.8. PRICING OF CONTRACTOR-FURNISHED AND INSTALLED PROPERTY AND GOVERNMENT-FURNISHED CONTRACTOR-INSTALLED PROPERTY

Promptly furnish and require any sub-contractor or supplier to furnish, in like manner, unit prices and descriptive data required by the Government for Property Record purposes of fixtures and equipment furnished and/or installed by the Contractor or sub-contractor, except prices do not need to be provided for Government-Furnished Property.

1.9. LEED REVIEW MEETINGS

1.9.1. Pre-Closeout Meeting. Approximately 30 days before submittal of LEED closeout documentation, the Contractor and the Government's project delivery team (including Installation representative) will meet to review the documentation, determine which, if any, credits will be audited and identify any corrections/missing items prior to the closeout LEED documentation submittal.

1.9.2. Approximately 14 days after submittal of LEED closeout documentation, the Contractor and the Government's project delivery team (including Installation representative) will meet to review the LEED closeout

documentation. The review conference will include discussion of and resolution of all review comments to ensure consensus on achievement of credits and satisfactory documentation. At the review conference a final score will be determined and endorsed in writing by all parties.

1.10. RED ZONE MEETING

At approximately 80% of contract completion or 60 days before the anticipated Beneficial Occupancy Date (BOD), whichever occurs first, the Contractor and the Government's project delivery team will conduct what is known as the Red Zone Meeting to discuss the close-out process, to schedule the events and review responsibilities for actions necessary to produce a timely physical, as well as fiscal, project close-out. The Red Zone meeting derives its name from the football term used to describe the team effort to move the ball the last 20 yards into the end zone. The close-out of a construction project sometimes can be equally as hard and most definitely requires the whole team's efforts. The ACO will chair the meeting. If not already provided, shortly before the meeting, the Contractor shall provide an electronic copy or access to the CADD as-built drawings, completed commensurate with the amount of work completed at the time of the Red Zone Meeting, as an indicator of the Contractors' understanding of and ability to meet the USACE CADD Standards and to ensure that the Contractor is making progress with CADD As-Built requirements. EXHIBIT 1 is a generic meeting checklist.

1.11. FINAL CLEANING

Clean the premises in accordance with FAR clause 52.236-12 and additional requirements stated here. Remove stains, foreign substances, and temporary labels from surfaces. Vacuum carpet and soft surfaces. Clean equipment and fixtures to a sanitary condition. Clean or replace filters of operating equipment if cleaning isn't possible or practicable. Remove debris from roofs, drainage systems, gutters, and downspouts. Sweep paved areas and rake clean landscaped areas. Remove waste, surplus materials, and rubbish from the site. Remove all temporary structures, barricades, project signs, fences and construction facilities. Submit a list of completed clean-up items on the day of final inspection.

1.12. INTERIM FORM DD1354 "TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

Near the completion of Project, but a minimum of 60 days prior to final acceptance of the work, complete, update draft provided with the final design package(s) (see Section 01 33 16, paragraph 3.7.5) and submit an accounting of all installed property on Interim Form DD1354 "Transfer and Acceptance of Military Real Property." Include any additional assets/improvements/alterations and cost updates from the Draft DD Form 1354. Contact the COR for any project specific information necessary to complete the DD Form 1354. This form will be a topic for the Red Zone Meeting discussed above. For information purposes, a blank DD Form 1354 (fill-able) in ADOBE (PDF) may be obtained at the following web site: http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd1354.pdf Submit the completed Checklist for Form DD1354 of Government-Furnished and Contractor-Furnished/Contractor Installed items. Attach this list to the updated DD Form 1354. Instructions for completing the form 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

SUBSURFACE EXPLORATION
AND
GEOTECHNICAL ENGINEERING REPORT
(PRELIMINARY)

General Instruction Building
(Virtual TADDS Facility)
LI 71125, FY 11
Fort Stewart, Georgia

By
Soils Section
Geotechnical & HTRW Branch
U.S. Army Engineer District, Savannah

May 2010

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ATTACHMENT A: Soil Test Boring Location Plan
ATTACHMENT B: Soil Test Boring Logs

SUBSURFACE EXPLORATION AND GEOTECHNICAL ENGINEERING REPORT (PRELIMINARY)

General Instruction Building
(Virtual TADDS Facility)
LI 71125, FY 11
Fort Stewart, Georgia

1. PURPOSE. The Government has conducted a preliminary geotechnical investigation for the proposed project. This subsurface characterization report provides a general overview of the site conditions, including subsurface soil and groundwater conditions, with detailed descriptions provided on the individual soil boring logs.

2. QUALIFICATION OF REPORT. The preliminary field explorations performed for this report were made to characterize the subsurface soil and groundwater conditions and were not intended to serve as an assessment of site environmental conditions. No effort was made to define, delineate, or designate any area of environmental concern or of contamination. The contractor's team shall include a licensed geotechnical engineer to interpret the report and develop foundation and earthwork recommendations and design parameters. Additional subsurface investigations and/or laboratory analyses required to determine site soil conditions and develop the final design shall be performed under the direction of a licensed geotechnical engineer and shall be the full responsibility of the contractor. A final geotechnical evaluation report shall be prepared by the licensed geotechnical engineer and submitted along with the first site design submittal.

3. PROJECT DESCRIPTION. The proposed project is the construction of standard design virtual training aids device systems (TADDS) general instruction building (GIB) at Ft. Stewart. Originally the project was one of three GIBs but the installation preferred to combine the buildings into one two-story structure. Primary facilities include the virtual TADDS GIB, building information systems, connection to energy monitoring and control systems, and antiterrorism measures. Utility construction for the site includes electrical power, natural gas, water, sanitary sewer collection system, and storm sewer system. Supporting facilities include an access road, POV parking, sidewalks, curb and gutters, and security fencing.

4. EXPLORATION PROCEDURES.

a. Site Reconnaissance. Prior to the field exploration, a geotechnical engineer visually inspected the proposed project site and surrounding areas. The observations were used in planning the exploration, in determining areas of special interest, and in relating site conditions to known geologic conditions in the area.

b. Field Exploration.

(1) Subsurface conditions at the project site were explored by 5 soil test borings labeled B-1 through B-5. Borings B-1, B-2, and B-3 were drilled to a depth of 25 feet below ground surface (bgs). The remaining borings were drilled to approximately 15 feet bgs. The borings were performed at the approximate locations shown on the plan included in Attachment A and on the RFP drawings. The Georgia State Plane coordinates of the boring locations are shown on the individual boring logs.

(2) Boring locations were established in the field by an engineer using a hand held Global Positioning System (GPS) device having an accuracy of ±10 feet. The ground surface elevation at each boring location was determined by interpolation from the site topography survey. Since the measurements were not precise, the locations shown on the boring layout plans and the elevations on the drilling logs should be considered approximate.

(3) The soil test borings were drilled by Savannah District using a truck mounted Failing 1500 drill rig. Where the borehole wall would remain stable, a 3.25-inch solid flight continuous auger (spiral auger) was used to advance the borehole. Where the borehole wall would not remain stable, the borehole was advanced using the rotary wash boring method in which a bentonite drilling fluid is circulated in the borehole to stabilize the borehole wall and to remove the drill cuttings. The drill bit used was a 5-inch mud-rotary "fishtail" bit. Split-barrel sampling with Standard Penetration Testing was performed at intervals shown on the boring logs. All soil sampling and Standard Penetration Testing were in substantial accordance with ASTM D 1586. In the Standard Penetration Test, a soil sample is obtained with a standard 1 $^{3}/_{8}$-inch I.D. by 2-inch O.D. split-barrel sampler. The sampler is first seated 6 inches and then driven an additional 12 inches with blows from a 140 lb. hammer falling a distance of 30 inches. The number of blows required to drive the sampler the final 12 inches is recorded and is termed the "standard penetration resistance," or the "N-value." Penetration resistance, when properly evaluated, is an index of the soil's strength, density, and foundation support capability.

(4) Representative portions of the soil samples obtained from the borings were sealed in airtight containers and transported to the Savannah District office where they were examined by a geotechnical engineer. Classification of the soil samples was performed in general accordance with ASTM D 2488 (Visual-Manual Procedure for Description of Soils). The soil classifications include the use of the Unified Soil Classification System described in ASTM D 2487 (Classification of Soils for Engineering Purposes). Since the soil descriptions and classifications are based on visual examination, they should be considered approximate.

(5) Logs of the soil borings graphically depicting soil descriptions, standard penetration resistances, and groundwater levels are included in Attachment B.

c. **Laboratory Soils Testing.** No laboratory tests were performed on the samples collected from the soil borings.

5. SITE AND SUBSURFACE CONDITIONS.

a. Site Description. The site proposed for the GIB is located along West 15th Street between McFarland Avenue and Mill Creek in the Ft. Stewart cantonment area. The only access to the site is indirect from West 15th Street. The site is approximately 3 acres and is mostly lowland pine forest, scrub vegetation, and some open space. A swale runs through the site and a pond is located along the northwestern side of the site. The majority of the site is flat with slopes ranging from 0 to 5 percent. To the southeast, the site is bordered by a fuel purging facility, fire control training facility, and a simulation facility.

b. Area and Site Geology.

(1) Fort Stewart is located near the eastern edge of the Coastal Plain Physiographic Province. In South Carolina and Georgia, this broad, gently sloping region extends southeastward from the Fall Line (Columbia-Augusta-Macon-Columbus) to the Atlantic Ocean. The province is typified by nine southeastward dipping strata that increase in thickness from 0 feet at the fall line to approximately 4,200 feet at the coast. State geologic records describe crystalline basement rocks at a depth of 4,254 feet below land surface in a petroleum exploration well (the No. 1 Jelks-Rogers) located in the region. This well provides the most complete record for Cretaceous, Tertiary, and Quaternary sedimentary strata. The Cretaceous section is approximately 1,970 feet thick and is dominated by clastics. The Tertiary section is approximately 2,170 feet thick and is dominated by limestone with a 175-foot thick cap of dark green phosphatic clay. The clay is regionally extensive and is known as the Hawthorn Group. The interval from approximately 110 feet to the surface is Quaternary in age and composed primarily of sand with interbeds of clay or silt.

(2) The near-surface soils encountered are predominantly sedimentary in origin and consist of layered marine deposits of sands, silts and clays. The deposits have since been subjected to successive erosion and re-deposition by fluctuations of sea levels, storm tides and winds. Many of the surface sands are the result of depositional forces along ancient beaches which formed during the changing shoreline and river conditions. Intermittent deposits of shells occur within the strata at irregular intervals.

c. Subsurface Soil Conditions.

(1) Soil test borings indicate the site consists of sandy materials. These soils were field classified as poorly graded sands (SP), clayey sands (SC), and silty sands (SM). The thicknesses of the various sand layers were quite variable ranging from less than 2 feet to almost 20 feet. Standard penetration resistances, or N-values, within these soils ranged from 3 to 63 for the poorly graded sands; 10 to 32 for the clayey sands; 16 to 22 for the silty sands. These resistances indicate that the soils exist in densities ranging from very loose to very dense. Potential design-build contractors should note that there are very loose surficial soils at the site.

(2) The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs should be

reviewed for specific information at individual boring locations. The stratifications shown on the boring logs represent the conditions only at the actual boring locations. Variations may occur and should be expected between boring locations. The stratification lines shown on the boring logs represent approximate boundaries between the subsurface materials; the actual transitions are typically more gradual.

d. Groundwater Conditions.

(1) Water levels were measured during drilling in the two borings advanced by auger (B-4 and B-5). The depth to groundwater in these borings was measured at 1.5 feet (B-4) and 3.5 feet (B-5) below ground surface. The remaining borings were advanced using mud rotary drilling from the ground surface for the entire depth of the boring. When this method of drilling is used, the depth to groundwater cannot be recorded during drilling. All of the borings were left open to determine a 24-hour groundwater reading. Groundwater was measured at 1 foot below the ground surface in boring B-3, the only boring that did not collapse. The design-build contractor for this project should expect to encounter groundwater during foundation and utility excavations.

(2) It should be noted that groundwater conditions, including perched water, vary during periods of prolonged drought and excessive rainfall as well as seasonally. Therefore, fluctuations in the elevation of the groundwater and the occurrence of perched water conditions should be anticipated with changing climatic and rainfall conditions.

(3) Water should not be allowed to collect near the foundation or on floor slab areas of the building either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater or surface runoff. Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath floor slabs.

6. DRAWINGS. The drawing showing the soil boring locations completed by the government is included in this RFP. These locations and the locations of any additional investigations (SPT borings, test pits, cone penetrometer tests, laboratory soils test data, etc.) performed by the AE's consulting geotechnical engineer shall be shown on the final design and on the project as-built drawings completed by the design build contractor. In addition, the selected design-build contractor shall show all boring logs, CPT soundings, and soil laboratory test data used for design on the final design drawings and on the as-built drawings.

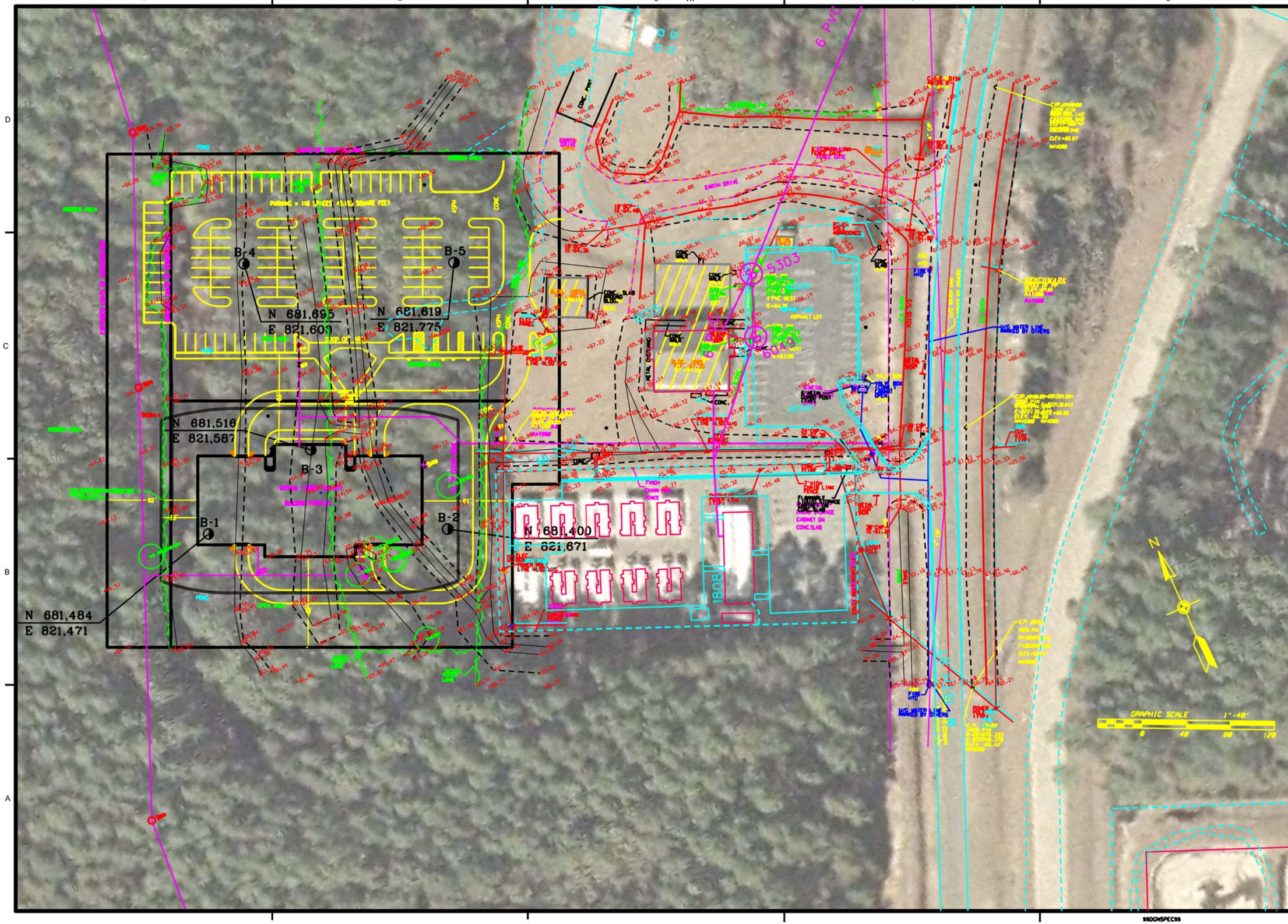
7. SPECIFICATIONS. It is recommended that the AE use the Savannah District's EARTHWORK specification, 31 00 00, when editing the specifications for this project. The specification (SpecsIntact format) can be found at the following website, http://en.sas.usace.army.mil/enweb/httproot/ae/index.htm, under the menu "Guide Specs".

8. FINAL GEOTECHNICAL EVALUATION REPORT. A final geotechnical evaluation report shall be prepared by the contractor's licensed geotechnical engineer and submitted along with the first foundation design submittal. The geotechnical report shall summarize the

subsurface conditions and provide recommendations for the design of appropriate foundations, floor slabs, retaining walls, embankments, roadways, and pavements. The report shall recommend the type of foundation system to be used, lateral load resistance capacities for foundation systems, and allowable bearing elevations for footings, grade beams, slabs, etc. An assessment of post-construction settlement potential including total and differential shall be provided. Recommendations regarding lateral earth pressures (active, at-rest, and passive) to be used in the design of retaining walls shall be provided. The report shall 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. Calculations shall be included to support the recommendations for bearing capacity, settlement, and pavement sections. Supporting documentation shall be included for all recommended design parameters such as Site Class, shear strength, earth pressure coefficients, friction factors, subgrade modulus, California Bearing Ratio (CBR), etc. In addition, the report shall provide earthwork recommendations, expected frost penetration, expected ground-water levels, recommendations for dewatering and ground-water control, and identify the possible presence of any surface or subsurface features that may affect the construction of the project such as sinkholes, boulders, shallow rock, undocumented fill, old structures, soft areas, or unusual soil conditions.

ATTACHMENT A

Soil Test Boring Location Plan



US ARMY CORPS OF ENGINEERS SAVANNAH

DATE	DESCRIPTION	BY
03/08/02		

DESIGNED BY: DATE:
DWN BY: CKD BY: SOLICITATION NO.:
SUBMITTED BY: CONTRACT NO.:
FILE NAME: CATEGORY CODE:
SIZE: D PLOT SCALE: 1:1 PLOT DATE: 1/72-10-01

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

GENERAL INSTRUCTION BUILDING
FORT STEWART, GEORGIA
CIVIL

SOIL TEST BORING LOCATION PLAN

PLATE REFERENCE NUMBER
B-101
SHEET

$$DGNSPEC$$
$$SYSTIME$$
$$USERNAME$$

ATTACHMENT B

Soil Test Boring Logs

DRILLING LOG

DIVISION	South Atlantic Division
INSTALLATION	Ft.Stewart, Georgia
SHEET	1 OF 1 SHEETS
1. PROJECT	Virtual TADDS GIB FY-11 L.I. 71125
9. COORDINATE SYSTEM	State Plane; HORIZONTAL NAD83; VERTICAL NAVD88
10. SIZE AND TYPE OF BIT	4" Fishtail
2. HOLE NUMBER	B-1
LOCATION COORDINATES	N 681484 E 821471
11. MANUFACTURER'S DESIGNATION OF DRILL	Failing 1500
3. DRILLING AGENCY	U.S. Corps of Engineers - Savannah District
12. TOTAL SAMPLES	DISTURBED 8; UNDISTURBED 0
4. NAME OF DRILLER	Danny Hewett
13. TOTAL NUMBER CORE BOXES	0
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED; DEG FROM VERTICAL ---; BEARING
14. ELEVATION GROUND WATER	See Remarks
15. DATE BORING	STARTED 5/14/10; COMPLETED 5/14/10
6. THICKNESS OF OVERBURDEN	>25'
16. ELEVATION TOP OF BORING	63.3' (Estimated from plans)
7. DEPTH DRILLED INTO ROCK	0'
17. TOTAL CORE RECOVERY FOR BORING	N/A
8. TOTAL DEPTH OF BORING	25'
18. SIGNATURE AND TITLE OF INSPECTOR	Eidalia Gonzalez, Geologist

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			POORLY GRADED SAND (SP), brown, fine grained, dry, trace clay, trace rootlets.	25	SS-1			1 1 2	3
			Fine to medium grained, wet.	60	SS-2			5 11 13	24
				30	SS-3			5 11 11	22
56.8	6.5								
			CLAYEY SAND (SC), dark gray, medium grained.	50	SS-4			6 12 15	27
				18	SS-5			6 10 14	24
49.8	13.5								
			POORLY GRADED SAND (SP), gray, medium grained, trace coarse sand.	14	SS-6			5 6 7	13
			Medium to coarse grained.	22	SS-7			8 16 22	38
			Medium grained, trace coarse sand.	67	SS-8			11 16 19	35
38.3	25.0								

BOTTOM OF BOREHOLE AT 25.0 ft

Water Level Data

Reading	Depth	Notes
24 hours		Collapsed Boring 5/15/2010

DRILLING LOG

DIVISION	South Atlantic Division
INSTALLATION	Ft.Stewart, Georgia
SHEET	1 OF 1 SHEETS
1. PROJECT	Virtual TADDS GIB FY-11 L.I. 71125
9. COORDINATE SYSTEM	State Plane; HORIZONTAL NAD83; VERTICAL NAVD88
10. SIZE AND TYPE OF BIT	4" Fishtail
2. HOLE NUMBER	B-2
LOCATION COORDINATES	N 681400 E 821671
11. MANUFACTURER'S DESIGNATION OF DRILL	Failing 1500
3. DRILLING AGENCY	U.S. Corps of Engineers - Savannah District
12. TOTAL SAMPLES	DISTURBED 8; UNDISTURBED 0
4. NAME OF DRILLER	Danny Hewett
13. TOTAL NUMBER CORE BOXES	0
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED; DEG FROM VERTICAL ---; BEARING
14. ELEVATION GROUND WATER	See Remarks
15. DATE BORING	STARTED 5/15/10; COMPLETED 5/15/10
6. THICKNESS OF OVERBURDEN	>25'
16. ELEVATION TOP OF BORING	66.5' (Estimated from plans)
7. DEPTH DRILLED INTO ROCK	0'
17. TOTAL CORE RECOVERY FOR BORING	N/A
8. TOTAL DEPTH OF BORING	25'
18. SIGNATURE AND TITLE OF INSPECTOR	Eidalia Gonzalez, Geologist

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			POORLY GRADED SAND (SP), brown, fine grained, moist, trace organics.	30	SS-1			2 3 2	5
			Tan.	47	SS-2			6 6 5	11
			Dark brown, trace organics.	20	SS-3			5 3 2	5
60.0	6.5								
			CLAYEY SAND (SC), yellow mottled with light gray, fine grained.	75	SS-4			9 16 16	32
58.0	8.5								
			POORLY GRADED SAND (SP), gray and purple, fine grained.	22	SS-5			13 20 25	45
			Coarse grained.	10	SS-6			8 9 9	18
			Fine to medium grained, trace coarse sand.	30	SS-7			13 19 22	41
			Trace clay.	67	SS-8			8 18 17	35
41.5	25.0								

BOTTOM OF BOREHOLE AT 25.0 ft

Water Level Data

Reading	Depth	Notes
24 hours		Collapsed Boring 5/16/2010

DRILLING LOG

DIVISION	South Atlantic Division
INSTALLATION	Ft.Stewart, Georgia
SHEET	1 OF 1 SHEETS
1. PROJECT	Virtual TADDS GIB FY-11 L.I. 71125
9. COORDINATE SYSTEM	State Plane
HORIZONTAL	NAD83
VERTICAL	NAVD88
10. SIZE AND TYPE OF BIT	4" Fishtail
2. HOLE NUMBER	B-3
LOCATION COORDINATES	N 681516 E 821587
11. MANUFACTURER'S DESIGNATION OF DRILL	Failing 1500
3. DRILLING AGENCY	U.S. Corps of Engineers - Savannah District
12. TOTAL SAMPLES	DISTURBED 8 / UNDISTURBED 0
4. NAME OF DRILLER	Danny Hewett
13. TOTAL NUMBER CORE BOXES	0
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG FROM VERTICAL	---
BEARING	
14. ELEVATION GROUND WATER	See Remarks
15. DATE BORING	STARTED 5/14/10 / COMPLETED 5/14/10
6. THICKNESS OF OVERBURDEN	>25'
16. ELEVATION TOP OF BORING	64' (Estimated from plans)
7. DEPTH DRILLED INTO ROCK	0'
17. TOTAL CORE RECOVERY FOR BORING	N/A
8. TOTAL DEPTH OF BORING	25'
18. SIGNATURE AND TITLE OF INSPECTOR	Eidalia Gonzalez, Geologist

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
62.0	2.0		POORLY GRADED SAND (SP), pinkish brown, fine grained, moist, trace organics.	20	SS-1			2 2 3	5
57.5	6.5		CLAYEY SAND (SC), yellowish brown and purple, fine grained, wet.	53	SS-2			7 7 9	16
			Yellowish brown mottled with dark gray.	33	SS-3			5 6 7	13
			POORLY GRADED SAND (SP), light gray and gray, fine grained, trace light gray interbedded clay layers.	60	SS-4			10 12 17	29
				47	SS-5			6 4 3	7
			Little coarse sand.	18	SS-6			9 4 6	10
			Gray and tan, medium to coarse grained, trace fine gravel.	26	SS-7			10 15 18	33
39.0	25.0			93	SS-8			26 27 36	63

BOTTOM OF BOREHOLE AT 25.0 ft

Water Level Data

Reading	Depth	Notes	
24 hours	1		5/15/2010

DRILLING LOG

DIVISION	South Atlantic Division
INSTALLATION	Ft.Stewart, Georgia
SHEET	1 OF 1 SHEETS
1. PROJECT	Virtual TADDS GIB FY-11 L.I. 71125
9. COORDINATE SYSTEM	State Plane; HORIZONTAL NAD83; VERTICAL NAVD88
10. SIZE AND TYPE OF BIT	3-1/4" Continuous Spiral Auger
2. HOLE NUMBER	B-4
LOCATION COORDINATES	N 681695 E 821600
11. MANUFACTURER'S DESIGNATION OF DRILL	Failing 1500
3. DRILLING AGENCY	U.S. Corps of Engineers - Savannah District
12. TOTAL SAMPLES	DISTURBED 6; UNDISTURBED 0
4. NAME OF DRILLER	Danny Hewett
13. TOTAL NUMBER CORE BOXES	0
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED; DEG FROM VERTICAL ---; BEARING
14. ELEVATION GROUND WATER	See Remarks
15. DATE BORING	STARTED 5/14/10; COMPLETED 5/14/10
6. THICKNESS OF OVERBURDEN	>15'
16. ELEVATION TOP OF BORING	63.5' (Estimated from plans)
7. DEPTH DRILLED INTO ROCK	0'
17. TOTAL CORE RECOVERY FOR BORING	N/A
8. TOTAL DEPTH OF BORING	15'
18. SIGNATURE AND TITLE OF INSPECTOR	Eidalia Gonzalez, Geologist

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
61.5	2.0		CLAYEY SAND (SC), dark brown and tan, fine grained, moist, trace organics.	40	SS-1			2, 4, 6	10
			POORLY GRADED SAND (SP), brown, fine grained, wet.	60	SS-2			6, 10, 11	21
				30	SS-3			4, 4, 4	8
			Trace interbedded thin clay layers.	55	SS-4			5, 14, 14	28
				73	SS-5			11, 17, 12	29
48.5	15.0		Medium grained, trace clay.	87	SS-6			10, 15, 17	32

BOTTOM OF BOREHOLE AT 15.0 ft

Water Level Data

Reading	Depth	Notes	
During drilling	1.5		5/14/2010
24 hours		Collapsed Boring	5/15/2010

DRILLING LOG

DIVISION	South Atlantic Division
INSTALLATION	Ft.Stewart, Georgia
SHEET	1 OF 1 SHEETS
1. PROJECT	Virtual TADDS GIB FY-11 L.I. 71125
9. COORDINATE SYSTEM	State Plane
HORIZONTAL	NAD83
VERTICAL	NAVD88
10. SIZE AND TYPE OF BIT	3-1/4" Continuous Spiral Auger
2. HOLE NUMBER	B-5
LOCATION COORDINATES	N 681619 E 821775
11. MANUFACTURER'S DESIGNATION OF DRILL	Failing 1500
3. DRILLING AGENCY	U.S. Corps of Engineers - Savannah District
12. TOTAL SAMPLES	DISTURBED 7 / UNDISTURBED 0
4. NAME OF DRILLER	Danny Hewwtt
13. TOTAL NUMBER CORE BOXES	0
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG FROM VERTICAL	---
BEARING	
14. ELEVATION GROUND WATER	See Remarks
15. DATE BORING	STARTED 5/15/10 / COMPLETED 5/15/10
6. THICKNESS OF OVERBURDEN	>15'
16. ELEVATION TOP OF BORING	66.3' (Estimated from plans)
7. DEPTH DRILLED INTO ROCK	0'
17. TOTAL CORE RECOVERY FOR BORING	N/A
8. TOTAL DEPTH OF BORING	15'
18. SIGNATURE AND TITLE OF INSPECTOR	Eidalia Gonzalez, Geologist

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			SILTY SAND (SM), brown, fine grained, dry, little rootlets.	50	SS-1			2, 6, 10	16
			Moist, trace clay.	60	SS-2			7, 10, 12	22
62.8	3.5								
			POORLY GRADED SAND (SP), brown and tan, fine grained, wet, trace clay.	37	SS-3			8, 11, 7	18
58.8	7.5			35	SS-4			4, 5, 6	11
			CLAYEY SAND (SC), brown, fine grained.						
56.9	9.4		Trace rootlets.						
			POORLY GRADED SAND (SP), gray and tan, fine to medium grained, trace clay.	22	SS-5 SS-6			5, 20, 36	56
51.3	15.0			27	SS-7			5, 6, 8	14

BOTTOM OF BOREHOLE AT 15.0 ft

Water Level Data

Reading	Depth	Notes	
During drilling	3.5		5/15/2010
24 hours		Collapsed Boring	5/16/2010

APPENDIX B

LIST OF DRAWINGS

LIST OF DRAWINGS

PLATE NO	SHEET NO	DNG FILE	TITLE
G-001	1	S2WG-001	COVER SHEET AND INDEX OF DRAWINGS
G-002	2	S2WG-002	LOCATION AND VICINITY MAP
VF101	3	S2WVF101	CIVIL TOPOGRAPHIC SURVEY
CS101	4	S2WCS101	CONCEPTUAL CIVIL SITE PLAN
CG101	5	S2WCG101	CONCEPTUAL CIVIL GRADING PLAN
CU101	6	S2WCU101	CONCEPTUAL CIVIL UTILITY PLAN
A-101	7	S2WA-101	CONCEPTUAL FLOOR PLAN

(SEE APPENDIX AA ALSO FOR CONCEPT FLOOR PLANS)

Appendix C Utility Connections

FORT STEWART, GEORGIA UTILITY CONNECTIONS

18 April 2010

A. SITE ELECTRICAL GENERAL REQUIREMENTS

1. The privatized electric utility company at Fort Stewart is Canoochee EMC. The point of contact is Ricky Simons at (912) 459-1112 x3004. All work done by the electric utility company shall be under a separate contract with the Government. This work is NOT part of this RFP.

2. See Appendix FF for Canoochee EMC Project Responsibilities and General Contractor Installation Requirements and Appendix GG for Lines of Demarcation for Canoochee EMC.

B. SITE LIGHTING

1. The privatized electric utility company at Fort Stewart is Canoochee EMC. The point of contact is Ricky Simons at (912) 459-1112 x3004. All work done by the electric utility company shall be under a separate contract with the Government. This work is NOT part of this RFP.

2. For additional guidance regarding the separation of responsibilities between the Design-Build Contractor and Canoochee EMC, see APPENDIX FF: Canoochee EMC Project Responsibilities and General Contractor installation requirements.

3. See Appendix FF for Canoochee EMC Project Responsibilities and General Contractor Installation Requirements and Appendix GG for Lines of Demarcation for Canoochee EMC.

C. SITE COMMUNICATIONS

1. The telecommunications design shall be coordinated with and approved by the NEC Quality Assurance Officer prior to construction. The NEC point of contact is Charles Smith at (912) 912-767-2571, email address: charles.smith7@us.army.mil. An alternate Pamela McCullough at (912) 912-767-7970, email address: pamela.mccullough@us.army.mil.

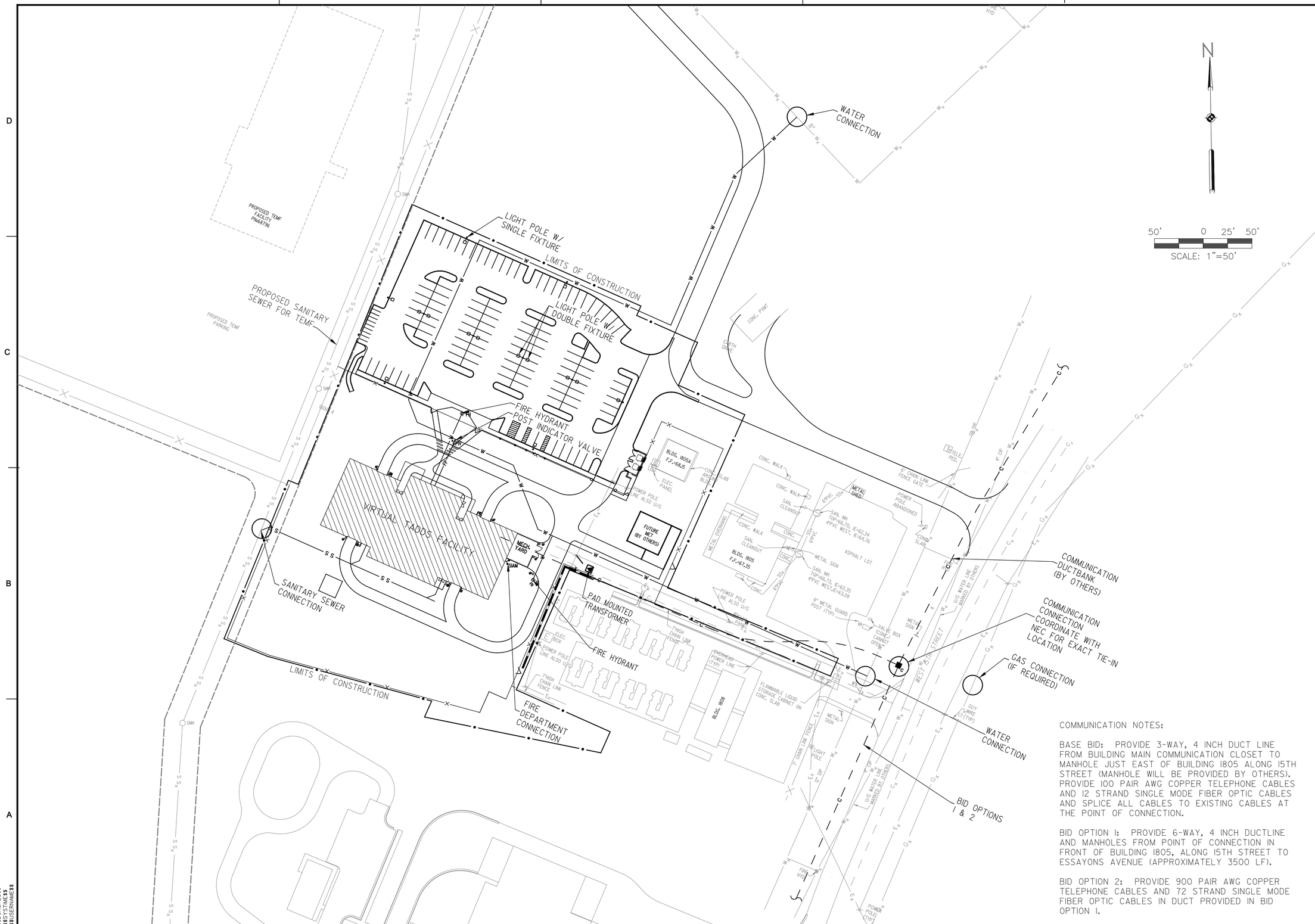
2. Communications drawings are provided for information only. Communications outside plant connection points shown on drawings shall be verified with the installations NEC. Communications ductbank sizes and quantities shown on drawings shall be verified with the installations NEC.

E. SITE CABLE TELEVISION (CATV)

1. Comcast Cable is the local cable television (CATV) company at Fort Stewart. The Comcast point of contact is Craig Markillie at (912) 353-6064. The Design-Build Contractor shall coordinate head-end equipment locations with Comcast Cable and NEC.

F. CATHODIC PROTECTION

1. Cathodic Protection shall be in accordance with UFC 3-570-06.



COMMUNICATION NOTES:

BASE BID: PROVIDE 3-WAY, 4 INCH DUCT LINE FROM BUILDING MAIN COMMUNICATION CLOSET TO MANHOLE JUST EAST OF BUILDING 1805 ALONG 15TH STREET (MANHOLE WILL BE PROVIDED BY OTHERS). PROVIDE 100 PAIR AWG COPPER TELEPHONE CABLES AND 12 STRAND SINGLE MODE FIBER OPTIC CABLES AND SPLICE ALL CABLES TO EXISTING CABLES AT THE POINT OF CONNECTION.

BID OPTION 1: PROVIDE 6-WAY, 4 INCH DUCTLINE AND MANHOLES FROM POINT OF CONNECTION IN FRONT OF BUILDING 1805, ALONG 15TH STREET TO ESSAYONS AVENUE (APPROXIMATELY 3500 LF).

BID OPTION 2: PROVIDE 900 PAIR AWG COPPER TELEPHONE CABLES AND 72 STRAND SINGLE MODE FIBER OPTIC CABLES IN DUCT PROVIDED IN BID OPTION 1.

US ARMY CORPS OF ENGINEERS SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY: DWG. BY: TLM, CKD. BY: RCC, SUBMITTED BY:
DATE: 09/01/10, SOLICITATION NO.: W912HN-08-X-0529, CONTRACT NO.:
FILE NAME: S2WCU101, SIZE: 22X34, PLOT SCALE: AS SHOWN, CATEGORY CODE: 172-10-01, PLOT DATE: 09/01/10

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

BENHAM an SAIC company

VIRTUAL TADDS FACILITY
FORT STEWART, GEORGIA

CONCEPTUAL UTILITY PLAN

PLATE REFERENCE NUMBER CU101
SHEET 6

$$DGNSPEC$$
$$SYSTIME$$
$$USERNAME$$

Appendix D

Results of Fire Flow Tests

Fire Hydrant Flow Test Request Form

FIRE FLOW TEST RESULTS

Project Name: GIS
Project Street Address: W. 15th. ST.
Cross Street: —
Flowed Hydrant Number: 184
Gaged Hydrant Number: 185

SKETCH AND COMMENTS

Check all that apply:

☐ Test location fronts more than one watermain. Please indicate on sketch or comments which watermain is to be tested.

☐ Static/Residual pressure or flow data is required from a specific hydrant. Please indicate the hydrant numbers in the above information.

☒ Sketch Attached.

TEST RESULTS

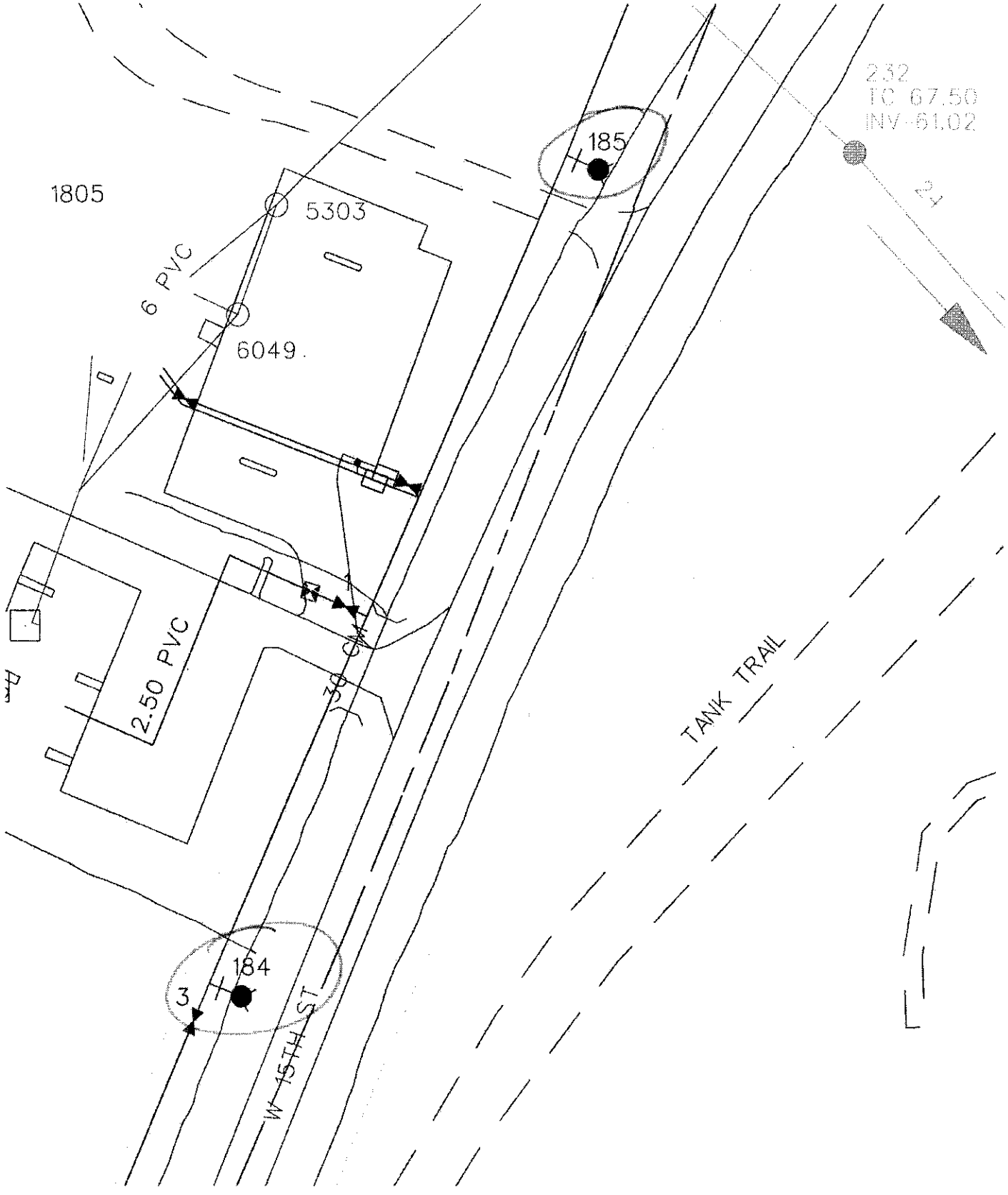
READING AT RESIDUAL HYDRANT # 185

STATIC PRESSURE (PSI): 74
RESIDUAL PRESSURE (PSI): 62

READING AT FLOW HYDRANT # 184

FLOW (GPM): 1171

TESTED BY: J.E.
TEST DATE: 3/18/10
REQUESTED BY: BILL WOLF


232
TC 67.50
INV-61.02
185
1805
5303
6 PVC
6049
2.50 PVC
TANK TRAIL
184
3
W 15TH ST

APPENDIX E
ENVIRONMENTAL INFORMATION AND CORRECTIONS

Corrections to Appendix E

1. **Section 01354 " Erosion and Sedimentation Control", paragraph 1.1.4 Environmental POC is Chief of Prevention and Compliance, Tressa M. Rutland**
2. **Section 01354 "Erosion and Sedimentation Control", paragraph 1.2, References change second paragraph to read "Manual for Erosion and Sediment Control in Georgia", published by the State Soil and Water Conservation Commission and O.C.G.A. 12-7-6**
3. **Section 01354 ""Erosion and Sedimentation Control", paragraph 3.2.2 Add the following, "NPDES requirements for Pre/Post Construction and compliance with EQ 13514/ESIA 2007 Section 438 and the Georgia Stormwater Management Manual-Coastal Stormwater Supplement in conjuction with the USEPA Technical Guidance for Implementation.**

Erosion and Sediment Control

SECTION 01354

EROSION AND SEDIMENTATION CONTROL

PART 1

1.1 SUMMARY

The purpose of this section is to outline the requirements, enforcement and violations, for all Erosion and Sediment Control Plans (E&S), Stormwater Management, Notice of Intent (NOI), and Notice of Termination (NOT) to be submitted with all construction projects on the Fort Stewart/Hunter Army Airfield.

1.1.1 Erosion and Sediment Control Plans

Submitted to DPW upon awarding of contract, reviewed by USDA-NRCS. Must be approved before land-disturbance of any kind can proceed.

1.1.2 Notice of Intent

Contractor to send this form, with the land-disturbance permit, from USDA-NRCS, to Georgia EPD,

Coastal District, Brunswick Office
Georgia Environmental Protection Division
One Conservation Way
Brunswick, GA 31520-8687
(912) 264-7284

14 days in advance of any land disturbing activities. Land-disturbance permit requires three (3) signatures, A) USDA-NRCS, B) DPW representative, C) Contractor responsible for work. Notice of Intent is required for Stormwater management. (See Exhibit 2 at Appendix L.)

1.1.3 Notice of Termination

To be submitted to, Georgia EPD,

Coastal District- Brunswick Office
Georgia Environmental Protection Division
One Conservation Way
Brunswick, GA 31520-8687
(912) 264-7284

by Contractor upon site being 70% stabilized. Concurrence is needed from the COR or PM and USDA-NRCS, and Environmental. (See Exhibit 3 at Appendix L.)

1.1.4 Time Line for Documentation

a. E&S plan submitted to ER&S, DPW.

b. E&S plan reviewed NRCS.

c. Upon E&S plan approval Contractor will be notified by DPW. Contractor to send NOI to the State of Georgia, Environmental Protection Division, 14 days prior to start date. Copies of notification to be sent to:

DPW – Jana Tanner, Chief EP&SD
CHIEF ENGINEER PLAN and SERVICES DIVISION (BLDG 1114)
DIRECTORATE of PUBLIC WORKS (USDA-NRCS)
HQS 3D IN DIV (MECH) AND FORT STEWART, SUITE 101
1117 FRANK COCHRAN DRIVE
FORT STEWART, GA. 31314-4940

Environmental - Tressa M. Rutland
Environmental Branch
Directorate of Public Works, Bldg. 1137
1550 Frank Cochran Drive
Fort Stewart, Georgia 31314-4927

NRCS – James Freeman
CHIEF ENGINEER PLAN and SERVICES DIVISION (BLDG 1114)
DIRECTORATE of PUBLIC WORKS (USDA-NRCS)
HQS 3D IN DIV (MECH) AND FORT STEWART, SUITE 101
1117 FRANK COCHRAN DRIVE
FORT STEWART, GA. 31314-4940

NOTE: Project cannot begin until these items have been completed.

1.2 REFERENCES

The publication listed below form a part of this specification to the extent referenced. The publication is referred to in the text by basic designation only.

Manual for Erosion and Sediment Control of Georgia, 5th Edition - http://www.gaswcc.org/

Environmental Protection Agency - http://www.state.ga.us/dnr/environ/

PART 2

2.1 MINIMUM REQUIREMENTS FOR EROSION AND SEDIMENTATION CONTROL USING BEST MANAGEMENT PRACTICES

2.1.1 General Provisions

Excessive soil erosion and resulting sedimentation can take place during land-disturbing activities. Therefore, plans for those land-disturbing activities, which are not excluded by this ordinance, shall contain provisions for application of soil erosion and sedimentation control measures and practices. The provisions shall be incorporated into the erosion and sedimentation control plans. Soil erosion and sedimentation control measures and practices shall conform to the minimum requirements of paragraph 2.2 of this section. The application of measures and practices shall apply to all features of the site, including street and utility installations, drainage facilities and other temporary and permanent improvements. Measures shall be installed to prevent or control erosion and sedimentation pollution during all stages of any land-disturbing activity.

2.2 MINIMUM REQUIREMENTS/BEST MANAGEMENT PRACTICES (BMP'S)

2.2.1 Best management practices, as set forth in paragraph 2.2 of this section shall be required for all land-disturbing activities. Proper design, installation, and maintenance of best management practices shall constitute a complete defense to any action by the Director or to any other allegation of noncompliance with paragraph (2) of this subsection or any substantially similar terms contained in a permit for the discharge of storm water issued

pursuant to subsection (f) of Code Section 12-5-30, the "Georgia Water Quality Control Act." As used in this subsection the terms "proper design" and “properly designed” mean designed to control soil erosion and sedimentation for all rainfall events up to and including a 25-year, 24-hour rainfall event.

2.2.2 Failure to properly design, install, or maintain best management practices shall constitute a violation of any land-disturbing permit issued by Fort Stewart/Hunter Army Airfield DPW.

2.2.3 Fort Stewart/Hunter Army Airfield DPW may require, in accordance with regulations adopted by the Board, reasonable and prudent monitoring of the turbidity level of receiving waters into which discharges from land disturbing activities occur.

2.2.4 The rules and regulations, ordinances, or resolutions adopted pursuant to this section for the purpose of governing land-disturbing activities shall require, as a minimum, best management practices, including sound conservation and engineering practices to prevent and minimize erosion and resultant sedimentation, which are consistent with, and no less stringent than, those practices contained in the Manual for Erosion and Sediment Control in Georgia published by the Georgia Soil and Water Conservation Commission as of January 1 of the year in which the land-disturbing activity was permitted, as well as the following:

a. Stripping of vegetation, re-grading and other development activities shall be conducted in a manner so as to minimize erosion.

b. Cut-fill operations must be kept to a minimum, as defined by contract.

c. Development plans must conform to topography and soil type, so as to create the lowest practical erosion potential.

d. Whenever feasible, natural vegetation shall be retained, protected and supplemented, as called by design.

e. The disturbed area and the duration of exposure to erosive elements shall be kept to a practicable minimum.

f. Disturbed soil shall be stabilized as quickly as practicable.

g. Temporary vegetation or mulching shall be employed to protect exposed critical areas during development.

h. Permanent vegetation and structural erosion control practices shall be installed as soon as practicable.

i. To the extent necessary, sediment in run-off water must be trapped by the use of debris basins, sediment basins, silt traps, or similar measures until the disturbed area is stabilized. As used in this paragraph, a disturbed area is stabilized when it is brought to a condition of continuous compliance with the requirements of O.C.G.A. 12-7-1 et. seq.

j. Adequate provisions must be provided to minimize damage from surface water to the cut face of excavations or the sloping of fills.

k. Cuts and fills may not endanger adjoining property.

l. Fills may not encroach upon natural watercourses or constructed channels in a manner so as to adversely affect other property owners.

m. Grading equipment must cross, flowing streams by means of bridges or

culverts except when such methods are not feasible, provided, in any case, that such crossings are kept to a minimum;

n. Land-disturbing activity plans for erosion and sedimentation control shall include provisions for treatment or control of any source of sediments and adequate sedimentation control facilities to retain sediments on-site or preclude sedimentation of adjacent waters beyond the levels specified in Section IV B. 2. of this ordinance.

o. A 25-foot buffer along the banks of all state waters, as measured horizontally from the point where vegetation has been wrested by normal stream flow or wave action, except where the Director determines to allow a variance that is at least as protective of natural resources and the environment, where otherwise allowed by the Director pursuant to O.C.G.A. 12-2-8, or where a drainage structure or a roadway drainage structure must be constructed, provided that adequate erosion control measures are incorporated in the project plans and specifications, and are implemented; provided, however, the buffers of at least 25 feet established pursuant to part 6 of Article 5, Chapter 5 of Title 12, the "Georgia Water Quality Control Act", shall remain in force unless a variance is granted by the Director as provided in this paragraph. The following requirements shall apply to any such buffer:
No land-disturbing activities shall be conducted within a buffer and a buffer shall remain in its natural, undisturbed state of vegetation until all land-disturbing activities on the construction site are completed. Once the final stabilization of the site is achieved, a buffer may be thinned or trimmed of vegetation as long as a protective vegetative cover remains to protect water quality and aquatic habitat and a natural canopy is left in sufficient quantity to keep shade on the stream bed.

PART 3

3.1 APPLICATION/PERMIT PROCESS

Fort Stewart/Hunter Army Airfield DPW shall review plans and detailed plans of Fort Stewart/Hunter Army Airfield that affect the tract to be developed and the area surrounding it.

3.2 APPLICATION REQUIREMENTS

3.2.1 No person shall conduct any land-disturbing activity within the jurisdictional boundaries of Fort Stewart/Hunter Army Airfield without first obtaining a permit from Fort Stewart/Hunter Army Airfield DPW to perform such activity.

3.2.2 The application for a permit shall be submitted to Fort Stewart/ Hunter Army Airfield DPW and must include the applicant’s erosion and sedimentation control plan with supporting data, as necessary. Said plans shall include, as a minimum, the data specified in paragraph 3.3 of this section. Soil erosion and sedimentation control plans shall conform to the provisions of paragraph 2.2 of this section. Applications for a permit will not be accepted unless accompanied by four copies of the applicant’s soil erosion and sedimentation control plans.

3.2.3 Immediately upon receipt of an application and plan for a permit, Fort Stewart/Hunter Army Airfield DPW shall refer the application and plan to the USDA-NRCS for its review and approval or disapproval concerning the adequacy of the erosion and sedimentation control plan. The results of the USDA-NRCS review shall be forwarded to the Fort Stewart/Hunter Army Airfield DPW. No permit will be issued unless the plan has been approved by the USDA-NRCS, and any variances required by Section IV C. 15. and 16.

3.3 PLAN REQUIREMENTS

3.3.1 Plans must be prepared to meet the minimum requirements as contained in paragraph 3.3 of this section. Conformance with the minimum requirements may be attained through the use of design criteria in the current issue of the Manual for Erosion and Sediment Control in Georgia, published by the State Soil and Water Conservation Commission as a guide; or through the use of more stringent, alternate design criteria which conform to sound conservation and engineering practices. The Manual for Erosion and Sediment Control in Georgia is hereby incorporated by reference into this ordinance. The plan for the land-disturbing activity shall consider the interrelationship of the soil types, geological and hydrological characteristics, topography, watershed, vegetation, proposed permanent structures including roadways, constructed waterways, sediment control and storm water management facilities, local ordinances and State laws.

3.3.2 Data Required for Site Plan

3.3.3 Narrative or Notes, and Other Information: Notes or narrative to be located on the site plan in general notes or in erosion and sediment control notes.

3.3.4 Description of existing land use at project site and description of proposed project.

3.3.5 Name, address, and phone number of the property owner.

3.3.6 Name and phone number of 24-hour local contact who is responsible for erosion and sedimentation controls.

3.3.7 Size of project, or phase under construction, in acres.

3.3.8 Activity schedule showing anticipated starting and completion dates for the project. Include the statement, in bold letters, that “The installation of erosion and sedimentation control measures and practices shall occur prior to or concurrent with land-disturbing activities.”

3.3.9 Stormwater and sedimentation management systems-storage capacity, hydrologic study, and calculations, including off-site drainage areas.

3.3.10 Vegetative plan for all temporary and permanent vegetative measures, including species, planting dates, and seeding, fertilizer, lime, and mulching rates. The vegetative plan should show options for year-round seeding.

3.3.11 Detail drawings for all structural practices. Specifications may follow guidelines set forth in the Manual for Erosion and Sediment Control in Georgia.

3.3.12 Maintenance statement - “Erosion and sedimentation control measures will be maintained at all times. Additional erosion and sedimentation control measures and practices will be installed if deemed necessary by onsite inspection.”

3.3.13 Maps, drawings, and supportive computations shall bear the signature/seal of a registered or certified professional in engineering, architecture, landscape architecture, land surveying, or erosion and sedimentation control. The certified plans shall contain:

3.3.14 Graphic scale and north point or arrow indicating magnetic north.

3.3.15 Vicinity maps showing location of project and existing streets.

3.3.16 Boundary line survey.

3.3.17 Delineation of disturbed areas within project boundary.

3.3.18 Existing and planned contours, with an interval in accordance with the following:

Map Scale	Ground Slope	Contour Interval, ft.
1 inch = 100 ft	Flat 0-2%.	0.5 or 1
larger scale	Rolling 2-8%	1 or 2
	Steep 8% +	2, 5 or 10

3.3.19 Adjacent areas and features areas such as streams, lakes, residential areas, etc. which might be affected should be indicated on the plan.

3.3.20 Proposed structures or additions to existing structures and paved areas.

3.3.21 Delineate the 25-foot horizontal buffer adjacent to state waters and the specified width in Metropolitan River Protection Act (MRPA) areas.

3.3.22 Location of erosion and sedimentation control measures and practices using coding symbols from the Manual for Erosion and Sediment Control in Georgia, Chapter 6.

3.3.23 Maintenance of all soil erosion and sedimentation control practices, whether temporary or permanent, shall be at all times the responsibility of the Contractor.

3.4 PERMITS

3.4.1 Permits shall be issued or denied as soon as practicable, but in any event not later than fifteen (15) days after receipt by Fort Stewart / Hunter Army Airfield / DPW of a completed application.

3.4.2 No permit shall be issued by Fort Stewart / Hunter Army Airfield/ DPW unless the erosion and sedimentation control plan has been approved by USDA-NRCS and Fort Stewart / Hunter Army Airfield/ DPW has affirmatively determined that the plan is in compliance with this ordinance and all ordinances and rules and regulations in effect within the jurisdictional boundaries of the Fort Stewart / Hunter Army Airfield / DPW are met. If the permit is denied, the reason for denial shall be furnished to the applicant.

3.4.3 If the tract is to be developed in phases, then a separate permit shall be required for each phase.

3.4.4 The permit may be suspended, revoked, or modified by Fort Stewart / Hunter Army Airfield/ DPW, as to all or any portion of the land affected by the plan, upon finding that the holder or his successor in the title is not in compliance with the approved erosion and sedimentation control plan or that the holder or his successor in title is in violation of this ordinance. A holder of a permit shall notify any successor in title to him as to all or any portion of the land affected by the approved plan of the conditions contained in the permit.

3.5 INSPECTIONS AND ENFORCEMENT

3.5.1 Fort Stewart / Hunter Army Airfield / DPW or USDA-NRCS representative, will periodically inspect the sites of land-disturbing activities for which permits have been issued to determine if the activities are being conducted in

accordance with the plan and if the measures required in the plan are effective in controlling erosion and sedimentation. If, through inspection, it is deemed that a person engaged in land-disturbing activities as defined herein has failed to comply with the approved plan, with permit conditions, or with the provisions of this ordinance, a written Notice to comply shall be served upon that person. The notice shall set forth the measures necessary to achieve compliance and shall state the time within which such measures must be completed (15 days). If the person engaged in the land-disturbing activity fails to comply within the time specified, he shall be deemed in violation of this ordinance.

3.5.2 Fort Stewart / Hunter Army Airfield/ DPW or USDA-NRCS representative shall have the power to conduct such investigations as it may reasonably deem necessary to carry out duties as prescribed in this ordinance, and for this purpose to enter at reasonable times upon any site, for the purpose of investigation and inspecting the sites of land-disturbing activities.

3.5.3 No person shall refuse entry or access to any authorized representative or agent of Fort Stewart/Hunter Army Airfield / DPW or USDA-NRCS representative, who requests entry for the purposes of inspection, and who presents appropriate credentials, nor shall any person obstruct, hamper or interfere with any such representative while in the process of carrying out their official duties.

3.6 PENALTIES AND INCENTIVES

3.6.1 Failure To Obtain a Permit For Land-Disturbing Activity

If any person commences any land-disturbing activity requiring a land-disturbing permit as prescribed in this ordinance without first obtaining said permit, the person shall be subject to a stop work order within the boundaries of Fort Stewart / Hunter Army Airfield.

3.7 STOP-WORK ORDERS

3.7.1 For the first violation of the provisions of this ordinance, Fort Stewart / Hunter Army Airfield / DPW shall issue a written warning to the violator. The violator shall have a designated amount of time to correct the violation. If the violation is not corrected within allotted time, Fort Stewart / Hunter Army Airfield/ DPW shall issue a stop-work order requiring that land-disturbing activities be stopped until necessary corrective action or mitigation has occurred; provided, however, that, if the violation presents an imminent threat to public health or waters of the state or if the land-disturbing activities are conducted without obtaining the necessary permit, Fort Stewart / Hunter Army Airfield/ DPW shall issue an immediate stop-work order in lieu of a warning;

3.7.2 For a third and each subsequent violation, Fort Stewart / Hunter Army Airfield / DPW shall issue an immediate stop-work order; and;

3.7.3 All stop-work orders shall be effective immediately upon issuance and shall be in effect until the necessary corrective action or mitigation has occurred.

4.1 DEFINITIONS

The following definitions shall apply in the interpretation and enforcement of this ordinance, unless otherwise specifically stated:

DEFINITIONS

1. Best Management Practices (BMP's): A collection of structural practices and vegetative measures which, when properly designed, installed and maintained, will provide effective erosion and sedimentation control for all rainfall events up to and including a 25-year, 24-hour rainfall event.

2. Board: The Board of Natural Resources.

3. Buffer: The area of land immediately adjacent to the banks of state waters in its natural state of vegetation, which facilitates the protection of water quality and aquatic habitat.

4. Commission: The State Soil & Water Conservation Commission.

5. Cut: A portion of land surface or area from which earth has been removed or will be removed by excavation; the depth below original ground surface to excavated surface. Also known as excavation.

6. Department: The Department of Natural Resources.

7. Director: The Director of the Environmental Protection Division of the Department of Natural Resources.

8. Division: The Environmental Protection Division of the Department of Natural Resources.

9. Drainage Structure: A device composed of a virtually non-erodible material such as concrete, steel, plastic or other such material that conveys water from one place to another by intercepting the flow and carrying it to a release point for storm-water management, drainage control, or flood control purposes.

10. Erosion: The process by which land surface is worn away by the action of wind, water, ice or gravity.

11. Erosion and Sedimentation Control Plan: A plan for the control of soil erosion and sedimentation, resulting from a land-disturbing activity.

12. Fill: A portion of land surface to which soil or other solid material has been added; the depth above the original ground.

13. Finished Grade: The final elevation and contour of the ground after cutting or filling and conforming to the proposed design.

14. Grading: Altering the shape of ground surfaces to a predetermined condition; this includes stripping, cutting, filling, stockpiling and shaping or any combination thereof and shall include the land in its cut or filled condition.

15. Ground Elevation: The original elevation of the ground surface prior to cutting or filling.

16. Issuing Authority: DPW.

17. Land-Disturbing Activity: Any activity which may result in soil erosion from water or wind and the movement of sediments into state waters or onto lands within the state, including, but not limited to, clearing, dredging, grading, excavating, transporting, and filling of land but not including agricultural practices as described in Section III, Paragraph 5.

18. Metropolitan River Protection Act (MRPA): A state law referenced as O.C.G.A. 12-5-440 et.seq., which addresses environmental and developmental

matters in certain metropolitan river corridors and their drainage basins.

19. Natural Ground Surface: The ground surface in its original state before any grading, excavation or filling.

20. Nephelometric Turbidity Units (NTU): Numerical units of measure based upon photometric analytical techniques for measuring the light scattered by finely divided particles of a substance in suspension. This technique is used to estimate the extent of turbidity in water in which colloidally dispersed particles are present.

21. Permit: The authorization necessary to conduct a land-disturbing activity under the provisions of this ordinance.

22. Person: Any individual, partnership, firm, association, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, state agency, municipality or other political subdivision of this State, any interstate body or any other legal entity.

23. Project: The entire proposed development project regardless of the size of the area of land to be disturbed.

24. Roadway Drainage Structure: A device such as a bridge, culvert, or ditch, composed of a virtually non-erodible material such as concrete, steel, plastic, or other such material that conveys water under a roadway by intercepting the flow on one side of a traveled way consisting of one or more defined lanes, with or without shoulder areas, and carrying water to a release point on the other side.

25. Sediment: Solid material, both organic and inorganic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, ice, or gravity as a product of erosion.

26. Sedimentation: The process by which eroded material is transported and deposited by the action of water, wind, ice or gravity.

27. Stabilization: The process of establishing an enduring soil cover of vegetation by the installation of temporary or permanent structures for the purpose of reducing to a minimum the erosion process and the resultant transport of sediment by wind, water, ice or gravity.

28. State Waters: Any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs, wells, and other bodies of surface or subsurface water, natural or artificial, lying within or forming a part of the boundaries of the State which are not entirely confined and retained completely upon the property of a single individual, partnership, or corporation.

29. Structural Erosion and Sedimentation Control Practices: Practices for the stabilization of erodible or sediment-producing areas by utilizing the mechanical properties of matter for the purpose of either changing the surface of the land or storing, regulating or disposing of runoff to prevent excessive sediment loss. Examples of structural erosion and sediment control practices are riprap, sediment basins, dikes, level spreaders, waterways or outlets, diversions, grade stabilization structures, sediment traps and land grading, etc. Such practices can be found in the publication Manual for Erosion and Sediment Control in Georgia.

30. Vegetative Erosion and Sedimentation Control Measures: Measures for the stabilization of erodible or sediment-producing areas by covering the soil

with:

A. Permanent seeding, sprigging or planting, producing long-term vegetative cover; or

B. Temporary seeding, producing short-term vegetative cover; or

C. Sodding, covering areas with a turf of perennial sod-forming grass. Such measures can be found in the publication Manual for Erosion and Sediment Control in Georgia.

31. Watercourse: Any natural or artificial watercourse, stream, river, creek, channel, ditch, canal, conduit, culvert, drain, waterway, gully, ravine, or wash in which water flows either continuously or intermittently and which has a definite channel, bed and banks, and including any area adjacent thereto subject to inundation by reason of overflow or floodwater.

32. Wetlands: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

---End of Section ---

EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST
GUIDANCE DOCUMENT

SWCD: (May be completed by ES&PC plan reviewer)

Project Name: (Noted clearly on cover sheet) Address: (Include street name/address on cover sheet)

City/County: (Noted on cover sheet-note LIA) Date on Plans: (Initial submittal date on cover sheet)

TO BE SHOWN ON ES&PC PLAN

1 Graphic scale and north arrow.
The graphic scale and north arrow must be clearly shown on all ES&PC plan sheets.

2 Existing and proposed contour lines with contour lines drawn at an interval in accordance with the following:

Map Scale	Ground Slope	Contour Intervals, ft.
1 inch =	Flat 0 - 2%	0.5 or 1
	Rolling 2 - 8%	1 or 2
	Steep 8% +	2,5 or 10

Plan should include an existing site plan sheet or sheets with the above contour line intervals shown on plan. The initial, intermediate and final phase sheets of the plan must show the proposed grade in bold contour lines with the above intervals overlaying the original contour lines. Elevations of both the existing and proposed contour lines must be shown. Contours for infrastructure projects may be shown using criteria from infrastructure checklist or by using the criteria listed above.

3 Delineation and acreage of contributing drainage basins on the project site.
The existing site plan or the initial phase plan must show delineation of each drainage basin on the project site with the acreage of each basin noted. As the basins are altered during grading for the intermediate phase of the plan the new basins and acreage must be delineated. If the basins are changed on the final phase of the plan delineate new basins with acreage noted.

4 Delineation of on-site wetlands and all state waters located on and within 200 feet of the project site.
ALL STATE WATERS LOCATED ON AND WITHIN 200 FEET OF THE PROJECT SITE MUST BE DELINEATED ON ALL PHASES OF THE PLAN. If the plan reviewer visits the site prior to the plan review and discovers possible state waters on and within 200 feet of the site that are not delineated on the plan, the review could be delayed until a state waters determination is made by the Local Issuing Authority. ALL WETLANDS LOCATED WITHIN THE PROJECT SITE ONLY MUST BE DELINEATED.

5 Delineation of 25-foot undisturbed buffers of state waters and 50-foot undisturbed buffers along designated trout streams. Clearly note and delineate all areas of impact.
The State Law of Georgia mandates these minimum undisturbed buffers, but the Local Issuing Authorities are allowed to require more stringent buffers of state waters. The minimum undisturbed buffers required by the state and all other buffers of state waters required by the issuing authority must be delineated. Any undisturbed buffer area that is impacted by the project site must be noted on the plan.

6 Soil series and their delineation.
Soil series delineations are required for the plan review and can be found on the NRCS web site. The highest level of soil survey required for the project site, such as a level three or level four survey for projects that will be using septic systems, must be delineated on the plan. The soil series delineation should be shown on the existing site plan or the initial phase plan. A chart listing the soils located on the project site should be shown on the sheet with their delineation.

7 Revision and/or initial date.
The initial plan date should be shown on all pages. With each resubmittal the revision date and entity requesting revisions (Planning Dept., GSWCC, NRCS, etc.) should be shown on cover sheet and each sheet that has been revised.

8 Limits of disturbance for each phase of construction.
The limits of disturbance for the initial phase should delineate only the area required to be disturbed for the installation of perimeter control and initial sediment storage. The intermediate phase should delineate the entire area to be disturbed for that phase, such as grading, drainage, utilities installed, etc. The final phase should delineate any additional areas to be disturbed such as individual lots, etc.

9 Signature, seal and GSWCC Level II certification number of the qualified design professional.
The plan must include the signature, seal and GSWCC Level II certification number of the qualified design professional on each sheet of and pertaining to the ES&PC plan. ANY PLANS RECEIVED THAT DO NOT PROVIDE ANY OF THESE WILL NOT BE REVIEWED.

10 Storm-drain pipe and weir velocities with appropriate outlet protection to accommodate discharges without erosion.
The storm-drain pipe and weir velocities must show the flow characteristics of the pipe at full flow including pipe diameter, flow rate (cfs), velocity (fps), and tailwater conditions. This information should be shown in a chart shown on storm-drain profile sheet, ES&PC intermediate phase sheet or on the ES&PC detail sheet that shows outlet protection.
The dimensions of the apron must include length (La), width at the headwall (W1), down-stream width (W2), average stone diameter (d50), and stone depth (D) designed in accordance with Figures 6-24.1 and 6-24.2 in the Manual. These should be shown in a chart on ES&PC intermediate and/or final phase sheet or ES&PC detail sheet with outlet protection.

11 Provide a minimum of 67 cubic yards of sediment storage per acre drained using a temporary sediment basin, retrofitted detention pond, and/or excavated inlet sediment traps for each common drainage location. Sediment storage volume must be in place prior to and during all land disturbance activities until final stabilization of the site has been achieved. A written rationale explaining the decision not to use a sediment basin must be included in the plan for each common drainage location in which a sediment basin is not provided.
For each common drainage location, a temporary (or Permanent) sediment basin (Sd3, Rt, or excavated Sd2) providing at least 67 cubic yards of storage per acre drained, or equivalent control measures, shall be provided until final stabilization of the site. The 67 cubic yards of storage per acre does not apply to flows from off-site areas and flows from on-site areas that are either undisturbed or have undergone final stabilization where such flows are diverted around both the disturbed area and the sediment basin. Sediment basins may not be appropriate for some common drainage locations and a written rationale explaining the decision not to use sediment basins must be included in the plan.

12 Location of Best Management Practices that are consistent with and no less stringent than the Manual for Erosion and Sediment Control in Georgia. Phase plan into initial sediment storage and perimeter control BMP's, intermediate grading and drainage BMP's and final BMP's. Use uniform coding symbols from the Manual, Chapter 6, with legend.
BMP's for all phases of the plan must be consistent with and no less stringent than the Manual and shown using uniform coding symbols from the Manual. The uniform coding symbols legend from the Manual must be included and may be shown on detail sheet or any of the ES&PC plan sheets.
The plan must be shown in a minimum of three phases with each phase shown on a separate sheet. Initial phase of the plan must include the required 67 cy per acre sediment storage, construction exit, tree-save fence if applicable and any other BMP's necessary to prevent sediment from leaving the site such as silt fence, inlet protection on existing storm drain structures, diversions, check dams, temporary ground cover, etc. Limits of disturbance for the initial phase are to be only the areas needed to install initial BMP's. The intermediate phase should show rough grading and utility construction. BMP's should include initial inlet protection, additional silt fence as needed, any revised sediment storage needed as drainage basins are altered, outlet protection, retrofit if applicable, matting with temporary or permanent vegetation as needed, temporary down drains, filter rings, etc. Final phase of plan should show finished grade, curbing and paving if applicable, building construction if applicable, etc. BMP's should include permanent vegetation, appropriate inlet protection, etc.

13 Name and phone number of 24-hour local contact responsible for erosion, sedimentation and pollution controls.
May be shown on ES&PC plan sheets and/or ES&PC notes.

14 Best Management Practices to minimize off-site vehicle tracking of sediments and the generation of dust.
The Plan must establish BMPs designed to minimize or eliminate the off-site vehicle tracking of dust, dirt, sand, soils and sediment and the generation of dust to the maximum extent practicable. The plan should indicate structural BMPs such as construction exits as well as a narrative description of the actions to be taken and/or equipment to be available and used as necessary to control dust and off-site vehicle tracking. Some requirements of the Plan may need a more detailed description of BMP's than a typical drawing can provide. These items should be clarified with a narrative description shown on the plan or in the ES&PC notes.

15 Delineate sampling locations, perennial and intermittent streams and other water bodies into which storm water is discharged.
The Plan must include a site map that shows the location of all waters of the State (including wetlands) present on the site whether or not those state waters have an associated buffer. The map must also show the location(s) of all storm water discharge points (outfalls) and indicate the location(s) of all points where storm water samples will be collected for the purposes of the permit. Storm water sampling must be conducted at all storm water outfalls (unless a representative outfall is designated) or at upstream and downstream locations in the receiving water(s). In some cases, the plan may call for sampling of a combination of storm water outfalls and receiving waters.

16 Identify/Delineate all storm water discharge points.
Any point where stormwater is discharged from the site should be clearly identified in each phase of the plan.

Narrative Notes and Other Information: (Notes or narrative should be located on the ES&PC plan or under Erosion, Sedimentation and Pollution Control notes.)

17 Provide hydrology study and maps of drainage basins for both the pre- and post-developed conditions.
Hydrology study and drainage maps should be separate from plans. Maps should include each individual basin draining to, through and from the project site, with each one delineated, labeled and showing its total acreage.

18 Provide vicinity map showing site's relation to surrounding areas. Include designation of specific phase, if necessary.
Site location must be delineated showing surrounding area roads and highways. If the project is being done in phases, each individual phase must be delineated and labeled. This information is important for plan reviewers if a site visit is needed, or if the site needs to be located on another map such as USGS quad.

19 Identify the project receiving waters and describe all adjacent areas including streams, lakes, residential areas, wetlands, etc. which may be affected.
The name of the initial receiving water(s) or if unnamed the first named blue line stream indicated on the appropriate USGS Topographic map and describe any neighboring area which could be affected by the post-developed runoff from the site.

20 Plan addresses BMP's for all phases of common development including individual building lots and out-parcels, etc. regardless of who owns or operates the individual sites. Include a typical and any situational lots applicable.
The Erosion, Sedimentation & Pollution Control plans for a common development is designed for the life of the project and must include practices to be implemented by all secondary permittees involved, whether the primary permittee relinquishes ownership of the land rights or not. This includes providing an ES&PC plan for typical and situational lots for each secondary permittee (builder) who purchases a lot from the primary permittee (developer). Situational lots may include, but are not limited to, lots adjacent to state waters buffers (in which a double row of Type C silt fence must be shown adjacent to buffer), lots adjacent to wetlands, lots with an extreme grade, etc. Not applicable for stand alone and infrastructure projects.

21 Design professional's certification statement and signature that the permittee's ES&PC Plan provides for an appropriate and comprehensive system of BMP's and sampling to meet permit requirements as stated on page 15 of permit.
Statement must be shown as worded on page 15 of GAR 100003 and include design professionals signature. The statement and signature are to be shown under ES&PC notes. This statement is found on pages 12-13 in GAR 100001 and on page 13 of GAR 100002.

22 Design professional's certification statement and signature that the site was visited prior to development of the ES&PC Plan.
Statement and signature are to be shown under ES&PC notes.

23 Indication that non-exempt activities shall not be conducted within the 25 or 50-foot undisturbed stream buffers as measured from the point of wrested vegetation without first acquiring the necessary variances and permits.
See Part IV. EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN (I) and (II) of the permit and show under ES&PC notes.

24 Plan describes practices used to reduce the pollutants in storm water discharges.
In addition to erosion and sedimentation controls, the plan must identify all potential sources of storm water pollution expected to be present at the site. These will include BMPs designed to control pollutants from waste disposal practices, soil additives, remediation of spills and leaks of petroleum products, concrete truck washout, etc. The plan must also show that the site will be in compliance with all applicable State and local waste disposal, sanitary sewer or septic system regulations.

25 Indication that the applicable portion of ES&PC Plan is to be provided to each secondary permittee prior to the secondary conducting any construction activity and that each secondary shall sign the Plan or portion of the Plan applicable to their site. List the names and addresses of all secondary permittees.
The Plan must contain a list of and contact information for all secondary permittees and a statement that the primary permittee shall provide a copy of the Plan (and any subsequent revisions to the Plan) to each secondary permittee. The plan must include a section for each secondary to sign indicating that they have made a written acknowledgement of receipt of the plan and a copy of the acknowledgement must be kept in the primary's records. Not applicable for stand alone and infrastructure projects.

26 Indication that the design professional who prepared the ES&PC Plan is to inspect the installation of BMP's within 7 days after initial construction activity begins.
The Plan must include a statement indicating that the design professional must be retained by the primary permittee to conduct a site inspection within seven (7) days after initial construction begins in order to determine if the BMPs have been installed as designed and are being maintained as required by the Plan and the Green Book. The design professional must report the results of the inspection to the primary permittee within seven (7) days and the primary must correct all deficiencies identified in the report within two (2) business days after receiving the report (unless additional time is needed due to adverse weather). The primary permittee may use an alternate design professional to conduct the BMP inspection, provided that they make a written request to EPD to change from the design professional who developed the plan and EPD has agreed.

27 Include certification and signature in accordance with section V.G.d. of the permit.
See part V. G. d. of the permit. Statement must be worded as shown in permit and shown under ES&PC notes with signature.

28 Indication that amendments/revisions to the ES&PC Plan which have a significant effect on BMP's with a hydraulic component must be certified by the design professional.
See part IV. C. of the permit. This can be clarified in a narrative and shown under ES&PC notes. Revisions or amendments should be submitted to the Local Issuing Authority for review.

29 Description of the nature of construction activity.
Provide a description of the existing site and a description of the proposed project. These must be shown on ES&PC plans or under ES&PC notes.

30 Description and chart or timeline of the intended sequence of major activities which disturb soils for the major portions of the site (i.e., initial perimeter and sediment storage BMP's, clearing and grubbing activities, excavation activities, utility activities, temporary and final stabilization).
Activity schedule must be site specific. The narrative description and timeline for each phase of construction may be shown on ES&PC plan sheet or under ES&PC notes.

31 An estimate of the runoff coefficient or peak discharge flow of the site prior to and after construction activities are completed.
The Plan must provide both pre- and post-construction estimates of the runoff coefficient or peak discharge flow for the site. This can be in the form of a hydrologic study so long as that study is made a part of the Plan and accompanies the Plan. A complete hydrologic study is not a required element of the Plan, only the pre and post-construction estimates of the run-off coefficient or peak discharge flow for the site.

32 Description of the measures that will be installed during the construction process to control pollutants in storm water that will occur after construction operations have been completed.
The Plan must contain a description of the measures that will be installed during the construction process to control pollutants in storm water that will occur after construction operations have been completed. These may include storm water detention and retention structures, use of vegetated swales and natural depressions for flow attenuation or a combination of these practices (sequential systems). The Plan must also include a technical explanation of the basis used to select these practices where flows will exceed pre-development levels. The Plan must indicate that velocity dissipation devices will be placed at discharge locations and along the length of any outflow channel in order to provide a non-erosive flow so that the natural physical and biological characteristics and functions of the water course are maintained and protected. The installation of these devices may be subject to Section 404 of the Federal Clean Water Act. Note: The permitttee is only responsible for the installation and maintenance of storm water management devices prior to final stabilization of the site and not the operation and maintenance of such structures after construction activities have been completed.

33 Indication that waste materials shall not be discharged to waters of the State, except as authorized by a Section 404 permit.
The Plan must include a description of how waste materials, including waste building materials, construction and demolition debris, concrete washout, excavated sediment, etc., will be properly disposed of. Any disposal of solid waste to waters of the State is prohibited unless authorized by a Section 404 permit.

34 Documentation that the ES&PC Plan is in compliance with waste disposal, sanitary sewer, or septic tank regulations.
The Plan must provide for the proper disposal of sewage and other wastes generated during construction operations. The plan must ensure that the site complies with any applicable State or local regulations regarding waste disposal, sanitary sewer, or septic tanks.

35 BMP's for the remediation of all petroleum spills and leaks.
The Plan must provide BMPs and guidance for the prevention of spills and leaks of petroleum products from any areas where such products are stored or used as well as guidance for the proper remediation of any spills and leaks that do occur. This information can be in the form of a separate Spill Prevention / Spill Response document so long as that information accompanies the Plan.

36 Details on required inspections and record keeping by the primary permittee, secondary permittees and tertiary permittees
The Plan must address the specific requirements for daily, weekly and monthly inspections of the site by Qualified Personnel and the record keeping requirements for the proper documentation of the inspections. Inspection reports must include the name of the inspector(s), the date(s) of each inspection, major observations relating to the implementation of the ES&PC plan and actions taken in response to the inspection(s). The reports must identify any incidents of non-compliance or, if a report does not identify any incidents of non-compliance, the report must contain a certification that the site is in compliance with the plan. Inspection reports must be signed in accordance with Part V.G of the permit.

37 Description of analytical methods to be used to collect and analyze the samples from each location.
The plan must address the monitoring of nephelometric turbidity in receiving waters and/or storm water outfalls by the primary permittee in accordance with the permit. The plan must include the following:

1. A topographic map (scale must be equal to or greater than 1:240000) showing the location of all waters of the State (both perennial and intermittent) into which storm water is discharged
2. A detailed narrative describing the analytical method(s) that will be used to collect and analyze the samples (including quality control and assurance procedures) for each sampling location
3. If all or some storm water outfalls will be sampled, a rationale for the selection of the appropriate NTU values from Appendix B
4. Any additional information required in writing to the permittee by EPD

38 Appendix B rationale for outfall sampling points where applicable.
See item 37 above.

39 Information on sampling frequency and reporting requirements.
The Plan must clearly indicate sampling locations (all receiving waters, storm water outfalls or a combination of both), when sampling events will be conducted, and the requirements for reporting results of sample analysis to EPD.

40 Provide land lot and district numbers for site location. Describe critical areas and any additional measures that will be utilized for these areas.
Land Lot and District numbers must be shown on cover sheet and may also be shown on ES&PC plan sheets and ES&PC notes.

41 Provide name, address and phone number of primary permittee.
May be shown on cover sheet, ES&PC plan or under ES&PC notes.

42 Note total and disturbed acreage (the disturbed area shall be the total estimated disturbed area of the primary and secondary permittees) of the project or phase under construction.
Must be shown on ES&PC plan or under ES&PC notes.

43 Cleary note statement in bold letters- "The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to, or concurrent with, land disturbing activities."
Must be shown on ES&PC plan or under ES&PC notes.

44 Cleary note maintenance statement in bold letters - "Erosion control measures will be maintained at all times. If full implementation of the approved plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source."
Must be shown on ES&PC plan or under ES&PC notes.

45 Clearly note the statement in bold letters - "Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding."
Must be shown on ES&PC plan or under ES&PC notes.

46 Provide detailed drawings for all structural practices. Specifications must, at a minimum, meet the guidelines set forth in the Manual for Erosion and Sediment Control in Georgia.
The erosion and sediment control detail sheet must show a detailed drawing for each structural BMP shown on the plan. All BMPs and details shown must, at a minimum, meet the guidelines given in the Manual. Note that a worksheet is provided in the Manual for most structural BMP's that must be included on the ES&PC plan or detail sheet.

47 Provide vegetative plan, noting all temporary and permanent vegetative practices. Include species, planting dates and seeding, fertilizer, lime and mulching rates. Vegetative plan shall be site specific for appropriate time of year that seeding will take place and for the appropriate geographic region of Georgia.
Provide vegetative plan, noting all temporary and permanent vegetative practices. Include species, planting dates and seeding, fertilizer, lime and mulching rates. Vegetative plan shall be site specific for appropriate time of year that seeding will take place and for the appropriate geographic region of Georgia.

For Official Use Only

NOTICE OF INTENT

State of Georgia
Environmental Protection Division
For Coverage Under NPDES General Permit
To Discharge Storm Water Associated With Construction Activity

PRIMARY PERMITTEE

Coverage Desired (Check Only One)

☐ GAR 100001-Stand Alone ☐ GAR 100002-Infrastructure ☐ GAR 100003-Common Development

I. SITE/OWNER/OPERATOR INFORMATION

Site Project Name: _____

GPS Location of Construction Exit: _____

Street Address: _____

City(if applicable): _____ County: _____

Subdivision Name: _____

Owner's Name: _____

Address: _____ City: _____ State: _____ Zip Code: _____

Operator's Name: _____ Phone: _____

Address: _____ City: _____ State: _____ Zip Code: _____

Facility Contact: _____ Phone: _____

II. SITE ACTIVITY INFORMATION

Start Date: _____ Completion Date: _____ Estimated Disturbed Acreage: _____

Type Construction Activity: ☐ Commercial ☐ Industrial ☐ Municipal ☐ Linear
☐ Utility ☐ Residential/Subdivision Development

Number of Secondary Permittees: _____

III. RECEIVING WATER INFORMATION

A. Name of Initial Receiving Water(s): _____

☐ Trout Stream ☐ Warm Water Fisheries Stream

B. Name of Municipal Storm Sewer System Owner/Operator: _____

Name of Receiving Water(s): _____

☐ Trout Stream ☐ Warm Water Fisheries Stream

C. ☐ Sampling of Outfall(s) ☐ Sampling of Receiving Stream(s) ☐ Trout Stream

Number of Outfalls: _____ Appendix B NTU Value: _____ Surface Water Drainage Area: _____

IV. ATTACHMENTS. (Check those that apply.)

Indicate below the items attached to this Notice of Intent:

_____ Location map showing the receiving stream(s), outfall(s) or combination thereof to be monitored.

_____ Erosion, Sedimentation and Pollution Control Plan (if project is greater than 50 acres or if project in areas without local Issuing Authorities regardless of acreage).

_____ List of known secondary permittees.

_____ Schedule for the timing of the major construction activities.

V. CERTIFICATIONS. (Owner or Operator or both to initial as applicable.)

_____I certify that the receiving water(s) or the outfall(s) or a combination of receiving water(s) and outfall(s) will be monitored in accordance with the Erosion, Sedimentation and Pollution Control Plan.

_____I certify that the Erosion, Sedimentation, and Pollution Control Plan (Plan) has been prepared in accordance with Part IV of the General NPDES Permit GAR100001, GAR 100002 or GAR 100003, the Plan will be implemented, and that such Plan will provide for compliance with this permit.

_____I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner's Printed Name: _____ Title: _____

Signature: _____ Date: _____

Operator's Printed Name: _____ Title: _____

Signature: _____ Date: _____

Instructions
Notice of Intent - Primary Permittee
For Storm Water Discharges
Associated With Construction Activity
To Be Covered Under The NPDES General Permit
Who must file a Notice of Intent (NOI) Form

This Notice of Intent must be typed. Any NOI that contains illegible information will not be accepted, will be returned, and the site will not be granted Permit coverage. All information on this NOI must be submitted to be a valid Notice. Any information requested on the NOI that is not applicable to the owner and operator or to the site must be marked "N/A".

The Owner and Operator of an activity that has a discharge of storm water from a site where construction activities occur must apply for a National Pollutant Discharge Elimination System (NPDES) Permit. The Georgia Environmental Protection Division has issued this General NPDES Permit for storm water discharges from construction activities with an effective date of August 12, 2003. The Permit is available for review at EPD's offices and on EPD's web page at www.dnr.state.ga.us/dnr/environ/. It is highly recommended that the permittee read and understand the terms and conditions of the Permit prior to submitting a NOI for coverage under this Permit. Contact EPD at the Regional Office or District Office shown on the next page for assistance in completing this NOI.

Where to file NOI Forms -- The NOI and attachments must be sent to the Regional Office or District Office shown on the next page. Please submit only the first two pages of this document plus your attachments, if necessary.

Section I. Site / Primary Permittee Information
Enter the information required. The site/project name is the physical location of the construction activity. Should the site lack a street address, sufficiently describe the facility location so that it can be found by district personnel. If additional space is needed, attach the description to the notice.

The facility contact is the person who the primary permittee has assigned the responsibility for the daily on-site operational control. Please do not leave any blanks in this section.

Section II. Site Activity Information
The start date and completion date are expected for the construction activity for which this NOI is applicable.

Estimated disturbed acreage is the total number of acres, **to the nearest 1/10 acre,** that will be disturbed under this NOI (this includes disturbances by the primary and all secondary permittees.)

Section III. Receiving Water Information
If the facility discharges storm water directly or indirectly (but not through a MS4) to the receiving water(s), enter the name(s) of the receiving water(s) and indicate whether the water(s) is a trout stream or a warm water fisheries stream. Attach to this notice a written description and a map of the location of the receiving water(s).

If the storm water discharges to a municipal separate storm sewer system (MS4), enter the name of the operator of the MS4 (e.g., city name or county name) and the name of the receiving water at the point of discharge from the MS4. A MS4 is defined as a conveyance or system of conveyances (including: roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that is owned or operated by a city or county which is designed or used for collecting or conveying storm water. It may be necessary to contact the city or county that operates the MS4 to determine the name of the receiving waters. Indicate whether the receiving water(s) is a trout stream or a warm water fisheries stream.

Section IV. Certifications
All applicants must sign this certification. Permittees shall initial next to the applicable certification statements on the line provided. Federal and State statutes provide specific requirements as to whom is authorized to sign Notice of Intents. Signing of a Notice of Intent by others is not a valid submittal. Please be aware Federal and State statues provide severe penalties for submitting false information on this application form. Federal and State regulations require this application to be signed as follows:

- For a corporation: by a responsible corporate officer;
- For a partnership or sole proprietorship: by a general partner or the proprietor; or
- For a municipality, state, Federal or other public facility: by either a principal executive officer or ranking elected official.

GEORGIA EPD DISTRICT OFFICES

All Notice of Intents, Notice of Terminations, Erosion, Sedimentation and Pollution Control Plans, Comprehensive Monitoring Programs, certifications, reports, and any other information shall be sent to the following District offices of EPD:

A. For facilities/sites located in the following counties: Bibb, Bleckley, Chattahoochee, Crawford, Dooly, Harris, Houston, Jones, Lamar, Macon, Marion, Meriwether, Monroe, Muscogee, Peach, Pike, Pulaski, Schley, Talbot, Taylor, Troup, Twiggs, Upson

Information shall be submitted to:
West Central District Office
Georgia Environmental Protection Division
2640 Shurling Drive
Macon, GA 31211-3576
(478) 751-6612

B. For facilities/sites located in the following counties: Burke, Columbia, Emanuel, Glascock, Jefferson, Jenkins, Johnson, Laurens, McDuffie, Montgomery, Richmond, Screven, Treutlen, Warren, Washington, Wheeler, Wilkinson

Information shall be submitted to:
East Central District Office
Georgia Environmental Protection Division
1885-A Tobacco Road
Augusta, GA 30906-8825
(706) 792-7744

C. For facilities/sites located in the following counties: Baldwin, Banks, Barrow, Butts, Clarke, Elbert, Franklin, Greene, Hall, Hancock, Hart, Jackson, Jasper, Lincoln, Madison, Morgan, Newton, Oconee, Oglethorpe, Putnam, Stephens, Taliaferro, Walton, Wilkes

Information shall be submitted to:
Northeast District Office
Georgia Environmental Protection Division
745 Gaines School Road
Athens, GA 30605-3129
(706) 369-6376

D. For facilities/sites located in the following counties: Clayton, Coweta, DeKalb, Fayette, Gwinnett, Heard, Henry, Rockdale, Spalding

Information shall be submitted to:
Mountain District - Atlanta Satellite
Georgia Environmental Protection Division
4244 International Parkway, Suite 114
Atlanta, GA 30354-3906
(404) 362-2671

E. For facilities/sites located in the following counties: Bartow, Carroll, Catoosa, Chattooga, Cherokee, Cobb, Dade, Dawson, Douglas, Fannin, Floyd, Forsyth, Fulton, Gilmer, Gordon, Habersham, Haralson, Lumpkin, Murray, Paulding, Pickens, Polk, Rabun, Towns, Union, Walker, White, Whitfield

Information shall be submitted to:
Mountain District - Cartersville Office
Georgia Environmental Protection Division
P.O. Box 3250
Cartersville, GA 30120-1705
(770) 387-4900

F. For facilities/sites located in the following counties: Appling, Atkinson, Bacon, Brantley, Bryan, Bulloch, Camden, Candler, Charlton, Chatham, Clinch, Coffee, Effingham, Evans, Glynn, Jeff Davis, Liberty, Long, McIntosh, Pierce, Tattnall, Toombs, Ware, Wayne

Information shall be submitted to:
Coastal District- Brunswick Office
Georgia Environmental Protection Division
One Conservation Way
Brunswick, GA 31520-8687
(912) 264-7284

G. For facilities/sites located in the following counties: Baker, Ben Hill, Berrien, Brooks, Calhoun, Clay, Colquitt, Cook, Crisp, Decatur, Dodge, Dougherty, Early, Echols, Grady, Irwin, Lanier, Lee, Lowndes, Miller, Mitchell, Quitman, Randolph, Seminole, Stewart, Sumter, Telfair, Terrell, Thomas, Tift, Turner, Webster, Wilcox, Worth

Information shall be submitted to:

Southwest District Office
Georgia Environmental Protection Division
2024 Newton Road
Albany, GA 31701-3576
912) 430-4144

For Official Use Only

NOTICE OF TERMINATION

State of Georgia
Environmental Protection Division
To Cease Coverage Under General Permit
To Discharge Storm Water Associated With Construction Activity

I. Permit Type: (Choose Only One)

☐ GAR 100001-Stand Alone ☐ GAR 100002-Infrastructure ☐ GAR 10003Common Development

II. SITE / PERMITTEE INFORMATION

Site/Project Name: _____

GPS Location of Construction Exit: _____

Site Location and Street Address: _____

City: _____ County: _____

Subdivision Name: _____ Lot Number: _____

Owner's Name: _____

Address: _____ City: _____ State: _____ Zip Code: _____

Operator's Name: _____ Phone: _____

Address: _____ City: _____ State: _____ Zip Code: _____

Type of Permittee: ☐ Primary ☐ Secondary ☐ Tertiary

Facility Contact: _____ Phone: _____

If Applicable:

Primary Permittee's Name: _____ Phone: _____

Address: _____ City: _____ State: _____ Zip Code: _____

Number of Secondary Permittees: _____

III. SITE ACTIVITY INFORMATION

☐ Construction Activity Completed ☐ No Longer Owner / Operator of Construction Activity

Construction Activity: ☐ Commercial ☐ Industrial ☐ Municipal ☐ DOT ☐ Utility

☐ Residential ☐ Primary Permittee of a Subdivision Development, or

☐ Individual Lot, or

☐ Individual Lot within a Surface Water Drainage Area where the Primary Permittee has ceased Permit Coverage

Name of Initial Receiving Water(s): _____

Name of Municipal Storm Sewer System Owner/Operator: _____

Name of Receiving Waters: _____

IV. CERTIFICATIONS. (Owner or Operator or both to initial as applicable.)

_____ 1. I certify under penalty of law that either: (a) all storm water discharges associated with construction activity from the portion of the construction activity where I was an Owner or Operator have ceased or have been eliminated; (b) all storm water discharges associated with construction activity from the identified site that are authorized by General NPDES Permit number indicated in Section I of this form have ceased; (c) I am no longer an Owner or Operator at the construction site and a new Owner or Operator has assumed operational control for those portions of the construction site where I previously had ownership or operational control; and/or if I am a primary permittee filing this Notice of Termination under Part VI.A.2. of this permit, I will notify by written correspondence to the subsequent legal title holder of any remaining lots that these lot Owners and /or Operators will become tertiary permittees for purposes of this permit and I will provide these tertiary permittees with the primary permittee's Erosion, Sedimentation and Pollution Control Plan. I understand that by submitting this Notice of Termination, that I am no longer authorized to discharge storm water associated with construction activity by the general permit, and that discharging pollutants in storm water associated with construction activity to waters of Georgia is unlawful under the Georgia Water Quality Control Act and the Clean Water Act where the discharge is not authorized by a NPDES permit.

_____ 2. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner's Printed Name:_____Title:_____

Signature:_____Date:_____

Operator's Printed Name:_____Title:_____

Signature:_____Date:_____

Instructions
Notice of Termination (NOT) For Storm Water Discharges Associated With Construction Activity

NPDES General Permit

Who must file a Notice of Termination (NOT) Form

This Notice of Termination must be typed. Any NOT that contains illegible information will not be accepted. All information on this NOT must be submitted to be a valid Notice. Any information requested on the NOT that is not applicable to the owner or operator or the site must be marked "N/A".

When the facility/site has been finally stabilized and all storm water discharges from construction activities authorized by the NPDES General Permit number indicated in Section I of this form have ceased or when the Owner/Operator of the site changes, the Owner/Operator of the facility/site must submit a Notice of Termination (NOT). Final Stabilization means that all soil disturbing activities at the site have been completed, and that for unpaved areas and areas not covered by permanent structures, 100% of the soil surface is uniformly covered in permanent vegetation with a density of 70% or greater, or equivalent permanent stabilization measures (such as the use of rip rap, gabions, permanent mulches or geotextiles) have been used. Permanent vegetation shall consist of: planted trees, shrubs, perennial vines; a crop of perennial vegetation appropriate for the time of year and region; or a crop of annual vegetation and a seeding of target crop perennials appropriate for the region. Final stabilization applies to each phase of construction

Where to file NOT Forms - The NOT and attachments must be sent to the Regional Office or District Office shown on the next page. Please submit only the first two pages of this document plus your attachments, if necessary.

Section I. Permit Type - Indicate the NPDES General Permit number for which this form is being submitted.

Section II. Site / Permittee Information

Enter the information required. The site/project name is the physical location of the construction activity. Should the site lack a street address, sufficiently describe the facility location so that it can be found by district personnel. **Should additional space be needed, attach the description to the notice.**

The facility contact is the person who the Owner and Operator has assigned the responsibility for the daily on-site operational control. Please do not leave any blanks in this section.

Section III. Site Activity Information

Indicate by marking the appropriate block whether this NOT is submitted due to completion of the construction activity or a change in the Owner and Operator of the construction activity.

Mark the appropriate box to indicate the class of construction activity that was conducted at the site. For residential sites, also mark the block as either a subdivision development or an individual lot.

Section IV. Certifications

All applicants must sign this Notice. Permittees shall initial next to the applicable certification statements on the line provided. Federal and State statutes provide specific requirements as to whom is authorized to sign Notice of Terminations. Signing of a Notice of Termination by others is not a valid submittal. Please be aware Federal and State statues provide severe penalties for submitting false information on this application form. Federal and State regulations require this application to be signed as follows:

- For a corporation: by a responsible corporate officer;
- For a partnership or sole proprietorship: by a general partner or the proprietor; or
- For a municipality, state, Federal or other public facility: by either a principal executive officer or ranking elected official.

GEORGIA EPD DISTRICT OFFICES

All Notice of Intents, Notice of Terminations, Erosion, Sedimentation and Pollution Control Plans, Comprehensive Monitoring Programs, certifications, reports, and any other information shall be sent to the following District offices of EPD:

A. For facilities/sites located in the following counties: Bibb, Bleckley, Chattahoochee, Crawford, Dooly, Harris, Houston, Jones, Lamar, Macon, Marion, Meriwether, Monroe, Muscogee, Peach, Pike, Pulaski, Schley, Talbot, Taylor, Troup, Twiggs, Upson

Information shall be submitted to:
West Central District Office
Georgia Environmental Protection Division
2640 Shurling Drive
Macon, GA 31211-3576
(478) 751-6612

B. For facilities/sites located in the following counties: Burke, Columbia, Emanuel, Glascock, Jefferson, Jenkins, Johnson, Laurens, McDuffie, Montgomery, Richmond, Screven, Treutlen, Warren, Washington, Wheeler, Wilkinson

Information shall be submitted to:
East Central District Office
Georgia Environmental Protection Division
1885-A Tobacco Road
Augusta, GA 30906-8825
(706) 792-7744

C. For facilities/sites located in the following counties: Baldwin, Banks, Barrow, Butts, Clarke, Elbert, Franklin, Greene, Hall, Hancock, Hart, Jackson, Jasper, Lincoln, Madison, Morgan, Newton, Oconee, Oglethorpe, Putnam, Stephens, Taliaferro, Walton, Wilkes

Information shall be submitted to:
Northeast District Office
Georgia Environmental Protection Division
745 Gaines School Road
Athens, GA 30605-3129
(706) 369-6376

D. For facilities/sites located in the following counties: Clayton, Coweta, DeKalb, Fayette, Gwinnett, Heard, Henry, Rockdale, Spalding

Information shall be submitted to:
Mountain District - Atlanta Satellite
Georgia Environmental Protection Division
4244 International Parkway, Suite 114
Atlanta, GA 30354-3906
(404) 362-2671

E. For facilities/sites located in the following counties: Bartow, Carroll, Catoosa, Chattooga, Cherokee, Cobb, Dade, Dawson, Douglas, Fannin, Floyd, Forsyth, Fulton, Gilmer, Gordon, Habersham, Haralson, Lumpkin, Murray, Paulding, Pickens, Polk, Rabun, Towns, Union, Walker, White, Whitfield

Information shall be submitted to:
Mountain District - Cartersville Office
Georgia Environmental Protection Division
P.O. Box 3250
Cartersville, GA 30120-1705
(770) 387-4900

F. For facilities/sites located in the following counties: Appling, Atkinson, Bacon, Brantley, Bryan, Bulloch, Camden, Candler, Charlton, Chatham, Clinch, Coffee, Effingham, Evans, Glynn, Jeff Davis, Liberty, Long, McIntosh, Pierce, Tattnall, Toombs, Ware, Wayne

Information shall be submitted to:
Coastal District- Brunswick Office
Georgia Environmental Protection Division
One Conservation Way
Brunswick, GA 31520-8687
(912) 264-7284

G. For facilities/sites located in the following counties: Baker, Ben Hill, Berrien, Brooks, Calhoun, Clay, Colquitt, Cook, Crisp, Decatur, Dodge, Dougherty, Early, Echols, Grady, Irwin, Lanier, Lee, Lowndes, Miller, Mitchell, Quitman, Randolph, Seminole, Stewart, Sumter, Telfair, Terrell, Thomas, Tift, Turner, Webster, Wilcox, Worth

Information shall be submitted to:

Southwest District Office
Georgia Environmental Protection Division
2024 Newton Road
Albany, GA 31701-3576
(912) 430-4144

Environmental Protection

SECTION 01355A
ENVIRONMENTAL PROTECTION

1.0 GENERAL

1.1 GENERAL REQUIREMENTS

1.2 SUBCONTRACTORS

1.3 ENVIRONMENTAL PROTECTION PLAN

1.4 PROTECTION FEATURES

1.5 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

1.6 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 TRAINING OF CONTRACTOR PERSONNEL

3.11 POST CONSTRUCTION CLEANUP

1.0 GENERAL

1.1 General Requirements

1.1The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations

1.2. SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.3. ENVIRONMENTAL PROTECTION PLAN

1.3.1. 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. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. In the environmental plan, The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit the Environmental Protection Plan for review and approval by the Contracting Officer. Prior to implementation of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.3.2. 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.

1.3.3. Contents

The environmental protection plan shall include, but shall not be limited to, the following:

1.3.3.1. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

1.3.3.2. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable

1.3.3.3. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel

1.3.3.4. Description of the Contractor's environmental protection personnel training program

1.3.3.5. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan shall include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.

1.3.3.6. 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.

1.3.3.7. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.

1.3.3.8. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

1.3.3.9. Drawing showing the location of on-installation borrow areas.

1.3.3.10. The Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1.3.3.10.1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer and the local Fire Department in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

1.3.3.10.2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup

1.3.3.10.3. Training requirements for Contractor's personnel and methods of accomplishing the training

1.3.3.10.4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

1.3.3.10.5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency

1.3.3.10.6. The methods and procedures to be used for expeditious contaminant cleanup

1.3.3.11. A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris. The plan shall include schedules for disposal. The Contractor shall identify any subcontractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction. The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after the first quarter that non-hazardous

solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted.

1.3.3.12. A recycling and solid waste minimization plan with a list of measures to reduce consumption of energy and natural resources. The plan shall detail the Contractor's actions to comply with and to participate in Federal, State, Regional, and local government sponsored recycling programs to reduce the volume of solid waste at the source.

1.3.3.13. 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.

1.3.3.14. 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, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated. Reference this plan in the Storm water Polution Prevention Plan, as applicable.

1.3.3.15. 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, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented and any required permits. If surface discharge will be the method of disposal, a copy of the permit and associated documents shall be included as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, the plan shall include documentation that the Waste Water Treatment Plant Operator has approved the flow rate, volume, and type of discharge.

1.3.3.16. 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. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

1.3.3.17. A pesticide treatment plan shall be included and updated, as information becomes available. The plan shall include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements as well as any additional Installation specific requirements. The Contractor shall follow AR 200-5 Pest Management, Chapter 2, Section III "Pest Management Records and Reports" for data required to be reported to the Installation.

1.4. PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the Contractor and the Contracting Officer 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.

1.5. ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.6. NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION

3.1. LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor.

3.1.1. Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted

during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.1.2. Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.1.3. Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. The Contractor shall 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. The area of bare soil exposed at any one time by construction operations should be kept to a minimum. The Contractor shall 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. Any temporary measures shall be removed after the area has been stabilized.

3.1.4. Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

3.2. WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor. 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

The Contractor shall not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

3.3. AIR RESOURCES

Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards.

3.3.1. Particulates

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

3.3.2. Odors

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.3.3. Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with the provisions of the state and Installation rules.

3.3.4. Burning

Burning will not be allowed on the project site unless specified in other sections of the specifications or authorized in writing by the Contracting Officer. The specific time, location, and manner 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

Solid wastes (excluding clearing debris) shall be placed in containers which are emptied on a regular schedule. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill shall be the minimum acceptable off-site solid waste disposal option. The Contractor shall verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. The Contractor shall comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

3.4.2. Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area

when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

3.4.3. 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. The Contractor shall, at a minimum, manage and store hazardous waste in compliance with 40 CFR 262 . The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berming or other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, State, and local laws and regulations. The Contractor shall transport Contractor generated hazardous waste off Government property in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer and the Facility Environmental Office. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility.

3.4.4. Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations.

3.5. RECYCLING AND WASTE MINIMIZATION

The Contractor shall participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project. .Fueling areas shall be lined and bermed and discharge points for site run-off shall have storm water control structures established. A liquid containment clean-up kit shall be 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. The Contractor shall protect these resources and shall be responsible for their preservation during the life of the Contract. If during excavation or other construction activities any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to or the destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.7. BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.8. INTEGRATED PEST MANAGEMENT

In order to minimize impacts to existing fauna and flora, the Contractor, through the Contracting Officer, shall coordinate with the Installation Pest Management Coordinator (IPMC) at the earliest possible time prior to pesticide application. The Contractor shall discuss integrated pest management strategies with the IPMC and receive concurrence from the IPMC through the COR prior to the application of any pesticide associated with these specifications. Installation Pest Management personnel shall be given the opportunity to be present at all meetings concerning treatment measures for pest or disease control and during application of the pesticide. The use and management of pesticides are regulated under 40 CFR 152 - 186.

3.8.1. Pesticide Delivery and Storage

Pesticides, approved for use on the Installation, shall be delivered to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses.

3.8.2. Qualifications

For the application of pesticides, the Contractor shall use the services of a subcontractor whose principal business is pest control. The subcontractor shall be licensed and certified in the state where the work is to be performed.

3.8.3. Pesticide Handling Requirements

The Contractor shall formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions.

3.8.4. Application

Pesticides shall be applied by a State Certified Pesticide Applicator in accordance with EPA label restrictions and recommendation.

3.9. PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

3.10. TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.11. POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

Borrow Pit Procedures

FORT STEWART & HUNTER ARMY AIRFIELD ENVIRONMENTAL DIVISION BORROW PIT EXCAVATION APPLICATION/PLAN

Environmental Branch
1137 Frank Cochran Drive
Fort Stewart, Georgia 31314
912/767-9779 (fax)
912/767-9443 (office)

FOR DEPARTMENT USE ONLY
Project Number:
Training Area:
Operation:
Acreage:
Amount of material required (cubic yards):

APPLICATION FOR BORROW PIT EXCAVATION PERMIT

Instructions: An application for a permit must include the Borrow Pit Operator's Excavation Plan and must be factual and complete. The Application and Plan (original and two [2] copies) must be submitted to the address shown above.

Pursuant to the requirements of the Fort Stewart/HAAF DPW Borrow Pit Management Plan.

1. Applies for a permit to conduct a Borrow Pit Excavation operation as represented in the attached Borrow Pit Excavation Plan;
2. Specifically grants to the applicant or any authorized representative of the applicant the right of entry and travel upon affected lands;
3. Certifies the information provided in or submitted by the Contracting Officer's Representative (COR) on behalf of the Borrow Pit Operator or Contractor as a part of this Borrow Pit Excavation Plan is true and correct, and the COR will ensure the Borrow Pit Operator agrees to comply with provisions of the Fort Stewart/HAAF DPW Borrow Pit Management Plan as specified herein.

Government COR Signature (Date)	Equipment Operator Name & Title
Government COR Name	Operator Contracting Company
Government COR Phone #	Company Address
Government COR Email Address	City, State, Zip
Government COR Building & Office Numbers	Telephone
Project Name	Borrow Pit Identification

The approval of this Application and Borrow Pit Excavation does not relieve the Operator of any obligation or responsibility for complying with the provisions of any other laws or regulations of any other federal, local or state authority.

FOR DEPARTMENT USE ONLY

Plan Recommendation: Approval/Disapproval	**Plan Recommendation: Approval/Disapproval**
Reviewer (Date)	Program Manager (Date)

Comments:

_____
Plan Number (Borrow Pit ID)
Page 2

BORROW PIT EXCAVATION LAND USE PLAN

NOTE: Any corrections, changes of information or other alternatives of content of this Plan and attachment must be initialed and dated by the Operator and the Fort Stewart Environmental Branch.

I. OPERATOR AND GENERAL INFORMATION

1. DESCRIPTION OF EXCAVATION OPERATOR'S COMPANY *(hereinafter "Operator")*

Name of Company: _____

Address: _____

Telephone: _____

Type of Business: ( ) Corporation ( ) Partnership ( ) Proprietorship ( ) Other

Onsite Manager/Representative: _____

Title: _____ Telephone: _____ Mobile phone: _____

Government Contracting Officer Representative: _____

Training Area Location of Borrow Pit Operation: _____

Borrow Pit Location within T.A.: _____

Environmental Office Contact: _____ Title: _____

Address: _____ Telephone: _____

3. GENERAL SITE LOCATION

Grid Coordinate of Borrow Pit Excavation Operation: _____

_____

_____

_____

4. MATERIAL TO BE EXCAVATED AND METHOD

Mineral/Material: _____

Method of Removal: _____

_____

5. SCHEDULES FOR EXCAVATION AND RECLAMATION

Anticipated Date to Begin _____
(Month/Year)

Anticipated Date to Complete _____
(Month/Year)

Anticipated Date of Final Reclamation _____
(Month/Year)

NOTE: If excavation is completed prior to the above stated date, the Operator shall notify DPW three (3) days prior to completion regardless of any stated or implied completion date. An inspection of the Borrow Pit is required by DPW to process a release. Failure to comply with the plan as stated herein will require notification to the COR before a release is authorized.

6. INFORMATION ON OTHER PERMITS

A. List any Georgia Surface Mining Permits suspended revoked, or for which a bond was forfeited:

_____

B. List other environmental permits being applied for in relation to this operation (i.e. erosion/sedimentation, storm water, etc…)

_____

C. List other local permits being applied for in relation to this operation:

_____

II. PERFORMANCE CRITERIA FOR BORROW PIT EXCAVATION PLAN AND DEWATERING ACTIVITIES

1. Plan Drawings (attached) shall show but are not limited to the metes and bounds of the property to be excavated, the limits of the affected acreage, the natural drainage features and water disposal, the initial site preparation and overburden (spoil) area(s), the erosion and sedimentation controls, the ingress/egress area(s), the direction, detail and schedule of excavation advancement, the area to be left undisturbed (buffer) where necessary, and the plan that shows projected final reclamation of the site.

2. The Operator will implement site survey control to ensure that all acres affected by the excavation operation will be on designated, permitted lands. Survey control will be accomplished through the use of permanent accessible benchmarks, survey control stakes, and/or boundary markers that designate and/or delineate all permitted acreage. Survey control shall be as indicated on the boundary survey, drawings, maps, etc. included as part of this Borrow Pit Excavation Plan (attached). Where necessary, for construction or operation proposes, vertical as well as horizontal survey control will be established and maintained.

MEANS	**Identifier/Location**
Property Boundary Markers	_____
Affected Acreage Markers	_____
Dredge limits	_____
Clearing Limits	_____
Other:	_____
Permanent Survey Control Markers	_____
Horizontal: (Identifier & Location)	_____
Vertical: (Identifier & Location)	_____
Known Elevation:	_____
Assumed Elevation:	_____

3. The Operator will ensure that all measures and facilities for control of erosion and sedimentation during site preparation, operation, and/or reclamation activities shall adhere to the following:

A. Erosion and sedimentation control measures and facilities will be employed prior to or concurrent with clearing, grading, overburden removal, access or other land disturbing activities for preparation or operation of the site. Provisions will be made for treatment or control of any source of sediments.

B. The Operator, so as to be effective, whether temporary or permanent, shall continuously maintain all erosion and sedimentation control measures or facilities.

C. Sediment in surface runoff water shall be trapped by use of debris basins, sediment basins, silt traps, sediment barriers or similar structures.

D. Permanent vegetation shall be installed as soon as possible. Temporary vegetation and/or mulch shall be employed where necessary to protect exposed critical areas until permanent vegetation or stabilization is attained.

E. Natural vegetation shall be retained, protected and supplemented wherever feasible to provide for natural buffer areas.

F. Diversions, dikes, and berms shall be employed to retain, direct and control surface water runoff from affected areas into sediment control structures.

G. All surface water discharges shall be controlled and released at a non-erosive velocity onto stabilized areas or into stabilized channels.

H. Constructed slopes, at the least should be four horizontal to one vertical (4:1) except where may be approved otherwise in this as shown in the attached Plan/drawings. All slopes shall be marked so as to prevent foot or vehicle traffic from inadvertently falling into the pit. Fill and cut slopes shall be designed and constructed to prohibit slumping or shear failures. Prior to final grading, all slopes will be blended in with the original existing topography. Slope grades shall be uniform. Mechanical or vegetative or both stabilization measures shall be employed as soon as practical to prevent erosion.

***NOTE**: The Operator may refer to design criteria in the "Manual for Erosion and Sedimentation Control in Georgia", published by the State Soil and Water Conservation Commission as a guide or through the use of alternate design criteria which conform to sound conservation and engineering practices.*

4. All permanent landform changes including, but not limited to, berms, drainage structures, surface water channel modifications, etc., shall be constructed in a manner to protect against failure, subsidence and/or erosion and will be permanently stabilized upon completion of construction.

5. Whenever a site lies contiguous to any waters of the State or whenever, in the judgment of the Fort Stewart Environmental Office, proposed operations at such site will adversely affect any portion of a watershed of the State, the Operator will follow sound engineering and conservation measures to provide protective barriers, such as dams, berms, silt ponds, or other similar structures, between the land to be affected and waters or watersheds involved. All such structures are to be approved by the Fort Stewart Environmental Office as a part of this Plan and are to be substantial for the protection of contiguous natural resources of the State. All structures referred to above are to be constructed a reasonable distance from waters of the State, or that portion of a watershed of the State that may be adversely affected, as determined by the Fort Stewart Environmental Office. Borrow Pit Excavation, if conducted within the 100-year floodplain, shall be done in accordance with any applicable local floodplain management ordinance, if any. Where a local floodplain management ordinance does not exist, the Operator shall ensure that the excavation activities are conducted so as to minimize flooding, erosion and/or sedimentation on adjacent upstream or downstream properties.

6. Before natural creeks, streams, rivers, lakes, or other bodies of water may be altered in course or relocated by the Operator, the Environmental Office as a part of this Plan must approve the plan for such alteration or relocation.

7. The Operator shall obtain required storm water permits and maintain compliance with the Water Quality Control Rules, Chapter 391-3-6-.16 (Storm Water Permit Requirements).

8. If archaeological or fossil resources are discovered during the course of an excavation; continued excavation and disturbance of the site will be suspended and the DPW, Environmental Division (767-2010) will be notified immediately. The ED will evaluate the significance of the finding and issue new guidance.

   A. Alternatives or measures to avoid or reduce effects on the historic properties;

   B. Determinations of effects on alteration to features of the property's location, setting, or use;

   C. Determinations of adverse effects which may diminish the integrity of the property's location, design, setting, materials, workmanship, or other structural detail.

Adverse effects on historic properties include, but are not limited to:

A. Physical destruction, damage, or alteration of all or part of the property;
B. Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register;
C. Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting.

***** Anytime archaeological or paleontological materials (e.g. artifacts, arrowheads, fossils, etc…) are encountered, the Fort Stewart Cultural Resources Section must be immediately notified at (912) 767-0992/2010.***

9. Adverse effects from the introduction of atmospheric elements shall be defined as repetitive non-conformance with the National Ambient Air Quality Standards (NAAQS) regarding fugitive dust particles of 10 microns and smaller which may leave the subject property as set forth by the Environmental Protection Agency.

10. Adverse effects from the introduction of audible elements shall be defined as repetitive non-compliance with the Georgia Blasting Standards Act (State of Georgia House Bill 824) regarding atmospheric overpressure limits as governed by the Department of the Fire Marshal for the State of Georgia. Avoidance of adverse effects by the introduction of visual elements shall be accomplished wherever practical by maintaining visual barriers, either by undisturbed buffer areas or manmade structures such as berms, as outlined in the approved Excavation Land Use Plan.

11. It is incumbent upon the Operator to provide satisfactory evidence to the Fort Stewart Environmental Office that alternatives have been considered and this plan contains appropriate measures to provide for minimizing and/or mitigating any adverse effects. If after the excavation operation begins adverse effects become evident, the Fort Stewart Program Manager will give the Operator written notice of the occurrence of such adverse effects. The Operator will then have thirty (30) days to mitigate the adverse effects. In certain cases depending on the nature of the impact the Operator may be required to cease work immediately. If during the thirty-day period no successful action is taken by the Operator to mitigate the adverse effects, the Operator upon notice from the Fort Stewart Environmental Office will cease operations. The Operator will then provide to the Fort Stewart Environmental Office, within ten (10) days, an assessment of the effects and a plan to mitigate the impact. Upon approval by the Fort Stewart Program Manager, the Operator may be allowed to resume excavation operations.

12. ***When Federally listed Endangered and/or Protected Plant/Animal Species are encountered the operator must immediately stop all excavation activities, and contact the Fort Stewart Fish and Wildlife Branch (912) 767-2584.***

13. The Operator shall post an identification sign, which shall display the Operator's Name, Borrow Pit Name/Number, and Permit at the entrance of the Borrow Pit.

14. In the event the Operator ceases active excavation, all exposed critical disturbed areas will be stabilized and the Operator will maintain all measures employed for erosion and sedimentation control. Should extraction of mineral or material cease prior to completion of the Excavation Plan, the Operator shall complete the reclamation as provided for within thirty (30) days from date of cessation.

III. PERFORMANCE CRITERIA FOR RECLAMATION

1. All applicable parts of Section II, 3. Erosion and Sedimentation Control apply including the following:

   A. Reclamation shall be concurrent with excavation activity as lands become available.

   B. Reclamation objectives as shown on Borrow Pit Excavation Plan will be achieved unless Operator submits an amendment.

   C. Following the removal or disposal of all structures, equipment, stock-piles, excavation refuse, and all other materials associated with surface excavation, the Operator will reclaim all affected land in accordance with the provisions of this Plan. All lands except those specifically exempted in this Plan will have a neat, clean appearance, and contain a high quality permanent vegetative cover.

   D. Vegetative Stabilization (planting) Requirement: The Operator will provide a high quality, enduring vegetative ground cover of properly planted and nurtured perennial vegetative species suited for the specific planting zone involved. The perennial vegetative species shall provide a complete, thorough stabilization by establishing root mass and cover for the total disturbed area.

   E. Structural Stabilization: Permanent structural control measures, i.e. stone riprap, ditches, berms, paved chutes, or piped down drains, etc, shall be utilized to convey concentrated storm flows down slopes to stable outlets. These measures are necessary in areas where concentrated storm flow velocities may cause erosion.

2. Specific requirements the Operator will adhere to:

   A. The Operator shall grade all peaks, ridges, and valleys resulting from surface excavation and backfill all pits and trenches resulting from same in a manner to minimize any hazardous effects of excavation adjacent to any Fort Stewart, State, or County maintained road.

B. All affected lands requiring backfilling as stated in the Reclamation Objective of this Plan shall be backfilled utilizing overburden, spoil material, and/or borrow from affected (permitted) land unless approval from the Fort Stewart Program Manager is obtained to utilize other materials. Sound engineering principles shall be applied to ensure that affected lands, as reclaimed, meet the intended use.

C. Immediate erosion control measures shall be applied to protect the topsoil cover until an adequate vegetative cover is established.

D. All high-walls occurring in unconsolidated materials shall be reduced by grading to blend the high-wall with the existing original site topography. High-walls occurring in consolidated material shall be reduced as much as may be practicable. If high walls are to remain they should have a constructed bench with reverse slope to the wall shall be provided at the top of. Any remaining high-walls of fifty (50) feet or greater shall be fenced or "bermed" at the top beyond the initial bench. Such fencing or berms shall be sufficient to provide an adequate degree of protection or warning to foot or vehicle traffic.

E. All affected land, unless otherwise specified in this Plan, shall be graded into a rolling topography and blended in with the existing landscape. All graded areas shall be free of debris, stockpiled materials, boulders, etc. that would interfere with the intended use and/or maintenance of the area.

F. Constructed slopes, at the least should be four horizontal to one vertical (4:1) except where may be approved otherwise in this Plan. Fill and cut slopes shall be designed and constructed to prohibit slumping or shear failures. Prior to final grading, all slopes will be blended in with the original existing topography. Slope grades shall be uniform. Mechanical or vegetative or both stabilization measures shall be employed as soon as practical to prevent erosion.

G. Overburden, spoil or refuse, when used as backfill material, for berms or other construction, shall be segregated as necessary, emplaced and compacted in accordance with sound engineering practices to provide for the purpose intended. Refuse does not include any material, which may be classified as solid waste under provisions of the Georgia Comprehensive Solid Waste Management Act.

H. All new landform structures created with the use of overburden (spoil) or refuse materials shall be constructed in a manner to protect against failure, subsidence and/or erosion and will be permanently stabilized upon completion of construction.

I. When lakes/ponds are proposed, the minimum acceptable design criteria shall meet or exceed those criteria in: Agriculture Handbook Number 590, Ponds – Planning, Design, Construction published by the United States Department of Agriculture, Soil Conservation Service, latest issue. When the dam structure proposed is 35 feet or higher, other acceptable design criteria shall be used.

J. Water shall be of a quality suitable for the intended use. The lake/pond shall have a safe access and be free of underwater hazards. All above water portions of the lake/pond site development shall be re-vegetated with an enduring permanent vegetative cover.

K. Under provisions of the Georgia Safe Dams Act, no permit shall be required to be obtained by the Operator if a dam is constructed with or incidental to "surface mining" as defined in the Georgia Surface Mining Act. If the dam so constructed is classified by the Fort Stewart Environmental Office as a Category I dam, then, before such lake is deemed acceptable reclamation and the Operator is released from his obligations under the Georgia Surface Mining Act, as amended, the Operator will obtain a permit for such dam under the Safe Dams Act.

L. Any proposal for the construction of wetlands as a reclamation objective shall be consistent with accepted practices utilizing the Best Available Technology (BAT) and include the best management practices (BMP's) to attain the desired result. The proposal shall be attached to and be a part of this Plan subject to approval by the Fort Stewart Environmental Office.

M. ***The Operator shall notify the Borrow Pit Management representative for Release upon completion of reclamation responsibilities on affected acreage.*** A report may be filed on reclamation activities that partially complete the Operator's full responsibilities for total acreage affected.

_____
Plan Number (Borrow Pit ID)
Page 7

* The following pass must be obtained from the Range Control Office ***before entering*** any Training Area.

POV PASS FOR FORT STEWART ROADS AND TRAINING AREAS

TO: Appropriate Range Guards and/or military police

FROM: Chief Range Division, Fort Stewart Ga. 31314 (912) 767-877/8100

The following individual(s) is/are authorized access to the following Training Area/Facilities beginning _____ thru _____ _____
(Start Date) (End Date)

_____ _____
Rank, Name (Last, First) Training Area(s) Facility

_____ _____
Organization Phone Number

Reason for Access Pass

Vehicle (Model) Year (License Plate Number)
(State)

Statement of understanding

I understand that I am permitted to use only the above listed training area(s) and roads leading to and from that area. I may only use that area/facility for the date and time listed below. I understand that I am using these roads at my own risk, and the Commander, 3rd infantry Division and Fort Stewart Assume no responsibility for my safety.

Permanently off limit areas- High Risk Dud Area: Artillery Impact Area, Aerial Gunnery Ranges 1-3 (AGR), EOD Area, Tank Gunnery Ranges (B9-16) and small arms impact area, Luzon Range. Abandoned Ranges located in C1 and C4 training areas.

CAUTION: DO NOT DISTURB UNEXPLODED AMMUNITION! Mark location and notify Range Control (912) 767-8777 or call the Military Police at 911.

I have been briefed and understand the OFF-LIMITS areas and the limitations of this pass. I will notify Range Control at 767-8777 prior to entering an area and upon departure.

_____ _____
Chief, Range Division Bearer's Signature

POST ON DASHBOARD OF VEHICLE

ATTACH PLAN DRAWINGS:

Soil Treatment Requirements

Pre-construction treatment for subterranean termite Contract Specification:

1. **SOIL TREATMENT**: Treatment will be applied within three days (in the absence of rain) for all critical phases of construction: pouring concrete slab on grade, pouring of basement slab and prior to backfilling around concrete or masonry foundations and during final grading completion for structures. Application will be made in strict accordance will manufacturer's label.

1.1 **Labeling** information shall be submitted not less than seven days prior to soil treatment is scheduled to occur. All treatment agents shall be delivered to the job site in un-opened containers, bearing the original manufacturers labels. Labels shall bear evidence of registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

1.2 **Approved** termiticide agent will be restricted to the products listed below that have been approved for use in the State of Georgia and approved for the use on Fort Stewart and Hunter AAF. Other products contrary to the list are not approved.

Termidor SC	AI: Fipronil 9.1%	EPA Reg. # 7969-210
Termidor WG	AI: Fipronil 80%	EPA Reg. # 7969-209
Premise 2 Insecticide	AI: Imidacloprid 21.4%	EPA Reg. # 432-1331

1.3 **Inspection** of chemical agent delivery, opening and application will be carried out by Mr. Charles Sikes (PMQAE, DPW), and Mr. Merritt Chambers (PM Supervisor, GSI Inc.) for all construction projects requiring treatment. All materials, equipment and means needed to handle, mix and apply treatments will be inspected for safety and accuracy before the application of chemical agent. Unacceptable materials shall be removed from the job site. Inspection agent shall be notified of treatment schedule at minimum 1 day prior to treatment.

1.4 **Only Applicators** with category # 30 (Wood Destroying Organisms) State certification will be allowed to apply termiticide on the Installation.

1.5 **Treatment** shall be the maximum allowable concentration for the chemical when used as a termiticide during soil treatment according to the label. Any variations will not be permitted.

1.6 **Record** of treatment(s) will be accurately documented and maintained by inspection agent at the time of treatment, along with documentation of services provided from the contractor conducting treatment as required by the State of Georgia.

1.7 **Warranty** of completed treatment shall be in writing and shall be valid for no less than five years after the completion of treatment(s). Warranty shall cover against the infestations or re-infestations by subterranean termites of the building or the buildings addition constructed under this contract, as well as cost of retreating.

Recycling Policy

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
954 WILLIAM H. WILSON AVENUE
FORT STEWART, GEORGIA 31314

REPLY TO
ATTENTION OF

IMSE-STW-IC

FEB 1 2 2007

MEMORANDUM FOR All Personnel, US Army Installation, Fort Stewart / Hunter Army Airfield, Georgia

SUBJECT: US Army Installation, Fort Stewart / Hunter Army Airfield Policy Memorandum # 8, Command Recycling Policy

1. REFERENCES.

a. Executive Order 13101, Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition, 14 September 1998.

b. Office of the Under Secretary of Defense, Acquisition and Technology, DoD Pollution Prevention Measure of Merit, 13 May 1998.

c. Assistant Chief of Staff, Installation Management, Memorandum, Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities, 6 Feb 06.

d. Fort Stewart /Hunter Army Airfield, Directorate of Public Works (DPW), Environmental Division Recycling Information Sheet, 31 Mar 06.

2. PURPOSE. To provide guidance to all civilian (and/or military) personnel assigned to and/or under the operational control of the Installation Management Command, tenant organizations, contractors and personnel living and/or working at Fort Stewart / Hunter Army Airfield on the Command Recycling Program.

3. APPLICABILITY. These procedures are applicable to all civilian (and/or military) personnel assigned to and/or under the operational control of the Installation Management Command, tenant organizations, contractors and personnel living and/or working at Fort Stewart / Hunter Army Airfield.

4. POLICY. Executive Order 13101 and this policy are the guidelines for personnel on this installation when purchasing supplies and materials for all operations and contracts. Only designated products meeting the requirements of Executive Order 13101 will be purchased. These product categories include paper, construction products, landscaping products, paper products, non-paper office products, parks and recreation products, transportation and alternative fuel vehicles, and miscellaneous items. All office paper purchased must contain no less than 20 percent recycle content. However, 50 percent recycle materials is encouraged. Contact the DPW, Environmental Waste Management Section for a full list of required items or refer to www.epa.gov/cpg/products.html.

5. PROCEDURES.

a. All military units, installation activities, tenant organizations and contractors will:

(1) Establish a Recycling Program Standard Operating Procedure tailored to their organization for the management of recyclable materials. (Recycling programs will be randomly assessed by DPW Environmental Division for compliance).

(2) Appoint a Recycling Compliance Person/s (RCP). The RCP must attend the Installation ECO (Environmental Compliance Officer) course for training and instruction on current recycling procedures. Contact the DPW Environmental Division Office for ECO Course dates/times and location. DPW, Environmental personnel will be available for participation in contract site visits and kick-off meetings to clarify requirements as needed. All appointed RCP's will work directly with the DPW, Environmental Division to ensure program requirements are met. Short-term contractors (less than one year) will schedule a 1 hour briefing with the DPW, Environmental Division to receive policy letter and guidance in lieu of the ECO course.

(3) Provide clearly marked recycling cans/containers (available through SSSC) and establish collection points inside all buildings/facilities and work sites for the collection of commingled recyclable materials. (For further information refer to Environmental Division Recycling Information Sheet, 31 Mar 06 – contained on the Fort Stewart Intranet, DPW Page).

(a) Office paper, junk mail, newspaper, magazines, cardboard, aluminum/bi-metal cans (i.e. vegetable cans), plastic containers (#1, 2 and 5 only), glass bottles/containers (clear, brown, green).

(i) Ensure all "unclassified" documents/paper products are placed in a transparent plastic bag and tied closed prior to placing in blue dumpsters to facilitate the separation process and protect the integrity of the commodity. Can liners are not required for other recyclable material, but if used, they too must be transparent liners/bags.

(ii) Ensure all recyclable cans and bottles are emptied and rinsed (if possible) prior to placing in collection container.

(iii) Ensure that all commingled (mixed) recyclable materials from barracks, motor pools and administration buildings are placed in blue dumpsters provided. (Note: If collections personnel discover trash in recycling dumpsters or recyclables in trash dumpsters, the containers **will not** be emptied. Violators will be reported to the DPW Environmental Division for coordination with offending entity for corrective action.

(b) Ink/toner cartridges, scrap metal, bulk cardboard and serviceable pallets. Deliver these items to the installation recycling facility (Fort Stewart - Bldg. #957 on McFarland Ave or on Hunter Army Airfield - Bldg. TR-727 on Westley Ave); do not place these items in or beside the dumpsters.

(c) Coordinate collection/delivery of bulk cardboard, scrap metals and pallets with the installation recycling facility. Organizations generating large amounts of cardboard scrap metal, and pallets on a continuous basis should contact the DPW, Environmental Division Section for assistance.

(d) Household Movement/Packing Materials. Coordinate the pickup of recyclable packing material (paper and cardboard) generated by newly arriving soldiers and ensure they are made aware of this recycling policy.

(4) Unit Training Exercises. Continue to enforce the recycling policy during unit field training exercises. Provide a means to collect recyclable materials and process these materials upon return IAW with this policy and specific ECO training guidance regarding petroleum, oil, and lubricant containers (i.e. triple rinse).

(5) Collect and deliver yard waste (limbs, leaves, pine straw, pine cones, grass clippings, etc.) to the landfill for proper disposal/composting – do not deposit these items in/near any dumpster.

b. Government Military Housing (GMH) and Housing Residents.

(1) GMH will:

(a) Provide each family housing unit with a blue recycling poly cart and a copy of this recycling policy.

(b) Provide weekly curbside collection of commingled recyclables. (Note: If collection personnel discover trash mixed with recyclables or recyclables mixed with trash, the containers **will not** be emptied and violators will be reported to DPW, Environmental Division for enforcement actions).

(2) Housing Residents will:

(a) Place all bulk household packing material (paper and cardboard) in the identified locations as designated by GMH for collection upon arrival/assignment to housing.

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SUBJECT: US Army Installation, Fort Stewart / Hunter Army Airfield Policy Memorandum # 8, Command Recycling Policy

(b) Place all recyclable materials (i.e., cardboard, junk mail, magazines, writing paper, newspaper, glass bottles/containers (clear, brown, green), plastic containers (#1, 2 and 5 only), aluminum/bi-metal cans, etc.) in the blue poly carts provided. All paper products must be placed in a transparent plastic bag which must be tied closed prior to being placed in the blue poly carts. Can liners are not required for other recyclable material; but if used, they must be transparent liners/bags.

(c) Place their blue poly carts at the curb before 0800 on their assigned collection day.

(d) Place large items, such as bicycles, "privately owned" washers, dryers, refrigerators, etc. on the curb beside their blue poly carts on their assigned collection day to be collected by the contractor.

c. Installation and tenant organizations will:

(1) Ensure that all contracts include the requirement for contractors to adhere to the Fort Stewart/Hunter Army Airfield Recycling Policy, and ensure through inspections that contractors are adhering to policy.
Contracts will require contractors to provide a copy of landfill scale tickets to their COR (Contracting Officer's Representative /QA for all waste disposed of off the installation. The COR will ensure that the copy of the landfill scale tickets are provided to DPW, Environmental Division, and all recyclables from construction, renovation, and demolition sites will be kept separate from other waste. (Note: This applies even if the contract requires the waste to be hauled off the installation for disposal).

(2) Ensure contracts that involve adding or replacing furniture, fixtures, mattresses, and other such items or in general generate large amounts of cardboard include provisions to collect and transport the cardboard t the installation recycling facility. (Note: The DPW Environmental Division has limited resources and will assist with collection and transporting this material until resources are expended, there are drop-off facilities available that are expected to be utilized when such service is not available. Contractors need to be aware of the limited resources and coordinate further assistance with the COR. (For further information refer to Environmental Division Recycling Information Sheet, 31 Mar 06 – contained on the Fort Stewart Intranet, DPW Page).

(3) Custodial service contracts will include the requirement to deposit the contents collected from any recycling containers in the nearest blue dumpster. Provisions will also be included in the contracts to not service trash receptacles when recyclables are not segregated from the waste stream, and to notifying the COR of the discrepancy. The COR will perform random inspections to ensure these requirements are being met and coordinate with the DPW, Environmental Division upon notification.

d. DPW will: Ensure refuse and recycle collection drivers <u>do not</u> service any trash dumpsters with recyclable materials present, or any recycle dumpsters with trash present. If either of these conditions exists, the driver will notify the DPW, Environmental Division for corrective action.

(1) Ensure all contracts state that contractors must separate, collect and deliver recyclable material generated during the life of the contract to the installation's recycling facility.

e. Self-Service Supply Center will:

(1) Stock clear plastic bags and blue recycling containers marked "We Recycle."

(2) Stock office paper with a minimum of 20% recycled content.

(3) Stock items made from recycled material, and ensure those items are clearly marked and labeled as such.

(4) Ensure that signs are posted stating that customers should purchase items made from recycled material when available.

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6. PROPONENT: The Directorate of Public Works is the proponent for this policy. The point of contact is DPW, Environmental Division, at commercial (912) 767-2010 or DSN 870-2010.

RICK LYNCH
Major General, USA
Installation Commander

APPENDIX F

The aesthetic considerations and design of this facility shall conform to Appendix ZZ section "6.5 Architecture" and the Fort Stewart IDG particularly sections 5, "Visual Themes and Zones", 7, "Site Planning Design Standards", and 8 "Buildings Design Standards".

APPENDIX G
GIS Data

Not Used

APPENDIX H
EXTERIOR SIGNAGE

- Monument and Display Design. Proposals for memorials must conform to the guidance set forth in Army Regulation (AR) 1-33, *Memorial Programs*.

11.3.17 Drinking Fountains.

Outdoor drinking fountains are not generally permitted on Fort Stewart, except to support larger playgrounds, outdoor recreation facility complexes and outlying recreation areas if convenient to a potable water supply line. When drinking fountains are installed, they must be of high quality cast or forged metal and must be self-winterizing. Steps must be provided for children, and the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and Uniform Federal Accessibility Standards (UFAS) standards must be meet.

11.4 SIGNS

11.4.1 Signs are used to visually communicate information. They are highly visible features that must 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 on Fort Stewart. A standardized signage system is in-force at Fort Stewart to 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*.

11.4.2 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.

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.

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.

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.

Legibility. Sign typestyle, line spacing, color and size all combine to create the crucial design characteristics of legibility. This aspect of sign design takes into consideration users such as motorists, pedestrians, or bicyclists and the relative travel speed at which each type of user will be traveling when viewing the signs.

11.4.3 Vocabulary of Communication.

A common language is used in the established signing system. The different components that create the sign package are named and referred to within the total signing system.

11.4.4 Visual Hierarchy.

System. The entire signing system communicates, through a range of sign and typestyle sizes, the relative importance of the individual activity that the sign identifies. The system follows a logical progression from a point of origin to the desired destination.

Ranking. 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.

Class. 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.

Scale. 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.

11.4.5 Types of Signs.

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, paragraph 2-7h. Every installation entrance shall have an installation identification sign displaying only the US Army plaque, with the words "United States Army," "Fort Stewart" and the name of the gate. 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.

Directional, Informational and Facility Identification Signs. The following standards apply to all signs that are installed for areas and individual buildings on Fort Stewart:

- **Typeface**: Lettering is self-adhesive backing material.
  - Building Title: Helvetica Medium, Upper and lower case
  - Building Numbers: Helvetica regular
  - 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
  - Post: Steel Pipe
  - Foundation: Concrete pier or direct burial

- **Street Addresses.** The addressing procedures prescribed in DoD 4525.8-M, DoD Official Mail Manual are mandatory for use by all DoD components. DoD 4525.8-M, Chapter 3 prescribes the following:
  - All DoD addresses shall be assigned so they are compatible with the United States Postal Services automated delivery point sequencing (C3.3).
  - The DoD installation is responsible for assigning city-style, street address on the installation (C3.3.2.2).
  - Street addresses shall be assigned and used even though a DoD activity may deliver the mail to the addressee (C3.3.2.2.1).
  - Only geographically locatable civilian-style street addresses (Fig. 11.29) shall be used (C3.3.2.2.4).
  - Installations shall not use one street address for the entire installation and then use secondary unit designators such as "Building 123" to designate the delivery addresses on the installation (C3.3.2.2.5).
  - Addresses such as "Building 123 Roberts Street" are not a valid address format and shall not be used (C3.3.2.2.6).
  - The Fort Stewart Directorate of Information Management (DOIM) is responsible for assigning street addresses to buildings. See attached listing of assigned building addresses.

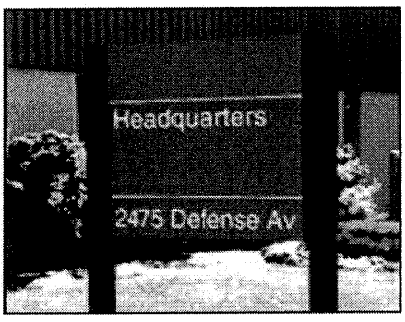

Fig. 11.29 –Street addresses are used on all building identification signs.

Brigade, Battalion and Company Headquarters Signs. TM 5-807-10 must be followed for any specifics not covered here.

Notes:

1. All figures and paragraphs referenced in the following can be found in TM 5-807-10.
2. Building numbers as described in TM 5-807-10 **will not** be placed on building identification signs

3. Building addresses will be placed on all building identification signs where the building numbers were once placed.

Military headquarters identification signs consist of four types:

- Sign type B1, installation headquarters sign, identifies the central administration of the installation.
- Sign type B2, command, division and brigade headquarters sign.
- Sign type B3, battalion headquarters sign.
- Sign type B4, headquarters building entrance sign, identifies the building entrance for all levels of authority. In addition, type B4 is used to identify a unit headquarters that has a special entry point other than the main entrance of a building.

Graphics appear on both sides of these signs, since they are placed perpendicular to the road and can be viewed by traffic moving in both directions.

Headquarters Facilities.

Sign Type B1 signs are used to identify the headquarters facilities of each installation.. When the headquarters of a command or division level organization is located in the same facility as the installation headquarters, the unit name is placed below the installation name. In addition, the authorized insignia of the command or division level unit is located to the left of the unit name.

(1) Colors. White letters and numbers on standard brown background; full-color insignia.

(2) Sign grid specifications.

(a) Dimensions. 3ft-6in. H x 8ft-0in. W.

(b) Message. Installation name—upper and lower case Helvetica medium, 6-inch capital letter height, flush left. Average line length-21 characters per line. "Headquarters" — upper and lower case Helvetica regular, 6-inch capital letter height, flush left. Average line length—24 characters per line. Command or division level name—upper and lower case Helvetica medium, 4-inch capital letter height, flush left. Average line length-27 characters per line.

(c) Building address. Upper and lower case Helvetica medium, 4-inch capital letter height, flush left.

(d) Insignia. Authorized military insignia, 12-inch maximum height x 8-inch maximum width, flush to top of grid box and centered.

Brigade Headquarters.

Sign Type B2 signs are used to identify the headquarters facilities of command, division and brigade level organizations. The authorized shoulder sleeve insignia or distinctive unit insignia for each command or division is located to the left of the unit name. Brigade level organizations show the name of the command or division under which each serves below the unit name, and display the command or division insignia to the left of the unit name. Only one headquarter unit is identified per sign.

(1) Colors. White letters and numbers on standard brown background; full-color insignia (Fig. 11.30).

(2) Sign grid specifications.

(a) *Dimensions.* 4ft-0in. H x 6ft-0in. W.

(b) *Message.* Unit name-upper and lower case Helvetica bold, 4-inch capital letter height, flush left. Average line length-17 characters per line. "Headquarters" —upper and lower case Helvetica regular, 4-inch capital letter height, flush left. Average line length-25 characters per line.

(c) *Building address.* Upper and lower case Helvetica medium, 4-inch capital letter height, flush left.

(d) *Insignia.* Authorized military insignia, 12-inch maximum height x 8-inch maximum width, flush to left of grid box and centered on the brigade name.

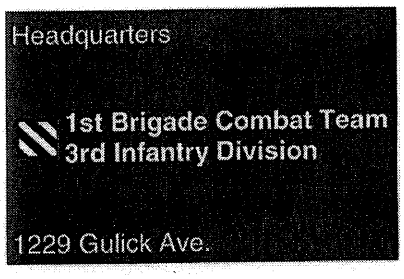

Fig. 11.30 – A sample brigade headquarters sign.

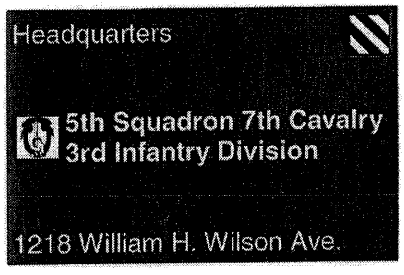

Fig. 11.31 – A sample battalion headquarters sign.

Battalion Headquarters.

Sign Type B3 signs are used to identify the headquarters facilities of battalion level organizations. The name of the command or division under which each serves is shown below the unit name. The authorized branch color(s) of the unit is located to the left of the unit name. Battalion headquarters signs shall display the command or division level organizational insignia in the upper right corner. If more than one (1) battalion headquarters is located in a specific building all unit names will be displayed on one (1) sign.

(1) Colors. White letters and numbers on standard brown background; full-color symbol (Fig. 11.31).

(2) Sign grid specifications.

(a) *Dimensions.* 4ft-0in. H x 5ft-0in. W.

(b) *Message*. Unit name-upper and lower case Helvetica bold, 4-inch capital letter height, flush left. Average line length—20 characters per line. "Headquarters"— upper and lower case Helvetica regular, 4-inch capital letter height, flush left. Average line length—22 characters per line.

(c) *Symbol*. 6-inch diameter overall, 1/4 –inch perimeter ring in white, 1-inch border ring in secondary branch color.

(d) *Building address*. Upper and lower case Helvetica medium, 4-inch capital letter height, flush left.

Company Headquarters.

Most company operations facilities contain more than one company headquarters unit. When more than one company Headquarters unit is located in a specific building all units will be listed on an individual sign. Sign specifications are as follows:

- **Facilities with one (1) company headquarters unit:**

  Type C4 signs. Insignias, branch colors, unit mottos, names or titles of individuals are not recommended on company level unit signs.

  (1) Colors. White letters and numbers on standard brown background (Fig. 11.32).

  (2) Sign grid specifications.

  (a) Dimensions. 4ft-0in. H x 5ft-0in. W.

  (b) Message. Facility and unit name-upper and lower case Helvetica medium, 3-inch capital letter height, flush left. Average line length-25 characters per line.

  (c) *Building address*. Upper and lower case Helvetica medium, 3-inch capital letter height, flush left.

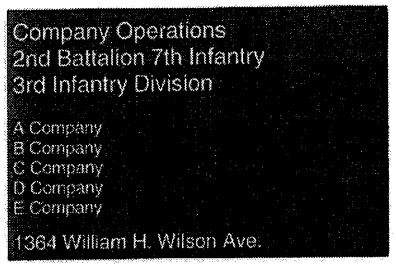

Fig. 11.32 – A sample company headquarters sign for multiple companies.

- **Facilities with more than one (1) company headquarters unit:**

  Type C2 signs. Sign Type C2 will be used with the extended grid specifications listed below. Insignias, branch colors, unit mottos, names or titles of individuals are not recommended on company level unit signs (Fig. 11.32).

  (1) Colors. White letters and numbers on standard brown background.

  (2) Sign grid specifications.

  (a) *Dimensions*. 4ft-0in. H x 5ft-0in. W.

  (b) *Message*. Unit facility and name—upper and lower case Helvetica medium 4-inch capital letter height, flush left. Average line length-19 characters per line. Sub-service name-upper and lower case

Helvetica regular, 3-inch capital letter height, flush left. Average line length-30 characters per line.

(c) *Building number.* Helvetica regular, 4-inch number height, flush left.

(4) Extended sign grid specifications.

(a) *Dimensions.* 5ft-6in. H x 5ft-0in. W.

(b) *Message.* Military unit name-upper and lower case Helvetica medium, 4-inch capital letter height, flush left. Average line length—19 characters per line. Sub-unit name-upper and lower case Helvetica regular, 3-inch capital letter height, flush left. Average line length-30 characters per line.

(c) Building number. Helvetica regular, 4-inch number height, flush left.

Exceptions to Stated Regulations. If companies or detachments are co-located in the same facility with battalion or higher headquarters units, all units will be listed on the facility identification sign of the type associated with the highest echelon unit.

Street Signs. Street name identification signs should be designed with the same lettering, color and materials as other information signs (Fig. 11.33).

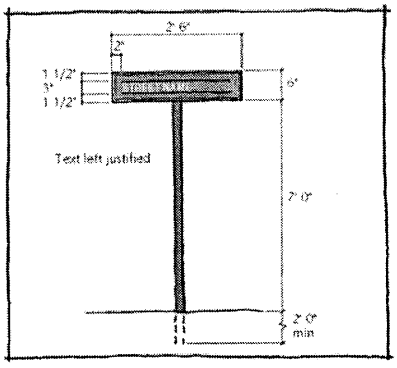

Fig. 11.33 - Dimensions of a typical street sign.

Housing Area Signs. The sign will be complimentary to the architectural setting of the housing area and approved by Master Planning. Housing numbers are placed on each house where lighting will effectively light the numbering.

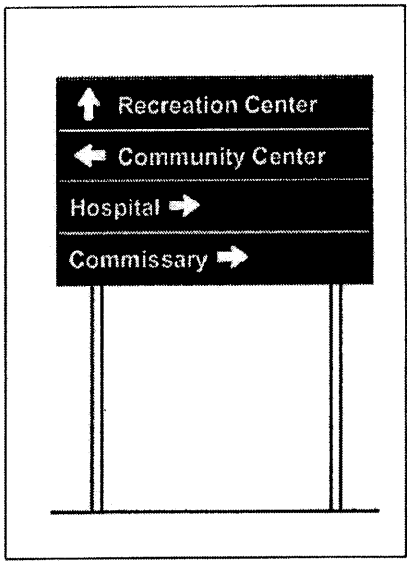

Fig. 11.34 – A diagram showing typical arrangement of arrows and names on a directional sign.

Directional Signs. Directional signs are placed in central locations and at major decision points along circulation routes. These signs guide the motorist or pedestrian in, around and out of the installation (Fig. 11.34). The legibility and placement of these signs, as well as the ordering of information, is critical to their effectiveness. Messages will be grouped in the following order according to their arrow direction: forward, left and right. Placement of the message on the sign panel is determined by the arrow direction. Destinations forward and left are listed first and have flush left messages. Destinations right are listed next and have flush right messages. The arrow is centered in the space between the message and the edge of the sign (Fig. 11.35). Prioritize destinations to be listed by giving the highest priority to the destinations that are most often sought by people new to the garrison or that serve as highly visible landmarks on the garrison. Those who live or work on the garrison or who visit frequently do

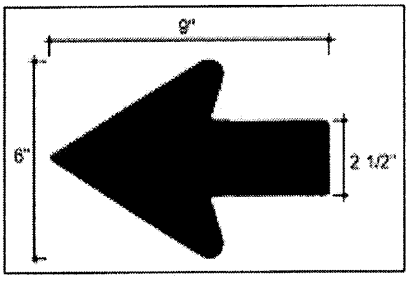

Fig. 11.35 - Dimensions of the arrow to be used on directional signs.

not need the degree of help required by a first time or infrequent visitor. These signs are designed to include the following:

Regulatory Signs. Regulatory signs provide the rules for travel and parking on Fort Stewart. Included are speed signs, turning and lane use signs, warning signs, parking control signs, etc. (Fig. 11.36). Related to these signs are pavement markings and traffic signals.

Traffic Control Signs. National highway standards will be used for signs to regulate vehicular traffic on Fort Stewart (AR 420-72, Transportation Infrastructure and Dams, paragraph 2-15f). These standards are described in the Manual of Uniform Traffic Control Devices (MUTCD). Also see MTMC Pamphlet 55-14, Traffic Engineering for Better Signs and Markings. This pamphlet clarifies existing standards and provides definite guidelines for installation officials to conform to the MUTCD. These standards shall be used installation wide to include installation Access Control Points.

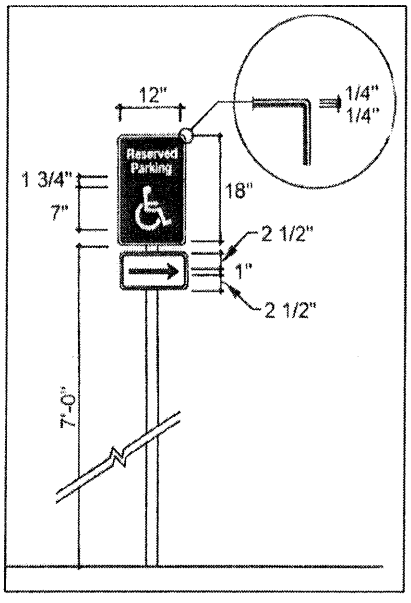

Fig. 11.36 – Dimensions for a regulatory sign.

Prohibitory (Warning) Signs. This category of signage is intended to maintain security and safety on the installation perimeter and at other specific secure areas. These signs notify visitors of restrictions, as well as other security procedures. The guidelines for design, fabrication and placement of warning signs are found in Technical Manual (TM) 5-807-10, Signage, paragraph 3-9.

Electronic Exterior Signs. All exterior flashing signs, traveling lights, or signs animated by lights of changing degrees of intensity or color are prohibited. 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 Master Planning. No sign of this type will be left in place for longer than six months. After which time, the sign will be removed or turned into a permanent sign.

11.4.6 Sign Placement

Placement of signs differs according to the type of sign and the specific site constraints. The following guidelines apply to placement of the majority of signs:

- Do not place more than one sign at any location. Traffic rules are the exception to this rule.
- Place signs in areas free of visual clutter and landscape materials.

- Place signs in locations that allow enough time for the user to read and react to the message.
- Signs must not be placed such that they block sight lines at intersections.
- Place signs approximately 4 feet (1.2 meters) above ground level to be within 10 degrees the driver's line of vision (Fig. 11.37). Provide proper placement to avoid a hazard to children.

11.4.7 Sign System Typography.

Military Emblems. The Army has a rich tradition of military heraldry. Military emblems are an important part of the soldiers' identity and the emblems have been carefully crafted over the years to express unit pride and unique history and function of the unit. The care and use of organizational emblems in a signage system can add visual interest as well as build pride and a sense of history. However, the overuse of miscellaneous emblems can lead to clutter and a dilution of their importance. Colors for military emblems must be in accordance with the Institute of Heraldry.

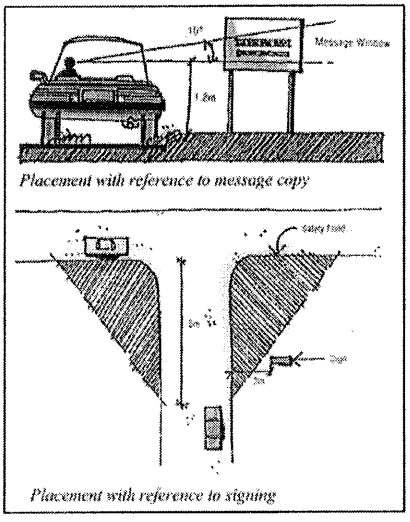

Fig. 11.37 - Placement of signs is critical to ensure easy readability.

Department of the Army Plaque. The plaque should be displayed on installation identification signage to emphasize the heritage and professionalism of the United States Army. The design of the plaque must be in accordance with Army Regulation (AR) 840-1, Department of the Army Seal, and Department of the Army Emblem and Branch of Service Plaques, and must be reproduced in full color.

Insignias. The use of branch insignia, shoulder sleeve insignia, coat of arms and/or distinctive insignia on headquarters signs is permitted. All military emblems must appear in full color. Motivational symbols or motifs will not be used.

11.4.8 Reduce Visual Clutter.

Over-signing detracts from a uniform sign system and if left uncontrolled will eventually destroy the integrity of the system.

Clutter creates confusion and ineffectiveness. Often motorist and pedestrians are confused by the bombardment of messages that have no relationship to each other, or the communication is on such a minimal level that the sign serves no purpose.

APPENDIX I
ACCEPTABLE PLANT LIST

PLANT SELECTION LIST
Plant Material Suitability Matrix

Botanical Name	Common Name	Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
		Characteristics														Culture								Use							
SHADE TREES																															
Acer rubrum	Red Maple	X				X						X	X	X	X						X	X		X	X		X				X
Betula nigra	River Birch	X				X					X			X						X	X	X			X		X				X
Liriodendron tulipifera	Tulip Poplar	X				X			X	X		X			X							X			X		X				X
Magnolia grandiflora	Southern Magnolia		X			X			X	X		X		X	X					X		X		X	X		X				X
Platanus occidentalis	London Planetree	X				X						X		X	X						X	X		X	X		X				X
Quercus falcata	Southern Red Oak	X		X								X		X	X							X		X	X		X				X
Quercus laurifolia	Laurel Oak	X		X								X		X	X					X	X	X		X	X		X				X
Quercus phellos	Willow Oak	X		X								X		X	X						X	X		X	X		X				X
Quercus shumardii	Shumard Oak	X		X								X		X	X					X	X	X		X	X		X				X
Quercus virginiana	Live Oak	X		X								X		X	X					X	X	X		X	X		X				X
INTERMEDIATE TREES																															
Carpinus caroliniana	Blue Beech	X				X						X	X	X							X	X									X
Cercis Canadensis	Redbud	X				X			X	X			X	X	X				X	X		X					X				X
Cornus florida	Flowering Dogwood	X		X					X	X		X	X	X					X	X		X					X				X
Koelreuteria paniculata	Goldenrain Tree	X				X		X				X			X				X	X	X	X	X		X						X
Lagerstroemia indica	Crapemyrtle	X		X			X	X		X	X	X			X							X					X				X
Magnolia soulangeana	Saucer Magnolia	X		X					X	X	X		X	X						X		X			X						X
Magnolia virginiana	Sweet Bay Magnolia		X	X					X	X	X	X	X	X						X	X	X			X		X				X
Myrica cerifera	Southern Wax Myrtle		X			X			X			X		X	X					X		X				X	X				X
Nyssa sylvatica	Black Tupelo	X		X								X		X	X					X	X	X					X				X
Pyrus calleryana 'Aristocrate'	Aristocrat Pear	X				X			X	X		X			X				X	X		X	X								X
Sapium sebiferum	Chinese Yellowtree	X				X		X				X		X						X	X	X	X		X						X
Taxodium distichum	Common Bald Cypress	X				X					X	X		X	X						X	X		X			X				
EVERGREEN TREES																															
Butia capitata	Butia Palm		X	X								X			X							X					X				X
Eriobotrya japonica	Loquat		X	X			X			X		X		X	X				X		X	X				X	X				X
Juniperus virginiana	Eastern Red Cedar		X			X					X			X	X					X		X	X			X	X	X			X
Pinus elliottii	Slash Pine		X			X						X		X	X							X				X	X	X			X
Pinus palustris	Longleaf Pine		X			X						X		X	X							X				X	X	X			X
Sabal palmetto	Cabbage Palmetto		X	X								X			X					X		X		X			X				X
Trachycarpus fortunei	Windmill Palm		X	X								X			X				X			X	X	X			X				X
EVERGREEN SHRUBS																															

PLANT SELECTION LIST
Plant Material Suitability Matrix

Botanical Name	Common Name	Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
		Characteristics														Culture								Use							
Buxus microphyllum	Japanese Boxwood		X	X			X			X		X		X	X						X	X					X		X		X
Camellia sasanqua	Fall-blooming Camellia		X	X			X			X		X		X	X						X	X				X					X
Cotoneaster horizontalis	Rockspray Cotoneaster		X	X								X		X	X							X					X				X
Cycas revolute	Sago Cycas		X	X								X		X	X					X		X					X				X
Elaeagnus pungens	Thorny Elaeagnus		X			X						X	X	X	X					X		X	X			X					X
Fatsia japonica	Japanese Fatsia		X	X			X			X		X		X	X							X					X				X
Hypericum patulum 'Sungold'	Sungold Hypericum		X			X		X		X		X		X	X				X	X		X	X				X				X
Ilex cornuta 'Burfordii'	Burford Holly		X	X								X		X	X					X		X				X	X				X
Ilex cornuta 'Carissa'	Carissa Holly		X	X								X		X	X				X	X		X				X	X				X
Ilex cornuta 'Rotunda'	Dwarf Chinese Holly		X	X								X		X	X				X	X		X				X	X				X
Ilex crenata	Japanese Holly		X	X								X		X	X					X		X				X	X		X		X
Ilex crenata 'Helleri'	Heller Japanese Holly		X	X								X		X	X							X					X		X		X
Ilex opaca 'Fosteri'	Fosters Holly		X	X								X		X	X					X		X				X					X
Ilex opaca 'Savannah'	Savannah Holly		X	X								X		X	X					X		X				X					X
Ilex vomitoria	Yaupon Holly		X	X								X		X	X					X		X				X	X				X
Ilex vomitoria 'Stokes dwarf'	Dwarf Yaupon Holly		X	X								X		X	X					X		X				X	X				X
Illicium parviflorum	Yellow Anise-Tree		X			X	X			X		X	X	X	X					X	X	X					X				X
Illicium floridanum	Florida Anise-Tree		X			X	X			X		X	X	X	X					X	X	X					X				X
Juniperus chinensis 'Torulosa'	Hollywood Torulosa Juniper		X	X								X			X							X									X
Juniperus chinensis 'Pfitzeriana'	Pfitzer Juniper		X	X								X			X				X			X	X				X				X
Juniperis conferta	Shore Juniper		X	X								X			X				X			X	X				X				X
Juniperus horizentalis 'Plumosa'	Andorra Juniper		X	X								X			X				X			X	X				X				X
Ligustrum japonicum	Japanese Privet		X			X			X	X		X		X	X				X			X				X	X				X
Ligustrum lucidum	Golden Privet		X			X			X	X		X		X	X				X			X				X	X				X
Mahonia bealei	Leatherleaf Mahonia		X	X					X	X		X	X	X								X					X				X
Nandina domestica	Heavenly Bamboo		X			X			X	X		X	X	X	X				X		X	X	X				X				X
Osmanthus americanus	Devilwood Osmanthus		X	X			X			X		X	X	X						X		X									X
Osmanthus fragrans	Fragrant Tea Olive		X			X	X			X		X	X	X						X		X				X	X				X
Photinia serrulata	Chinese Photinia		X			X			X	X		X		X	X							X	X			X	X				X
Pittosporum tobira	Japanese Pittosporum		X			X			X	X		X	X	X	X							X	X			X	X				X

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Botanical Name	Common Name	Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
		Characteristics														Culture								Use							
Podocarpus marcrophyllus 'Maki'	Shrubby Yew Podocarpus		X	X					X	X		X	X	X	X				X	X		X	X			X	X	X			X
Prunus caroliniana	Cherry Laurel		X	X					X	X		X		X	X							X				X					X
Pyracantha coccinea	Scarlet Firethorn		X			X		X		X					X							X					X				X
Raphiolepis indica	Indian Hawthorn		X	X					X	X		X	X	X	X				X		X	X	X				X				X
Rhododendron indicum	Indica Azalea		X			X			X	X		X	X	X							X	X					X				X
Rhododendron obtusum	Kurume Azalea		X	X					X	X		X	X	X							X	X					X				X
Ternstroemia gymnathera	Japanese Cleyera		X	X					X	X		X		X	X				X	X		X	X			X	X				X
Viburnum odoratissumum	Sweet Viburnum		X			X			X			X		X								X	X			X	X				X
DECIDUOUS SHRUBS																															
Clethra alnifolia	Summersweet Clethra	X				X		X		X			X	X	X					X		X					X				X
Hibiscus syriacus	Shrub Althea	X		X						X			X	X	X					X		X	X				X				
Hydrangea macrophylla	Bigleaf Hydrangea	X				X		X		X			X	X							X	X					X				X
Hydrangea quercifolia	Oakleaf Hydrangea	X				X		X		X	X			X	X					X		X					X				X
Jasminum nudiflorum	Winter Jasmine	X		X					X	X			X	X	X				X	X		X	X				X				X
Lonicera fragrantissima	Winter Honeysuckle	X				X			X	X			X	X						X		X				X	X				X
Spiraea thunbergii	Thunberg Spirea	X				X		X		X					X							X					X				X
Spiraea x vanhouttei	Vanhoutte Spirea	X				X		X		X					X							X					X				X
GROUNDCOVERS/VINES																															
Ajuga reptans	Carpet Bugle	X				X			X	X		X	X	X	X				X	X	X	X	X				X				
Euonymus fortunei 'Radicans'	Common Wintercreeper		X	X								X		X	X							X					X				
Hedera canariensis	Algerian Ivy		X	X						X			X	X						X		X					X				
Hedera helix	English Ivy		X	X						X			X	X						X		X					X				
Hemerocallis	Daylilly	X				X	X	X		X		X		X	X					X		X					X				
Juniperus chinensis 'Sargentii'	Sargent Juniper		X	X								X		X	X							X	X				X				
Juniperus conferta 'Blue Pacific'	Blue Pacific Juniper		X	X								X		X	X							X	X				X				
Juniperus horizentalis	Creeping Juniper		X	X								X		X	X							X	X				X				
Juniperus procumbrens	Japgarden Juniper		X	X								X		X	X							X	X				X				
Vinca major	Bigleaf Periwinkle		X			X			X	X		X		X	X							X					X				
GRASSES																															
Axonopus affinis	Carpet Grass	X				X						X		X								X					X				

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Plant Material Suitability Matrix

Botanical Name	Common Name	Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
		Characteristics														Culture								Use							
Cortaderia selloana	Pampas Grass	X				X		X		X			X	X	X					X		X	X				X				X
Cynodon dactylon 'Tiflawn'	Common Bermuda Grass	X				X						X			X							X					X				
Ermochloa ophiuroides	Centipede Grass	X		X						X				X	X							X					X				
Liriope muscari	Big Blue Lilyturf	X				X		X		X		X	X	X					X			X	X				X				
Liriope spicata	Creeping Lilyturf	X				X		X		X		X	X	X					X			X	X				X				
Stenotaphrum secundatum	St. Augustine Grass	X				X						X	X									X					X				

APPENDIX J
Drawings

VIRTUAL TADDS FACILITY
GENERAL INSTRUCTION BUILDING

US Army Corps of Engineers
Savannah District

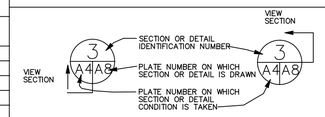
FORT STEWART, GEORGIA
FY11, L.I. 71125

SOLICITATION NO: W912HN-08-X-0529

INDEX OF DRAWINGS

PLATE NO.	SHEET NO.	DGN FILE	TITLE	PLATE NO.	SHEET NO.
G-001	1	S2WG-001	COVER SHEET AND INDEX OF DRAWINGS		
G-002	2	S2WG-002	LOCATION AND VICINITY MAPS		
VF101	3	S2WVF101	TOPOGRAPHIC SURVEY		
CS101	4	S2WCS101	CONCEPTUAL SITE PLAN		
CG101	5	S2WCG101	CONCEPTUAL GRADING PLAN		
CU101	6	S2WCU101	CONCEPTUAL UTILITY PLAN		
A-101	7	S2WA-101	FLOOR PLAN		

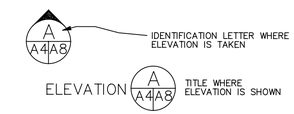
SECTION SYMBOLS



SYMBOL WHERE SECTION IS TAKEN

SECTION/DETAIL (A / A4A8)

TITLE WHERE SECTION IS DRAWN



ELEVATION SYMBOL

MATERIAL INDICATIONS

- EARTH (ORIGINAL GRADE)
- EARTH (COMPACTED FILL)
- GRAVEL
- CONCRETE
- MORTAR – CEMENT – PLASTER – STUCCO
- CONCRETE MASONRY UNITS (C.M.U., SMALL\ SCALE – PLAN)
- CONCRETE MASONRY UNITS (C.M.U., LARGE SCALE – SECTION)
- CONCRETE MASONRY UNITS OR HOLLOW TILE (SMALL SCALE – SECTION)
- METAL (ELEVATION)
- STEEL (CROSS SECTION)
- INSULATION (RIGID)
- INSULATION (LOOSE OR BATT)
- BRICK
- WOOD (BLOCKING)
- WOOD (FINISH)

A
A.C. AIR CONDITIONED
A.D. AREA DRAIN
A.H.U. AIR HANDLING UNIT
ALT. ALTERNATE
ALUM. ALUMINUM
AMP., A. AMPERES
A.O. ACCESS OPENING
APPROX. APPROXIMATELY
ARCH. ARCHITECTURAL
A.T. ASPHALT TILE
A.T.C. ACOUSTIC TILE CEILING

B
BAL. BALANCE
BD. BOARD
BLDG. BUILDING
BLK. BLANK
BM. BEAM
BOT. BOTTOM
BRG. BEARING
B.T.U.H. BRITISH THERMO UNIT/HOUR

C
CAB. CABINET
CAP. CAPACITY
C/B CIRCUIT BREAKER
C.D. CEILING DIFFUSER
CEM. CEMENT
CER. CERAMIC
C.F.M. CUBIC FEET/MINUTE
CKT. CIRCUIT
℄ CENTER LINE
CEIL. CEILING
CL. CLOSET
C.M.U. CONCRETE MASONRY UNIT
C.O. CLEAN OUT
COL. COLUMN
CONC. CONCRETE
COND. CONDENSATE
CONN. CONNECTION
CONST. CONSTRUCTION
CONT. CONTINUOUS
CONTR. JT. CONTRACTION JOINT
C.S.C. COLOR SYMBOL CODE
C.T. CERAMIC TILE
C.T.B. CERAMIC TILE BASE
C. TO C. CENTER TO CENTER

D
DET. DETAIL
DIA. DIAMETER
DIFF. DIFFUSER
DIM. DIMENSION
DISC. DISCONNECT
D.J. DUMMY JOINT
DN. DOWN
DR. DRAIN
D.S. DOWN SPOUT
DWG.(S) DRAWING(S)

E
EA. EACH
ELEC. ELECTRIC
EQUIP. EQUIPMENT
E.W.C. ELECTRIC WATER COOLER
EXH. EXHAUST
EXP. JT. EXPANSION JOINT
EXT. EXTERIOR
EXIST. EXISTING

F
F.A. FIRE ALARM
F.C. FLEXIBLE CONNECTION
F.D. FLOOR DRAIN
F.E.C. FIRE EXTINGUISHER CABINET
FIN. FINISH
FL. FLOOR
FT. FOOT, FEET
FTG. FOOTING

G
GA. GAGE
GAL. GALLON
GALV. GALVANIZED
G.F.E. GOVERNMENT FURNISHED EQUIPMENT
GL. GLASS
GND. GROUND
GOV'T GOVERNMENT
G.P.H. GALLONS/HOUR
G.P.M. GALLONS/MINUTE
GR. GRILLE
G.W.B. GYPSUM WALL BOARD

H
H. HIGH
H.B. HOSE BIBB
H.C. HOLLOW CORE
HT. HEIGHT
H.M. HOLLOW METAL
H.P. HORSE POWER
HR. HOUR
HTG. HEATING
HTR. HEATER
H.&V. HEATING AND VENTILATING
HW. HARDWARE
HYD. HYDRANT

I
I.D. INSIDE DIAMETER
I.E. INVERT ELEVATION
IN. INCHES
INCAND. INCANDESCENT
INSUL. INSULATION
INT. INTERIOR

J
J.B. JUNCTION BOX
JCT. JUNCTION
JT. JOINT

K
KVA KILOVOLT AMPERE

L
LB.,# POUND
LG. LONG
L.P. LIGHTING PANEL
LTG. LIGHTING

M
M. MOTOR
MAINT. MAINTENANCE
MAX. MAXIMUM
M.D.P. MAIN DISTRIBUTION PANEL
MECH. MECHANICAL
MTL. METAL
MIN. MINIMUM
MISC. MISCELLANEOUS
M.O. MASONRY OPENING
M.T. METAL THRESHOLD
MTD. MOUNTED
MTG. MOUNTING
M.V. MECHANICAL VENTILATION
M.G.T. MATT GLAZE TILE

N
N.A. NOT APPLICABLE
N.I.C. NOT IN CONTRACT
NO. NUMBER

O
O.A. OUTDOOR AIR
OL. OVERLOAD
OPNG. OPENING
OPP. OPPOSITE
O.S.D. OPEN SIGHT DRAIN

P
P. PAPER
PART. PARTITION
PER. PERIMETER
ℙ, PL. PLATE
PLBG. PLUMBING
PLYW'D PLYWOOD
PNL. PANEL
PRESS. PRESSURE
PSF POUNDS/SQUARE FOOT
PSI POUNDS/SQUARE INCH
PSIG POUNDS/SQUARE INCH GAGE
PT. POINT
PTD. PAINTED

Q
QTR. QUARTER
QUAN. QUANTITY

R
R. RISER
R.A. RETURN AIR
RAD. RADIUS
RD. ROUND
REG. REGISTER
REINF. REINFORCING
REQ. REQUIRED
RET. RETURN
R.G. RETURN GRILLE
RM. ROOM
R.P.M. REVOLUTION/MINUTE

S
S. SUPPLY
S.A. SUPPLY AIR
SCH. SCHEDULE
SECT. SECTION
SERV. SERVICE
SHT. SHEET
S.J. SLIP JOINT
SPEC. SPECIFICATIONS
SQ. FT. SQUARE FEET
ST. STEEL
STOR. STORAGE
STRUC. STRUCTURAL
SUSP. SUSPENDED
SW. SWITCH

T
T. TOILET
TEL. TELEPHONE
TEMP. TEMPERATURE
THK. THICKNESS
THD. THRESHOLD
TOIL. TOILET
TYP. TYPICAL

V
V. VOLT
V.A.T. VINYL ASBESTOS TILE
VENT. VENTILATION
VERT. VERTICAL
VTR VENT THRU ROOF

W
W. WATT
W/ WITH
WC WAINSCOATING
WD. WOOD
W.D. WINDOW DIMENSION
WF WIDE FLANGE
W.G. WATER GAGE
WP. WEATHERPROOF
WTR. WATER
W.W.F. WELDED WIRE FABRIC

US ARMY CORPS OF ENGINEERS SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY: MKB
DWN BY: TLM
CKD BY: RCC
SUBMITTED BY:
DATE: 06/01/10
SOLICITATION NO.: W912HN-08-X-0529
CONTRACT NO.:
FILE NAME: S2WG-001
CATEGORY CODE: 1172-10-01
SIZE: 22X34
PLOT SCALE: AS SHOWN
PLOT DATE: 06/01/10

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

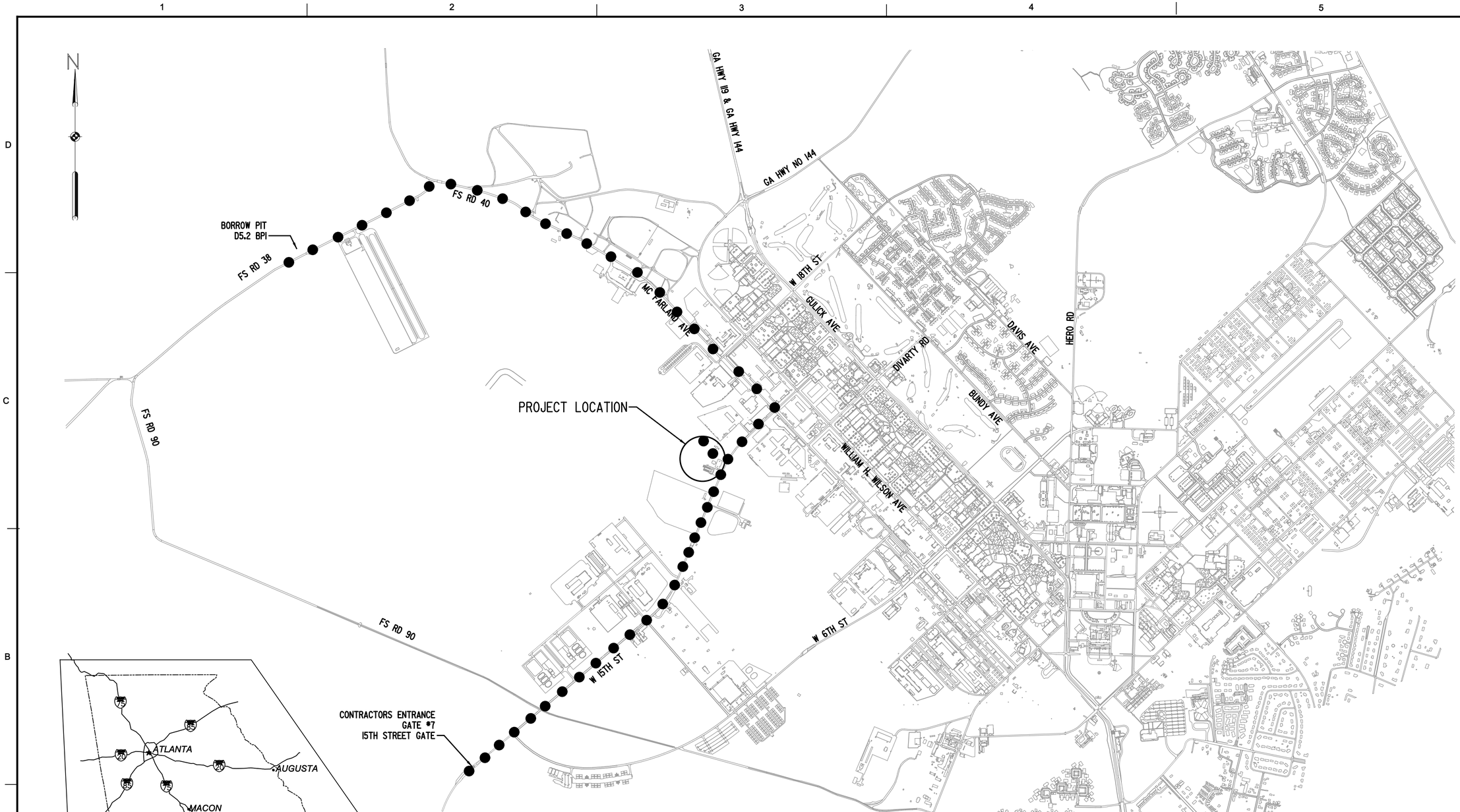
BENHAM an SAIC company

VIRTUAL TADDS FACILITY
FORT STEWART, GEORGIA

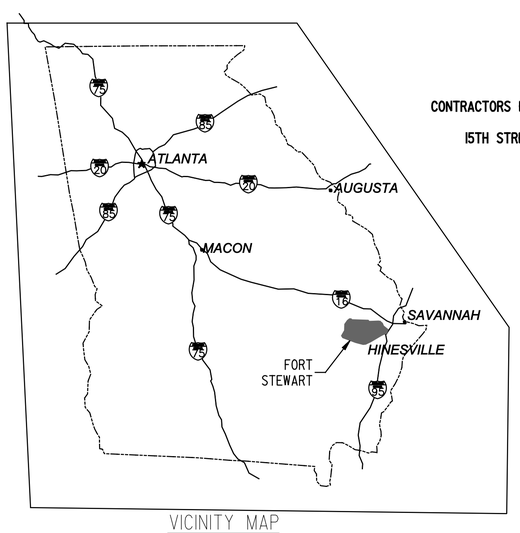
COVER SHEET AND INDEX OF DRAWINGS

PLATE REFERENCE NUMBER
G–001
SHEET 1

$$DGNSPEC$$
$$SYSTIME$$
$$USERNAME$$



LOCATION MAP
NO SCALE



VICINITY MAP
NO SCALE

LEGEND

HAUL ROUTE

US ARMY CORPS
OF ENGINEERS
SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY: MRL
DWN BY: TLM
CKD BY: RCC
SUBMITTED BY:
DATE: 06/11/10
SOLICITATION NO.: W912HN-08-X-0529
CONTRACT NO.:
FILE NAME: S2WG-002
CATEGORY CODE: 172-10-01
SIZE: 22x34
PLOT SCALE: AS SHOWN
PLOT DATE: 06/11/10

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

BENHAM
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VIRTUAL TADDS FACILITY
FORT STEWART, GEORGIA

LOCATION AND VICINITY MAPS

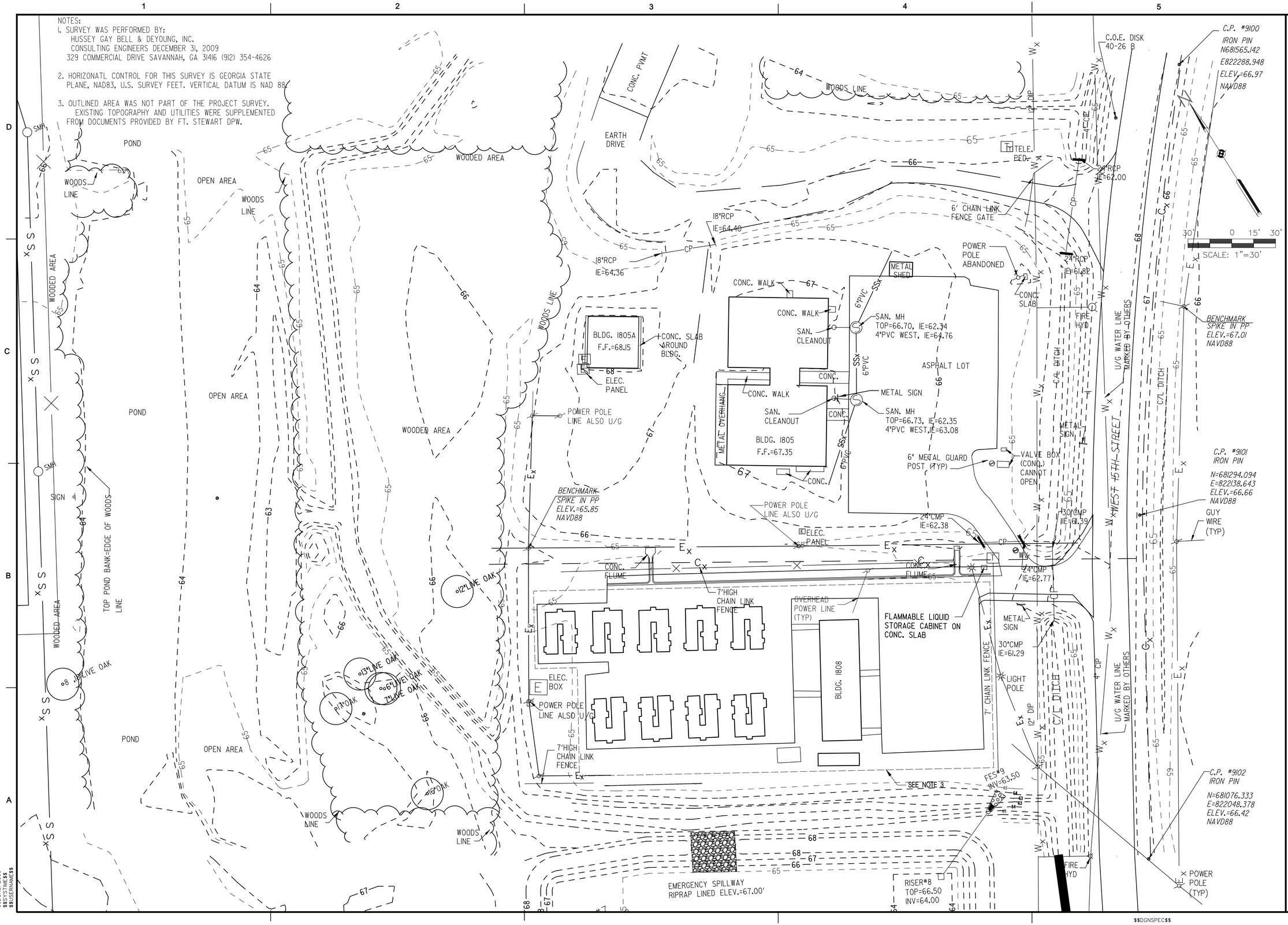
PLATE
REFERENCE
NUMBER
G-002
SHEET 2

$$DGNSPEC$$
$$SYSTIME$$
$$USERNAME$$

NOTES:
1. SURVEY WAS PERFORMED BY:
HUSSEY GAY BELL & DEYOUNG, INC.
CONSULTING ENGINEERS DECEMBER 31, 2009
329 COMMERCIAL DRIVE SAVANNAH, GA 31416 (912) 354-4626

2. HORIZONATL CONTROL FOR THIS SURVEY IS GEORGIA STATE PLANE, NAD83, U.S. SURVEY FEET. VERTICAL DATUM IS NAD 88.

3. OUTLINED AREA WAS NOT PART OF THE PROJECT SURVEY. EXISTING TOPOGRAPHY AND UTILITIES WERE SUPPLEMENTED FROM DOCUMENTS PROVIDED BY FT. STEWART DPW.



US ARMY CORPS OF ENGINEERS SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY: DWG. BY: TLM, CKD. BY: RCC, SUBMITTED BY:
DATE: 09/01/10, SOLICITATION NO.: W912HN-08-X-0529, CONTRACT NO.:
FILE NAME: S2WVF100, CATEGORY CODE: 1T2-10-01
SIZE: 22X34, PLOT SCALE: AS SHOWN, PLOT DATE: 09/01/10

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

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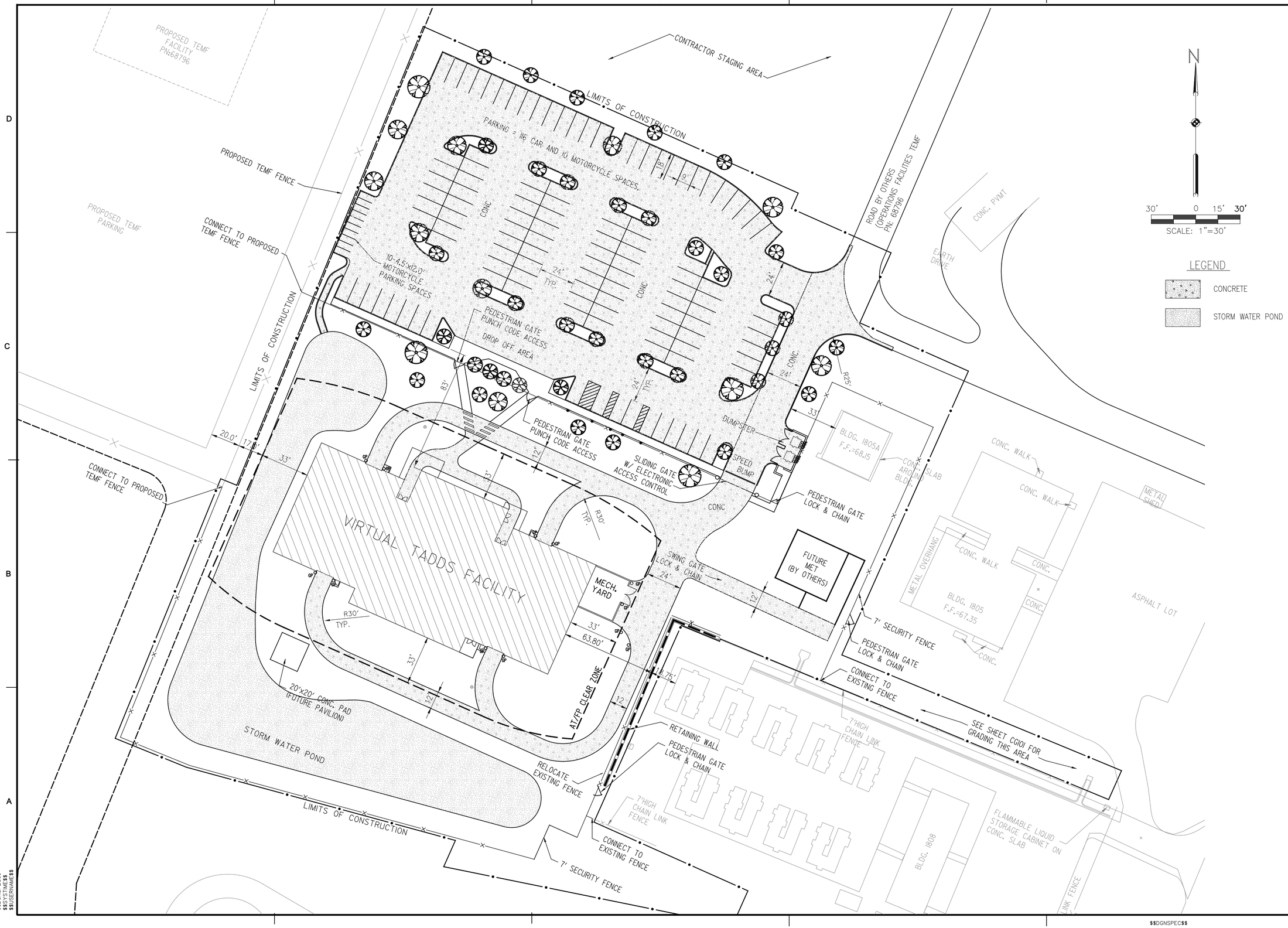
VIRTUAL TADDS FACILITY
FORT STEWART, GEORGIA

TOPOGRAPHIC SURVEY

PLATE REFERENCE NUMBER
VF101
SHEET 3

$$DGNSPEC$$
$$SYSTIME$$
$$USERNAME$$



US ARMY CORPS OF ENGINEERS SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY: DWG
DRAWN BY: TLM
SUBMITTED BY:
CHKD BY: RCC
DATE: 09/17/10
SOLICITATION NO.: W912HN-09-X-0529
CONTRACT NO.:
FILE NAME: S2WCS101
SIZE: 22X34
PLOT SCALE: AS SHOWN
CATEGORY CODE: 172-10-01
PLOT DATE: 09/17/10

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

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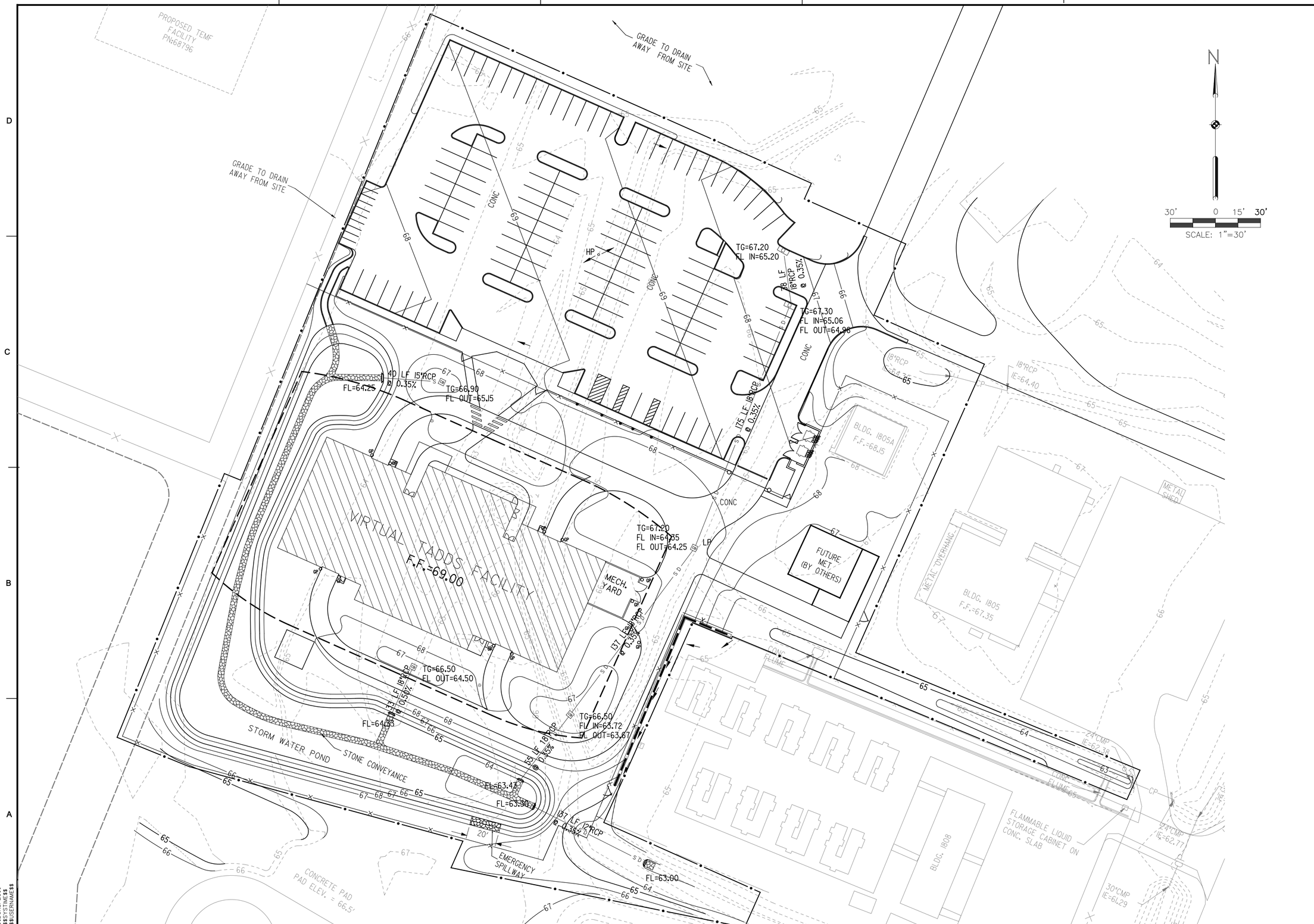
VIRTUAL TADDS FACILITY
FORT STEWART, GEORGIA

CONCEPTUAL SITE PLAN

PLATE REFERENCE NUMBER
CS101
SHEET 4

$$DGNSPEC$$
$$SYSTIME$$
$$USERNAME$$



US ARMY CORPS OF ENGINEERS SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY: MRT
DWN BY: TLM
CKD BY: RCC
SUBMITTED BY:
DATE: 06/17/10
SOLICITATION NO.: W912HN-08-X-0529
CONTRACT NO.:
FILE NAME: S2WCS101
CATEGORY CODE: 1172-10-01
SIZE: 22X34
PLOT SCALE: AS SHOWN
PLOT DATE: 06/17/10

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

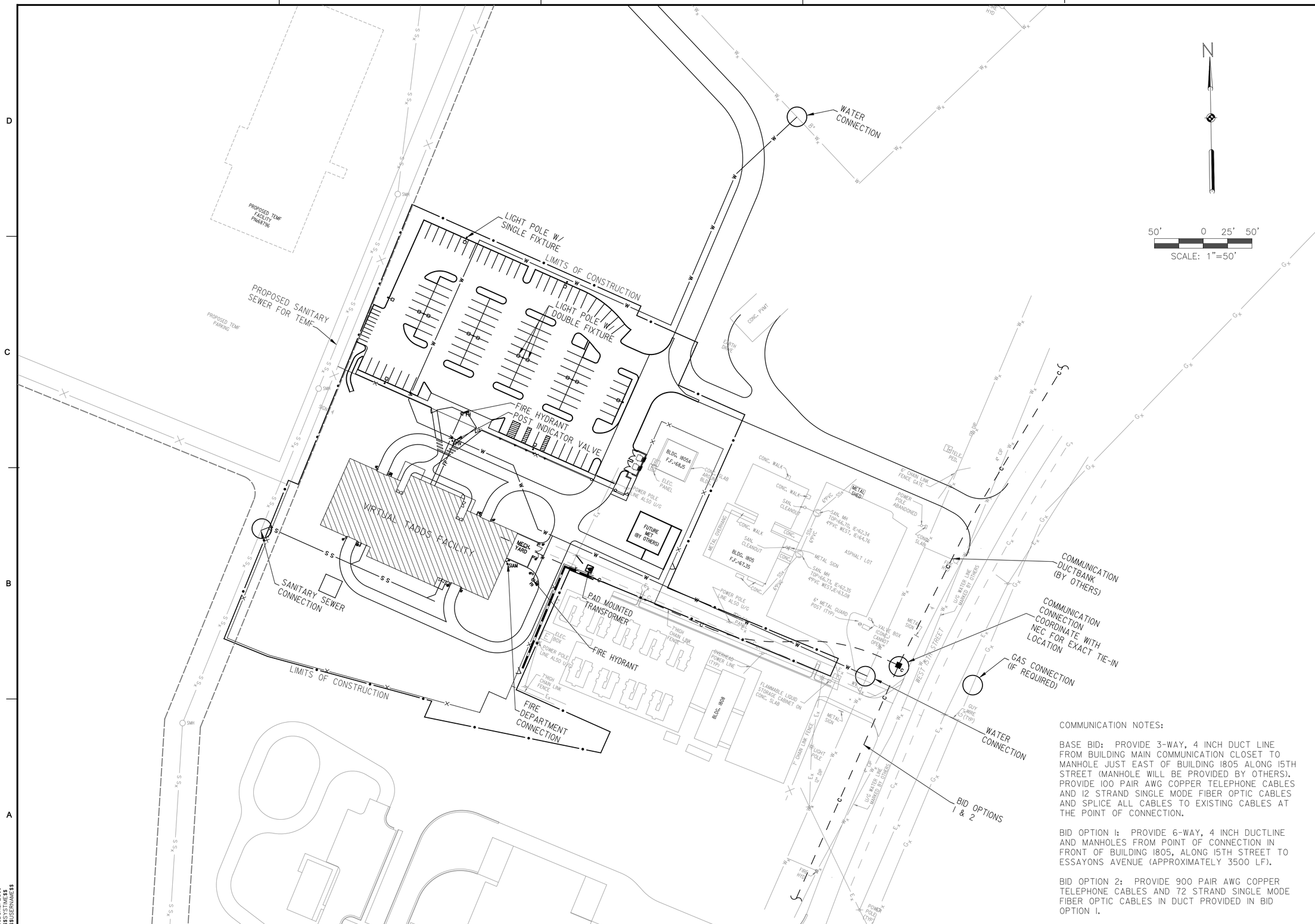
BENHAM
an SAIC company

VIRTUAL TADDS FACILITY
FORT STEWART, GEORGIA

CONCEPTUAL GRADING PLAN

PLATE REFERENCE NUMBER
CG101
SHEET 5

$$DGNSPEC$$
$$SYSTIME$$
$$USERNAME$$



COMMUNICATION NOTES:

BASE BID: PROVIDE 3-WAY, 4 INCH DUCT LINE FROM BUILDING MAIN COMMUNICATION CLOSET TO MANHOLE JUST EAST OF BUILDING 1805 ALONG 15TH STREET (MANHOLE WILL BE PROVIDED BY OTHERS). PROVIDE 100 PAIR AWG COPPER TELEPHONE CABLES AND 12 STRAND SINGLE MODE FIBER OPTIC CABLES AND SPLICE ALL CABLES TO EXISTING CABLES AT THE POINT OF CONNECTION.

BID OPTION 1: PROVIDE 6-WAY, 4 INCH DUCTLINE AND MANHOLES FROM POINT OF CONNECTION IN FRONT OF BUILDING 1805, ALONG 15TH STREET TO ESSAYONS AVENUE (APPROXIMATELY 3500 LF).

BID OPTION 2: PROVIDE 900 PAIR AWG COPPER TELEPHONE CABLES AND 72 STRAND SINGLE MODE FIBER OPTIC CABLES IN DUCT PROVIDED IN BID OPTION 1.

US ARMY CORPS OF ENGINEERS SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY: DWG. BY: TLM, CKD. BY: RCC, SUBMITTED BY:
DATE: 09/11/10, SOLICITATION NO.: W912HN-08-X-0529, CONTRACT NO.:
FILE NAME: S2WCU101, CATEGORY CODE: 172-10-01
SIZE: 22X34, PLOT SCALE: AS SHOWN, PLOT DATE: 09/11/10

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

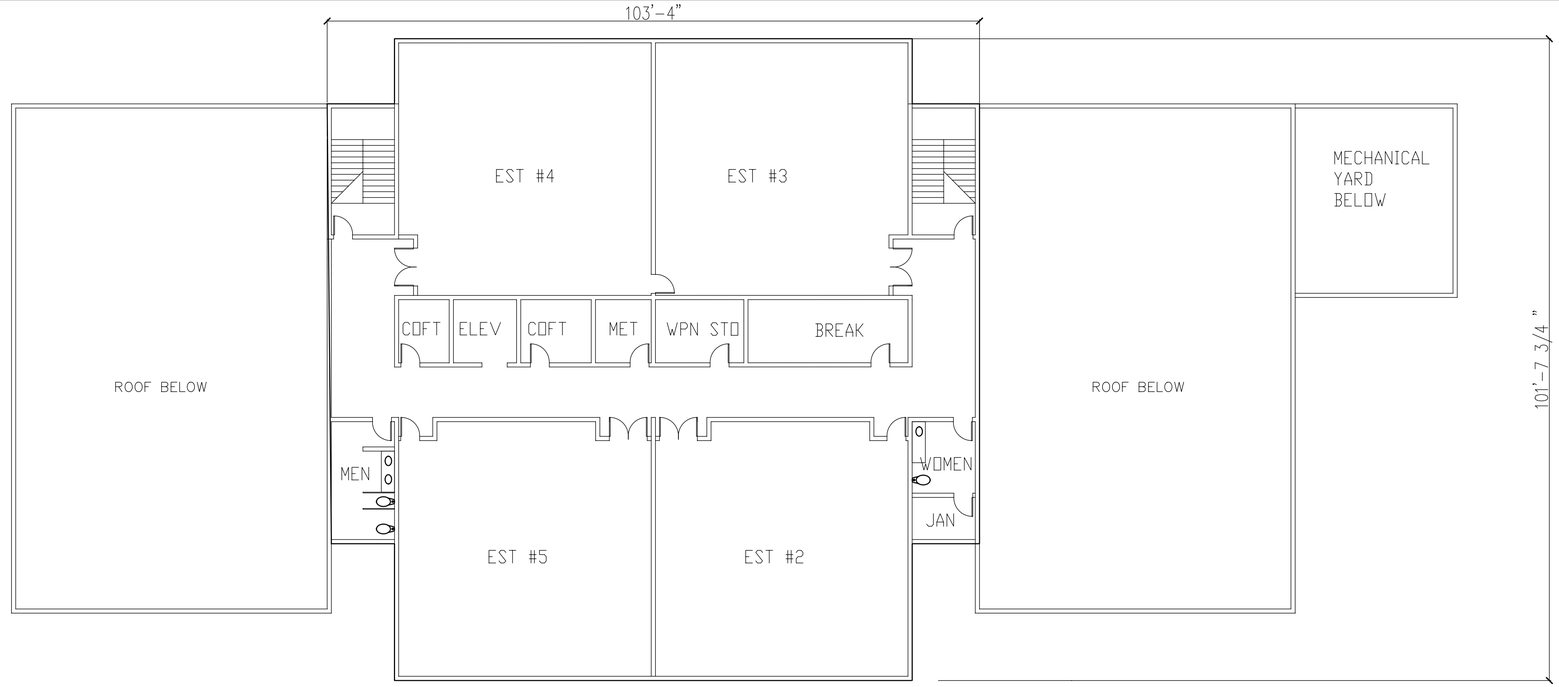
BENHAM an SAIC company

VIRTUAL TADDS FACILITY
FORT STEWART, GEORGIA

CONCEPTUAL UTILITY PLAN

PLATE REFERENCE NUMBER
CU101
SHEET 6

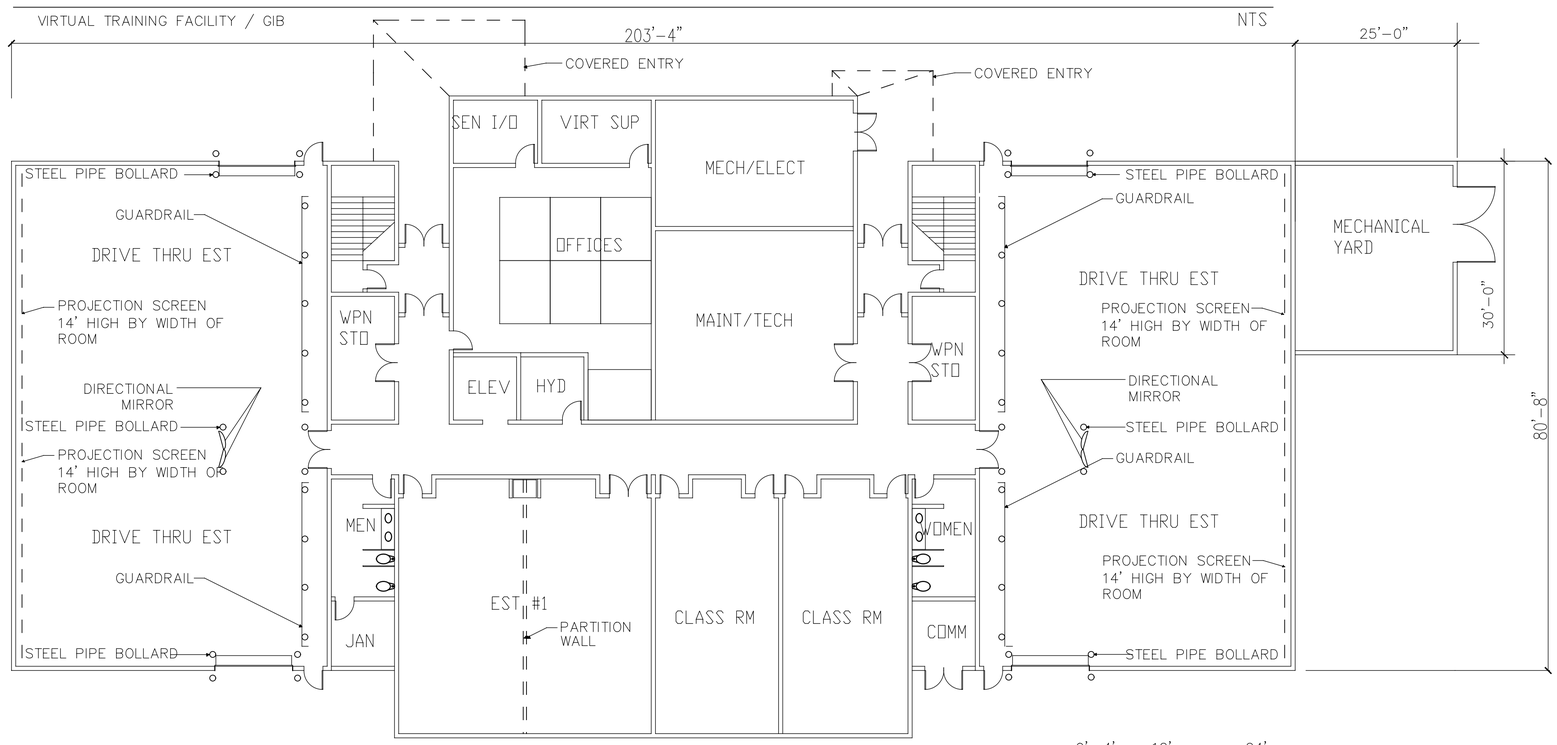
$$DGNSPEC$$
$$SYSTIME$$
$$USERNAME$$



SECOND FLOOR PLAN CONCEPT DRAWING

VIRTUAL TRAINING FACILITY / GIB

NTS



FIRST FLOOR PLAN CONCEPT DRAWING

0' 4' 12' 24'

VIRTUAL TRAINING FACILITY / GIB

NTS

US ARMY CORPS OF ENGINEERS SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY: MRH
DWN BY: TLM
CKD BY: RCC
SUBMITTED BY:
DATE: 09/01/10
SOLICITATION NO.: W912HN-08-X-0529
CONTRACT NO.:
FILE NAME: S2WA-101
CATEGORY CODE: 172-10-01
SIZE: 22X34
PLOT SCALE: AS SHOWN
PLOT DATE: 09/01/10

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

VIRTUAL TADDS FACILITY
FORT STEWART, GEORGIA

FLOOR PLAN

PLATE REFERENCE NUMBER
A-101
SHEET 7

$$DGNSPEC$$
$$SYSTIME$$
$$USERNAME$$

Fort Stewart, GA

Utility Cost Information

(Updated: 6 Jan 2010)

The following utility rates for this installation are provided for the purpose of performing life cycle cost calculations in response to this solicitation and for design development in accordance with Section 01 10 00 Design After Award:

Electrical:
Demand Charge – $0.0724 per KWH

Natural Gas:
Commodity Charge Rate – $0.725 per therm

Water:
Commodity Charge Rate – $0.6316 per 1,000 Gal

Sewer:
Commodity Charge Rate – $1.022 per 1,000 gallons of Water consumption

Appendix L

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 Credit Paragraph	LEED Project Credit Guidance	**Army Guidance:** Required - Preferred - Avoid	**Project Preference Ranking**: (1=most preferred, blank=no preference, X=preference not applicable to this credit, Rqd=required)	
PAR	**FEATURE**			**REMARKS**
SUSTAINABLE SITES				
SSPR1	Construction Activity Pollution Prevention (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
SS1	Site Selection		X	See paragraph LEED CREDITS COORDINATION.

SS2	Development Density & Community Connectivity - OPTION 1 DENSITY		X	See paragraph LEED CREDITS COORDINATION.
	Development Density & Community Connectivity - OPTION 2 CONNECTIVITY		X	See paragraph LEED CREDITS COORDINATION.
SS3	Brownfield Redevelopment		X	See paragraph LEED CREDITS COORDINATION.
SS4.1	Alternative Transportation: Public Transportation Access		X	See paragraph LEED CREDITS COORDINATION.
SS4.2	Alternative Transportation: Bicycle Storage & Changing Rooms	Pref		Assume that non-transient building occupants are NOT housed on Post unless indicated otherwise.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 1			Requires provision of vehicles, which cannot be purchased with construction funds. Assume Government will not provide vehicles unless indicated otherwise. Assume that 50% of GOV fleet is NOT alternative fuel vehicles unless indicated otherwise.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 2	Pref		
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 3			Requires provision of vehicle refueling stations. Installation must support type of fuel and commit to maintaining/supporting refueling stations.
SS4.4	Alternative Transportation: Parking Capacity	Pref		

SS5.1	Site Development: Protect or Restore Habitat			
SS5.2	Site Development: Maximize Open Space	Pref		Assume AGMBC option for aggregated open space at another location on the installation is not available to the project unless indicated otherwise.
SS6.1	Stormwater Design: Quantity Control	Pref		See paragraph STORMWATER MANAGEMENT.
SS6.2	Stormwater Design: Quality Control	Pref		See paragraph STORMWATER MANAGEMENT.
SS7.1	Heat Island Effect: Non-Roof			
SS7.2	Heat Island Effect: Roof	Pref		Coordinate with nearby airfield requirements, which may preclude this credit.
SS8	Light Pollution Reduction	Pref		
WATER EFFICIENCY				
WEPR1	Water Use Reduction (Version 3 only)	Rqd	Rqd	All LEED prerequisites are required to be met.
WE1.1	Water Efficient Landscaping: Reduce by 50%	Pref		See paragraph IRRIGATION. Project must include landscaping to be eligible for this credit.
WE1.2	Water Efficient Landscaping: No Potable Water Use or No Irrigation	Pref		Project must include landscaping to be eligible for this credit.
WE2	Innovative Wastewater Technologies - OPTION 1			
WE2	Innovative Wastewater Technologies - OPTION 2			
WE3	Water Use Reduction	Pref		See paragraph BUILDING WATER USE REDUCTION.

ENERGY AND ATMOSPHERE				
EAPR1	Fundamental Commissioning of the Building Energy Systems (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EAPR2	Minimum Energy Performance (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EAPR3	Fundamental Refrigerant Management (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EA1	Optimize Energy Performance	Rqd	1	Earning of LEED EA1 points as indicated in paragraph ENERGY CONSERVATION, as a minimum, is required.
EA2.1	On-Site Renewable Energy	Pref		See paragraph ENERGY CONSERVATION.
EA3	Enhanced Commissioning			The Commissioning Authority may be provided through the Design-Build Contractor only if in accordance with USGBC Credit Interpretation Ruling (CIR) dated 9/15/06. Commissioning Authority activities begin during design phase and continue well beyond beneficial occupancy. Assume Government will not provide CxA post-occupancy activities unless indicated otherwise.
EA4	Enhanced Refrigerant Management			
EA5	Measurement & Verification			Assume Government will not provide post-occupancy activities unless indicated otherwise.
EA6	Green Power		X	See paragraph LEED CREDITS COORDINATION.
MATERIALS AND RESOURCES				

MRPR1	Storage & Collection of Recyclables (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met. Coordinate with Installation during design development on collection service and receptacles.
MR1	Building Reuse			
MR2.1	Construction Waste Management: Divert 50% From Disposal	Pref		See paragraph CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT.
MR2.2	Construction Waste Management: Divert 75% From Disposal	Pref		
MR3	Materials Reuse			
MR4.1	Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	Pref		See paragraph RECYCLED CONTENT.
MR4.2	Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	Pref		
MR5.1	Regional Materials:10% Extracted, Processed & Manufactured Regionally			
MR5.2	Regional Materials:20% Extracted, Processed & Manufactured Regionally			
MR6	Rapidly Renewable Materials	Pref		See paragraph BIOBASED AND ENVIRONMENTALLY PREFERABLE MATERIALS and

				paragraph FEDERAL BIOBASED PRODUCTS PREFERRED PROCUREMENT PROGRAM.
MR7	Certified Wood	Pref		See paragraph BIOBASED AND ENVIRONMENTALLY PREFERABLE MATERIALS.
INDOOR ENVIRONMENTAL QUALITY				
EQPR1	Minimum IAQ Performance (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EQPR2	Environmental Tobacco Smoke (ETS) Control (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met. Assume all buildings are smoke free unless indicated otherwise (family housing, barracks and other lodging are facility types where smoking may be permitted in some cases).
EQ1	Outdoor Air Delivery Monitoring			
EQ2	Increased Ventilation			
EQ3.1	Construction IAQ Management Plan: During Construction	Pref		See paragraph CONSTRUCTION IAQ MANAGEMENT.
EQ3.2	Construction IAQ Management Plan: Before Occupancy	Pref		See paragraph CONSTRUCTION IAQ MANAGEMENT.
EQ4.1	Low Emitting Materials: Adhesives & Sealants	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ4.2	Low Emitting Materials: Paints & Coatings	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ4.3	Low Emitting Materials: Carpet/Flooring Systems	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ4.4	Low Emitting Materials: Composite Wood & Agrifiber Products	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ5	Indoor Chemical & Pollutant Source Control	Pref		System requiring weekly cleaning to earn this credit is not a permitted option unless indicated

				otherwise.
EQ6.1	Controllability of Systems: Lighting			
EQ6.2	Controllability of Systems: Thermal Comfort			
EQ7.1	Thermal Comfort: Design	Pref		See paragraph APPLICABLE CRITERIA
EQ7.2	Thermal Comfort: Verification			Project must earn credit EQ7.1 to be eligible for this credit. Assume Government will not provide post-occupancy activities unless indicated otherwise.
EQ8.1	Daylight & Views: Daylight 75% of Spaces	Pref		See paragraph DAYLIGHTING.
EQ8.2	Daylight & Views: Views for 90% of Spaces	Pref		
INNOVATION & DESIGN PROCESS				
IDc1.1	Innovation in Design			See paragraph INNOVATION AND DESIGN CREDITS. Assume Government will not provide any activities associated with ID credits.
IDc1.2	Innovation in Design			
IDc1.3	Innovation in Design			
IDc1.4	Innovation in Design			
IDc2	LEED Accredited Professional	Rqd	Rqd	LEED AP during design and construction is required.
REGIONAL PRIORITY CREDITS (Version 3 only)				See paragraph LEED CREDITS COORDINATION.

Appendix M

Owner's Project Requirements Document for LEED Fundamental Commissioning

Project: _____

Approved: _____ _____ _____
Name Owner's Representative Date

_____ _____ _____
Name Design Agent's Representative Date

Overview and Instructions

The purpose of this document is to provide clear and concise documentation of the Owner's goals, expectations and requirements for commissioned systems, and shall be utilized throughout the project delivery and commissioning process to provide an informed baseline and focus for design development and for validating systems' energy and environmental performance.

The Owner's Project Requirements Document is a required document for LEED-NC EA Prerequisite Fundamental Commissioning of the Building Energy Systems. It shall be completed by the Corps District/Design Agent based on coordination with the Installation/User/Proponent and shall be approved by the Installation/User/Proponent representative.

The intent of the Owner's Project Requirements Document is to detail the functional requirements of a project and the expectations of the building's use and operation as it relates to commissioned systems. This template contains the basic recommended components indicated in the LEED Reference Guide. It should be adapted as needed to suit the project, remaining reflective of the LEED intent.

The Owner's Project Requirements Document should ideally be completed before the start of design and furnished to the design team. It must be completed prior to the approval of Contractor submittals of any commissioned equipment or systems to meet LEED requirements.

Updates to the Owner's Project Requirements Document throughout the course of project delivery shall be made by the Corps District/Design Agent based on decisions and agreements coordinated with and agreed to by the Installation/User/Proponent.

The Owner's Project Requirements Document shall be included in the project's LEED documentation file under EA PR1, Fundamental Commissioning of the Building Energy Systems.

Owner's Project Requirements Document for LEED Fundamental Commissioning

Table of Contents

1. Owner and User Requirements
   - Primary Purpose, Program and Use
   - Project History
   - Broad Goals
2. Environmental and Sustainability Goals
   - Energy Efficiency Goals
   - General
   - Siting
   - Building Façade
   - Building Fenestration
   - Building Envelope
   - Roof
   - Other
3. Indoor Environmental Quality Requirements
   - Intended Use
   - Occupancy Schedule
   - Accommodations for After-Hours Use
   - Lighting, Temperature, Humidity, Air Quality, Ventilation, Filtration
   - Acoustics
   - Occupant Ability to Adjust System Controls
   - Types of Lighting
4. Equipment and Systems Expectations
   - Space Heating
   - Ventilation
   - Air Conditioning
   - Refrigeration
   - HVAC Controls
   - Domestic Hot Water
   - Lighting Controls
   - Daylighting Controls
   - Emergency Power
   - Other
5. Building Occupant and O&M Personnel Requirements
   - Facility Operation
   - EMCS
   - Occupant Training and Orientation
   - O&M Staff Training and Orientation

TABLE 1

1. *Owner and User Requirements*

What is the primary purpose, program and use of this project? (example: office building with data center)

_____
_____
_____

Describe pertinent project history. (example: standard design development)

_____
_____
_____

Broad Goals

What are the broad goals relative to program needs?

_____
_____
_____

What are the broad goals relative to future expansion?

_____
_____
_____

What are the broad goals relative to flexibility?

_____
_____
_____

What are the broad goals relative to quality of materials?

_____
_____
_____

What are the broad goals relative to construction costs?

_____
_____
_____

What are the broad goals relative to operational costs?

_____
_____
_____

Other broad goals: *(Insert as applicable)*

2. Environmental and Sustainability Goals

What are the project goals relative to sustainability and environmental issues? (example: LEED Silver rating)

What are the project goals relative to energy efficiency? (example: Meet EPACT)

What are the project goals and requirements for building siting that will impact energy use?

What are the project goals and requirements for building facade that will impact energy use?

What are the project goals and requirements for building fenestration that will impact energy use?

What are the project goals and requirements for building envelope that will impact energy use?

What are the project goals and requirements for building roof that will impact energy use?

Other: *(Insert as applicable)*

3. Indoor Environmental Quality Requirements

What is the intended use for all spaces? For all spaces that have an intended use that is not readily apparent from the space name, provide this information in Table 1.

_____
_____
_____

What is the anticipated occupancy schedule (numbers of occupants and time frames) for all occupied spaces? Indicate the default occupancy schedule below and for all spaces that have an occupancy schedule that differs from the default, provide this information in Table 1.

_____
_____
_____

What accommodations for after-hours use are required? (example: access control, lighting controls, HVAC controls) Indicate general accommodations required below and for all spaces that have special requirements, provide this information in Table 1.

_____
_____
_____

What are the lighting, temperature, humidity, air quality, ventilation and filtration requirements for all spaces? Indicate the default requirements below and for all spaces that have a requirement that differs from the default, provide this information in Table 1.

Lighting: _____
Temperature: _____

Humidity: _____
Air Quality: _____

Ventilation: _____

Filtration: _____

What are the acoustical requirements for all spaces? Indicate the default acoustical requirements below and for all spaces that have a requirement that differs from the default, provide this information in Table 1.

_____
_____
_____

What is the desired level of occupant ability to adjust systems controls? Indicate the default desired levels below and for all spaces that have a desired level that differs from the default, provide this information in Table 1.

Lighting: _____

Temperature: _____
Humidity: _____
Air Quality: _____

Ventilation: _____

What, if any, specific types of lighting are desired? (example: fluorescent in 2x2 grid, accent lighting, particular lamps)

_____
_____
_____

4. Equipment and System Expectations

(Complete for each category as applicable or indicate "none identified" or "N/A". Add desired features information for other anticipated commissioned systems as applicable)

Indicate desired features for the following commissioned system: Space Heating

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility: _____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Ventilation

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility: _____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Air Conditioning

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Refrigeration

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies:

Indicate desired features for the following commissioned system: HVAC Controls

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Domestic Hot Water

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Lighting Controls

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Daylighting Controls

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Emergency Power

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Other - _____

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

5. Building Occupant and O&M Personnel Requirements

How will the facility be operated? Who will operate the facility?

_____
_____
_____

Will the facility be connected to an EMCS? If so, what are the interface requirements? (example: monitoring points, control points, scheduling)

_____
_____
_____

What is the desired level of training and orientation for building occupants to understand and use the building systems?

_____
_____
_____

What is the desired level of training and orientation for O&M staff to understand and maintain the building systems?

_____
_____
_____

Table 1

Space	Use / Activity	Num of Occs	Special Occupancy Schedule	After Hours Use Reqmt.	Special Cooling Reqmt.	Special Heating Reqmt.	Special Humidity Reqmt.	Special Ventil./Filtration Reqmt.	Special Acoustic Reqmt.	Special Lighting Reqmt.	Special Occup Adjustability Reqmt.

APPENDIX N
LEED Requirements for Multiple Contractor Combined Projects

Not Used

APPENDIX O
LEED STRATEGY TABLES

LEED Credit Paragraph	**LEED Multiple Contractor Responsibilities Table**	Building CTR Substitution Permitted	Site CTR Substitution Permitted	**Required Points Strategy**	NIC=Not in Contract N/A=Not Applicable R=Required
BUILDING: TACTICAL EQUIPMENT MAINTENANCE FACILITIES					
PAR	**FEATURE**				**REMARKS**
CATEGORY 1 – SUSTAINABLE SITES					
SSPR1	Construction Activity Pollution Prevention (PREREQUISITE)	NIC	NO	R	Site CTR is primary permittee. Building CTR is secondary permittee to primary permittee.
SS1	Site Selection	NIC	NO		Site CTR responsible.
SS2	Development Density & Community Connectivity	NIC	NO		Site CTR responsible.
SS3	Brownfield Redevelopment	NIC	NO		Site CTR responsible.
SS4.1	Alternative Transportation: Public Transportation Access	NIC	NO		Site CTR responsible.
SS4.2	Alternative Transportation: Bicycle Storage & Changing Rooms	NO	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	NIC	YES		Site CTR responsible.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 2	NIC	YES	1	Site CTR responsible.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 3	NO	NO		Combined Bldg/Site credit.
SS4.4	Alternative Transportation: Parking Capacity	NIC	YES	1	Site CTR responsible.
SS5.1	Site Development: Protect or Restore Habitat	NIC	YES		Site CTR responsible.
SS5.2	Site Development: Maximize Open Space	NIC	YES	1	Site CTR responsible.
SS6.1	Stormwater Design: Quantity Control	NIC	YES		Site CTR responsible.
SS6.2	Stormwater Design: Quality Control	NIC	YES		Site CTR responsible.
SS7.1	Heat Island Effect: Non-Roof	NO	YES		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.
SS7.2	Heat Island Effect: Roof	YES	NIC	1	Building CTR responsible.
SS8	Light Pollution Reduction	NO	NO	1	Combined Bldg/Site credit. Building CTR responsible for building lighting rqmts. Site CTR responsible for site lighting rqmts.
CATEGORY 2 – WATER EFFICIENCY					
WEPR1	**Water Use Reduction (v3 only)**	**NO**	**NIC**	**N/A**	**Building CTR responsible.**
WE1.1	Water Efficient Landscaping: Reduce	NIC	YES	1	Site CTR responsible.
WE1.2	Water Efficient Landscaping: No Potable Water Use or No Irrigation	NIC	YES	1	Site CTR responsible.
WE2	Innovative Wastewater Technologies - OPTION 1	YES	YES		Proposed credit must fall within CTR scope or be coordinated with other CTR.

LEED Credit Paragraph	**LEED Multiple Contractor Responsibilities Table**	Building CTR Substitution Permitted	Site CTR Substitution Permitted	**Required Points Strategy**	NIC=Not in Contract N/A=Not Applicable R=Required
BUILDING: TACTICAL EQUIPMENT MAINTENANCE FACILITIES					
PAR	**FEATURE**				**REMARKS**
WE2	Innovative Wastewater Technologies - OPTION 2	NIC	YES		Site CTR responsible.
WE3	Water Use Reduction	YES	NIC	2	Building CTR responsible.
CATEGORY 3 – ENERGY AND ATMOSPHERE					
EAPR1	Fundamental Commissioning of the Building Energy Systems (PREREQUISITE)	NO	NO	R	Building CTR responsible for commissioning of building systems. Site CTR responsible for commissioning of site systems.
EAPR2	Minimum Energy Performance (PREREQUISITE)	NO	NIC	R	Building CTR responsible.
EAPR3	Fundamental Refrigerant Management (PREREQUISITE)	NO	NIC	R	Building CTR responsible.
EA1	Optimize Energy Performance	YES	NIC	6	Building CTR responsible. Must comply with EPACT
EA2	On-Site Renewable Energy	YES	NO		Proposed credit must fall within CTR scope or be coordinated with other CTR.
EA3	Enhanced Commissioning	NO	NO		
EA4	Enhanced Refrigerant Management	YES	NIC	1	Building CTR responsible.
EA5	Measurement & Verification	YES	NIC		Building CTR responsible.
EA6	Green Power	NO	NIC		Building CTR responsible.
CATEGORY 4 – MATERIALS AND RESOURCES					
MRPR1	Storage & Collection of Recyclables (PREREQUISITE)	NO	NIC	R	Building CTR responsible.
MR1	Building Reuse	N/A	N/A		
MR2.1	Construction Waste Management: Divert 50% From Disposal	NO	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.
MR2.2	Construction Waste Management: Divert 75% From Disposal	NO	NO		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	NO		Aggregate credit. Building CTR responsible for 5% materials reuse. Site CTR responsible for 5% materials reuse.
MR3.2	Materials Reuse: 10%	NO	NO		Aggregate credit. Building CTR responsible for 10% materials reuse. Site CTR responsible for 10% materials reuse.
MR4.1	Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	NO	NO	1	Aggregate credit. Building CTR responsible for minimum 15% recycled materials. Site CTR responsible for minimum 1% recycled materials.
MR4.2	Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	NO	NO		Aggregate credit. Building CTR responsible for minimum 30% recycled materials. Site CTR responsible for minimum 1% recycled materials.

LEED Credit Paragraph	**LEED Multiple Contractor Responsibilities Table**	Building CTR Substitution Permitted	Site CTR Substitution Permitted	**Required Points Strategy**	NIC=Not in Contract N/A=Not Applicable R=Required
BUILDING: TACTICAL EQUIPMENT MAINTENANCE FACILITIES					
PAR	**FEATURE**				**REMARKS**
MR5.1	Regional Materials:10% Extracted, Processed & Manufactured Regionally	NO	NO	1	Aggregate credit. Building CTR responsible for minimum 3% regional materials. Site CTR responsible for minimum 30% regional materials.
MR5.2	Regional Materials:20% Extracted, Processed & Manufactured Regionally	NO	NO		Aggregate credit. Building CTR responsible for minimum 6% regional materials. Site CTR responsible for minimum 60% regional materials.
MR6	Rapidly Renewable Materials	YES	NIC		Building CTR responsible.
MR7	Certified Wood	YES	NIC		Building CTR responsible.
CATEGORY 5 – INDOOR ENVIRONMENTAL QUALITY					
EQPR1	Minimum IAQ Performance (PREREQUISITE)	NO	NIC	R	Building CTR responsible.
EQPR2	Environmental Tobacco Smoke (ETS) Control (PREREQUISITE)	NO	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.
EQ1	Outdoor Air Delivery Monitoring	YES	NIC		Building CTR responsible.
EQ2	Increased Ventilation	YES	NIC		Building CTR responsible.
EQ3.1	Construction IAQ Management Plan: During Construction	YES	NIC	1	Building CTR responsible.
EQ3.2	Construction IAQ Management Plan: Before Occupancy	YES	NIC	1	Building CTR responsible.
EQ4.1	Low Emitting Materials: Adhesives & Sealants	YES	NIC	1	Building CTR responsible.
EQ4.2	Low Emitting Materials: Paints & Coatings	YES	NIC	1	Building CTR responsible.
EQ4.3	Low Emitting Materials: Carpet/Flooring Systems	YES	NIC	1	Building CTR responsible.
EQ4.4	Low Emitting Materials: Composite Wood & Agrifiber Products	YES	NIC	1	Building CTR responsible.
EQ5	Indoor Chemical & Pollutant Source Control	YES	NIC	1	Building CTR responsible.
EQ6.1	Controllability of Systems: Lighting	YES	NIC		Building CTR responsible.
EQ6.2	Controllability of Systems: Thermal Comfort	YES	NIC		Building CTR responsible.
EQ7.1	Thermal Comfort: Design	YES	NIC	1	Building CTR responsible.
EQ7.2	Thermal Comfort: Verification	YES	NIC		Building CTR responsible.
EQ8.1	Daylight & Views: Daylight 75% of Spaces	YES	NIC		Building CTR responsible.
EQ8.2	Daylight & Views: Views for 90% of Spaces	YES	NIC		Building CTR responsible.
CATEGORY 6 – INNOVATION IN DESIGN					

LEED Credit Paragraph	**LEED Multiple Contractor Responsibilities Table**	Building CTR Substitution Permitted	Site CTR Substitution Permitted	**Required Points Strategy**	NIC=Not in Contract N/A=Not Applicable R=Required
BUILDING: TACTICAL EQUIPMENT MAINTENANCE FACILITIES					
PAR	**FEATURE**				**REMARKS**
IDc1.1	Innovation in Design	YES	YES		Proposed credit must fall within CTR scope or be coordinated with other CTR.
IDc1.2	Innovation in Design	YES	YES		Proposed credit must fall within CTR scope or be coordinated with other CTR.
IDc1.3	Innovation in Design	YES	YES		Proposed credit must fall within CTR scope or be coordinated with other CTR.
IDc1.4	Innovation in Design	YES	YES		Proposed credit must fall within CTR scope or be coordinated with other CTR.
IDc2	LEED Accredited Professional	NO	NO	1	
CATEGORY 7 – REGIONAL PRIORITY CREDITS (v3 only)					
	TOTAL			29	

APPENDIX P

LEED Registration of Army Projects

15 April 2010

Number of Registrations
Each building must be registered separately, except multiple instances of a standard building on a shared site may be registered as a single project. If a single registration for multiple buildings is chosen, all buildings under the single registration must earn exactly the same points. Do not register buildings that are exempt from a specific LEED achievement requirement.

Typical Registration Procedure
1. Login, complete the online registration form (see guidance below) at the GBCI LEED Online website http://www.gbci.org/DisplayPage.aspx?CMSPageID=174 and submit it online.
2. Pay the registration fee via credit card (USACE staff: credit card PR&C is funded by project design or S&A funds).
3. GBCI will follow up with a final invoice, the LEED-online passwords and template information.
4. The individual who registers the project online is, by default, the Project Administrator.

Completing the Registration Form

BEFORE YOU BEGIN:
Create a personal account with USGBC if you do not have one.
You will need the following information:
Project name as it appears in P2 (obtain from USACE Project Manager)
Building number/physical address of project
Zip code for Installation/project location
Anticipated construction start and end dates
Total gross area all non-exempt buildings in registration
Total construction cost all non-exempt buildings only (see Project Details Section instructions below)

ACCOUNT/LOGIN INFORMATION
1. The person registering the project **must have an account with USGBC** (login and password) to complete the form. Go to http://www.gbci.org/ , click on “register a project” at the drop-down menu for project certification (at the top of the page) and select “register now for LEED 2009” to start the project registration process. If you have an account, login with your email address and password and select “register new project” to proceed. If you do not have an account, you may select “register a new account” and follow the instructions. It is recommended that you create an account separately on the USGBC website before you start the form. IMPORTANT: USACE team members are members of USGBC and are eligible for Member prices. USACE team members registering projects should be sure to include the USACE Corporate Access ID in their personal account profile (if you do not have it contact richard.l.schneider@usace.army.mil or judith.f.milton@usace.army.mil for the number).
2. The Account/Login Information section is filled out by the person registering the project. It may be a Contractor or a USACE staff member.

ELIGIBILITY SECTION
Follow directions (accepting the terms and conditions)
Review your profile information and make corrections if needed

RATING SYSTEM SELECTION SECTION
Select single project registration and I know which rating system.
Select the rating system - currently only LEED-NC and LEED for Homes are approved for Army use without special approval.
LEED Minimum Program Requirements: select YES

RATING SYSTEM RESULTS SECTION

Confirm selected rating system.

PROJECT INFORMATION SECTION

Project Title: Begin the project title with a one-word identifier for the Installation. Do not include the word "Fort". After this match the project name used in P2 (contact the USACE Project Manager for this information) and identify the building being registered. Example: "Stewart 4th IBCT - DFAC".
Project Address 1 and 2: This is the physical location of the project. Provide building number, street address, block number or whatever is known to best describe the location of the project on the Installation.
Project City: Installation Name
State, Country, Zip Code: Self-explanatory
Anticipated Construction Start and End Dates: Self-explanatory – give your best guess if unknown. Note that required data entry format is: 1 or 2 digit month/1 or 2 digit date/4 digit year (example 3/23/2010)
Gross Square Footage: Provide total area all buildings in LEED project. Exclude the area of any buildings that are exempt from the LEED achievement requirement (for example, exclude an unconditioned storage shed to be constructed with a barracks complex).
Is Project Confidential: Indicate NO except, if project has security sensitivity (elements that are FOUO or higher security), indicate YES.
Notification of Local Chapter: Indicate NO unless Government/USACE Project Manager requests you to indicate YES.
Anticipated Project Type: Select the most appropriate option from the drop-down menu.
Anticipated Certification Level: Select the applicable option from the drop-down menu (Silver is the usual level).

PROJECT OWNER INFORMATION SECTION

Project Owner First Name, Last Name, email, phone, address: The Project Owner is the USACE Project Manager. Obtain this info from the USACE Project Manager.
Organization: U.S. Army Corps of Engineers. This field MUST be completed this way because it will be used as a search field by higher HQ to find all USACE registered projects. You may supplement it with district name at the end but DO NOT revise or use an acronym.
May we publish Owner information: Indicate NO
Owner Type: Pick Federal Government from drop-down menu.
Project Owner Assertion: Check the box

PAYMENT INFORMATION

Self-explanatory

APPENDIX Q
REV 2.1 – 30 SEP 2010
AREA COMPUTATIONS

Computation of Areas: Compute the "gross area" and "net area" of facilities (excluding family housing) in accordance with the following subparagraphs:

(1) Enclosed Spaces: The "gross area" is the sum of all floor spaces with an average clear height ≥6'-11" (as measured to the underside of the structural system) and having perimeter walls which are ≥4'-11". The area is calculated by measuring to the exterior dimensions of surfaces and walls.

(2) Half-Scope Spaces: Areas of the following spaces shall count as one-half scope when calculating "gross area":

- Balconies
- Porches
- Covered exterior loading platforms or facilities
- Covered but not enclosed spaces, canopies, training, and assembly areas
- Covered but not enclosed passageways and walks
- Open stairways (both covered and uncovered)
- Covered ramps
- Interior corridors (Unaccompanied Enlisted Personnel Housing Only)

(3) Excluded Spaces: The following spaces shall be excluded from the "gross area" calculation:

- Crawl spaces
- Uncovered exterior loading platforms or facilities
- Exterior insulation applied to existing buildings
- Open courtyards
- Open paved terraces
- Uncovered ramps
- Uncovered stoops
- Utility tunnels and raceways
- Roof overhangs and soffits measuring less than 3'-0" from the exterior face of the building to the fascia

(4) Net Floor Area: Where required, "net area" is calculated by measuring the inside clear dimensions from the finish surfaces of walls. If required, overall "assignable net area" is determined by subtracting the following spaces from the "gross area":

- Basements not suited as office, special mechanical, or storage space
- Elevator shafts and machinery space
- Exterior walls
- Interior partitions
- Mechanical equipment and water supply equipment space
- Permanent corridors and hallways
- Stairs and stair towers
- Janitor closets
- Electrical equipment space
- Electronic/communications equipment space

RMS SUBMITTAL REGISTER INPUT FORM

CONTRACT NUMBER

DELIVERY ORDER

TITLE AND LOCATION

Button <-----Right click for Instructions

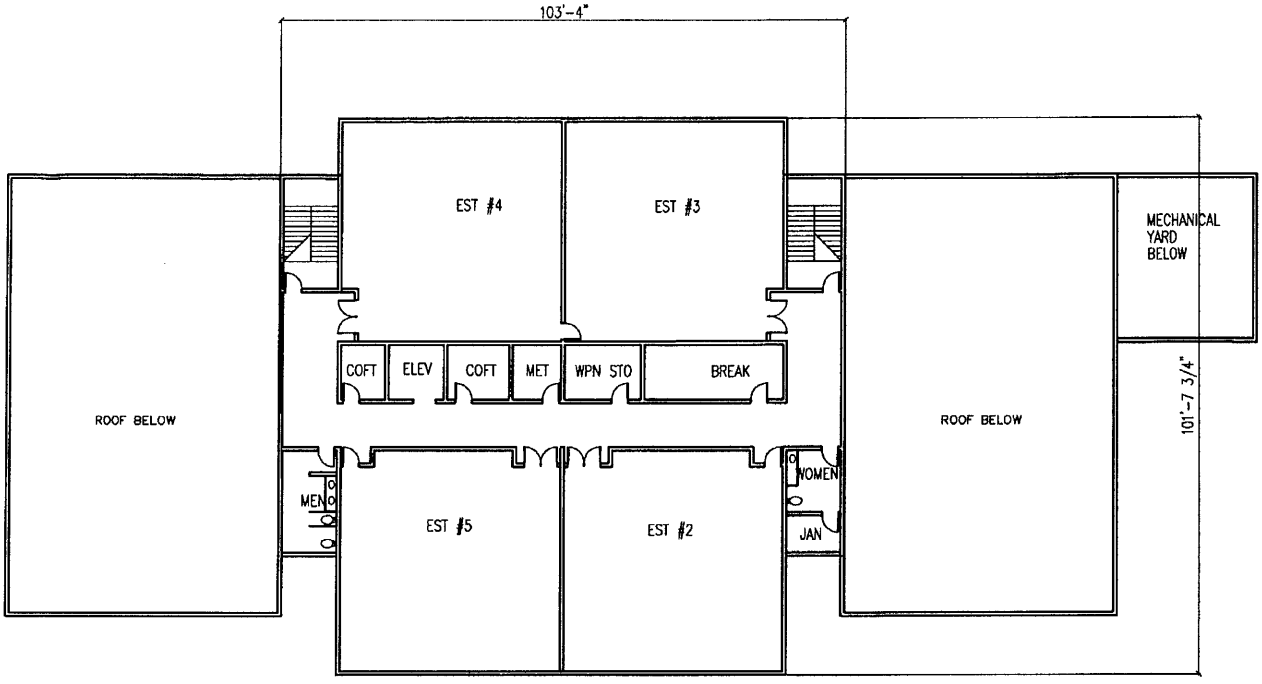
SECTION	PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL											CLASSIFICATION						REVIEWING OFFICE					
			01 - PRECON SUBMITTALS	02 - SHOP DRAWINGS	03 - PRODUCT DATA	04 - SAMPLES	05 - DESIGN DATA	06 - TEST REPORTS	07 - CERTIFICATES	08 - MFRS INSTRUCTIONS	09 - MFRS FIELD REPORT	10 - 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	1.2.3.11	Non-Hazardous Solid Waste Diversion Reports							X					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

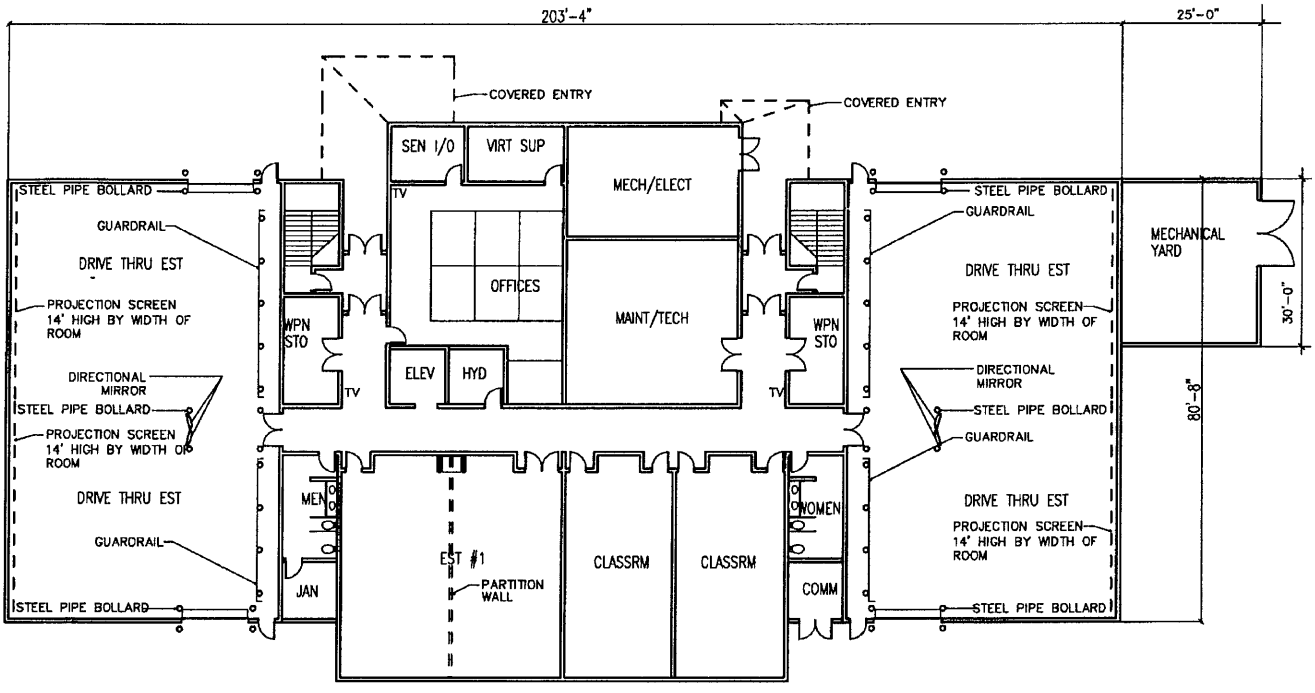
APPENDIX AA
CONCEPT FLOOR PLANS



SECOND FLOOR PLAN CONCEPT DRAWING

VIRTUAL TRAINING FACILITY / GIB

NTS



FIRST FLOOR PLAN CONCEPT DRAWING

0' 4' 12' 24'

VIRTUAL TRAINING FACILITY / GIB

NTS

APPENDIX BB
PROGRAM SPACES AND SQUARE FOOTAGE REQUIREMENTS

CENAO-TS-EA **Date 26 MAY 2010**

Subject: Space Requirements FY 11 PN71125 Virtual Training Facility, Ft. Stewart, GA

GENERAL INSTRUCTION PROGRAM

FIRST LEVEL

Drive Through for vehicles (4 @ 2000sf each = 8,000sf)	**8,000**
Classroom 21 (2 @ 750sf each = 1,500)	**1,500**
EST- Large Weapons (1@1600sf each)	**1,600**
Offices	**1,250**
Maintenance Technicians	**1,200**
WPN Storage Bulk	**300**
WRT Supervisor	**150**
WTA	**120**
Senior I/O Officer	**120**
Supply Officer	**120**
EST I/O	**100**
Men's Toilet	**150**
Women's Toilet	**150**
Janitor's Space	**100**
Communication	**100**
Vestibule	**100**
Stair	**250**
Circulation	**1,360**
Mechanical Room	**500**
Electrical Room	**100**
Subtotal area First Floor	**17,270**

CENAO-TS-EA **Date 26 MAY 2010**

Subject: Space Requirements FY 11 PN71125 Virtual Training Facility, Ft. Stewart, GA

GENERAL INSTRUCTION PROGRAM

SECOND LEVEL

EST Small (4 @ 1600sf each = 6,400SF)	**6,400**
EST I/O (3 @ 100sf each)	**300**
Automation	**150**
C/W Contractors (2 @ 100 each = 200)	**200**
WPN Storage Bulk	**400**
Men's Toilet	**150**
Women's Toilet	**150**
Janitor's Space	**50**
MET	**100**
COFT (2 @ 100 each = 200)	**200**
Break-room	**250**
Circulation	**1,100**
Mechanical Room	**0**
Electrical Room	**0**
Subtotal Second Floor	**9,450**
Total Area (17,270 + 9,450 = 26,720)	**26,720**

APPENDIX CC
GROUND WATER

The General contractor shall remove, contain, and test all ground water encountered in excavations during construction for lead content. Only after independent lab test results indicate that such ground water lead content is below acceptable levels based on EPA standards shall ground water be released into the storm drainage system. If test results show a ground water lead content above EPA acceptable levels for release into the storm drainage system, then the contractor shall take appropriate steps as required by the EPA to properly dispose of such ground water. Permits required if discharge volume exceeds allowable limits set by GA EPD of 10,000 gallons per day shall be the responsibility of the general contractor.

The contractor shall include in their fee proposal a unit price for the containment, testing, permitting, and proper disposal for ground water released into the storm drainage system and for water required to be disposed of that cannot be released into the storm drainage system.

The contractor shall include a lump sum amount of $5,000 in their fee proposal for initial handling, and testing of ground water.

APPENDIX DD

EST CLASSROOM REQUIREMENTS AND CONCEPT FLOOR PLAN

EST CLASSROOM REQUIREMENTS and

CONCEPT FLOOR PLAN

15 July 2010

1. **MRAP Vehicles to be driven through the EST classrooms on the first floor vary in size and weight. The minimum vehicles which need to be accommodated by this facility are:**

   MAXPRO, Height 159 inches (13.25') Width 120 inches (10') GVWR 43,500 lbs

   RG33, Height 134 inches (11.17') Width 113 inches (9.42') GVWR 40,000 lbs

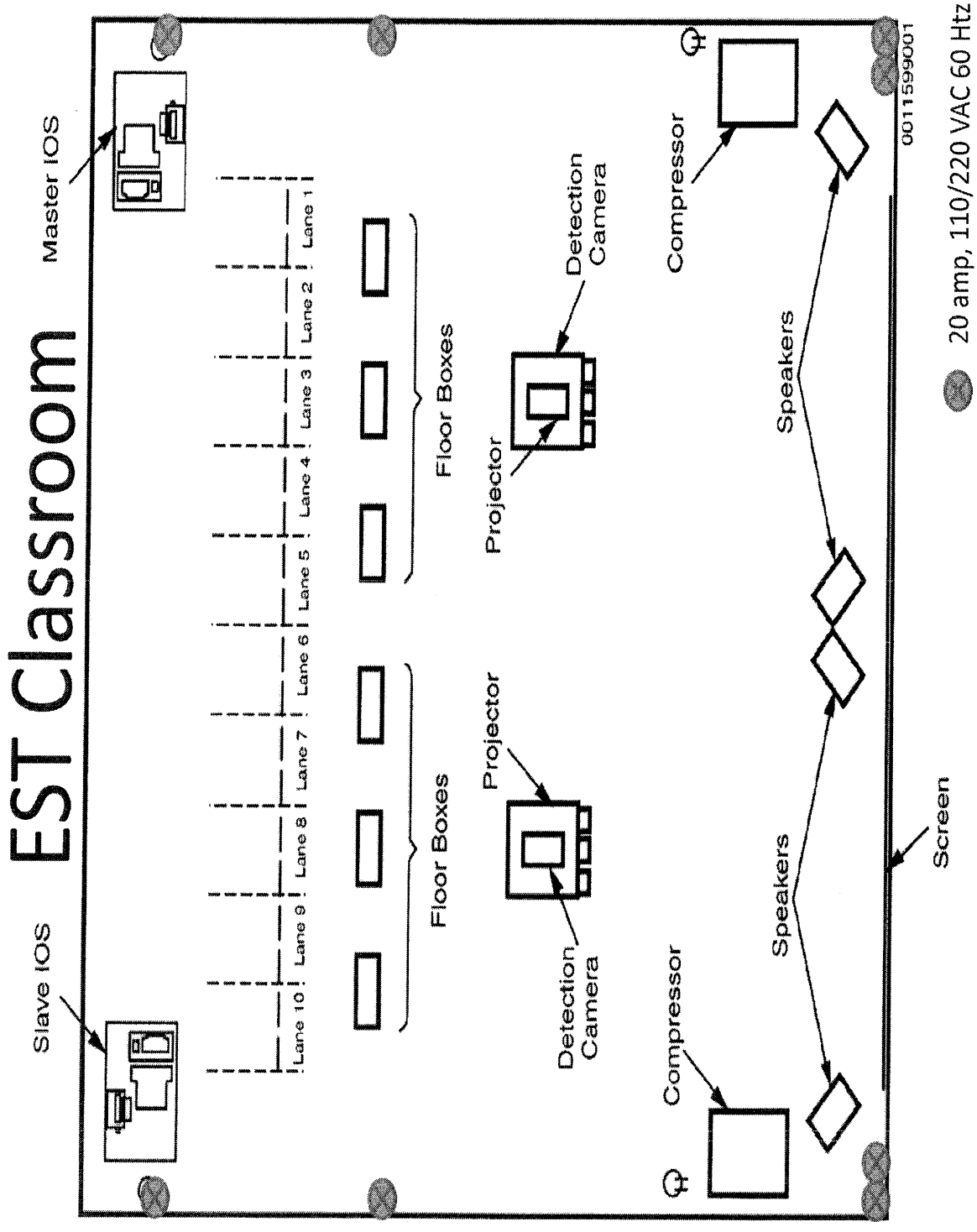
   Caiman , Height 143 inches (11.92') Width 121 inches (10.08') GVWR 50,620 lbs

   Cougar, Height 123 inches (10.25') Width 103 inches (8.58') GVWR 52,000 lbs

2. **Minimum Electrical/Data Requirements;**

   The minimum electrical requirements per EST Classroom are 8 dedicated 20 amp electrical receptacles and breakers rated 110/220 VAC 60 Htz. There are overhead projectors, and detection cameras connected to two computer terminals which are used to run the various scenarios and record testing results. There are four speakers, and two compressors per EST Classroom. Overhead or under floor accessible pathways will need to be provided for the required data connections between all equipment. Each drive through ground floor EST classrooms will consist of one 10 lane EST suite with drive through for vehicles similar to the set up in Bldg 1310. This also applies to all 4 EST classrooms on the second floor except there is no drive capability. The EST classroom indicated as space EST 1 on the first floor concept plan will have this capability as well as typical classroom 21 electrical/data requirements. See the next page for a conceptual layout of a typical EST Classroom.

   In multi-purpose classrooms provide multi-mode fiber to connect the data switches in the TR to a smaller data switch in each classroom, to be located in a secured cabinet/TE. Based on IAW I3A standards and IA policies, the cabinet in each classroom could serve as the TE. The cabinet should be segregated into 2 sections, with each section having a mechanical cipher lock: One lock to secure the NIPRNET equipment; and the other lock will secure the user IT/AV equipment (such as a closed mission network switch or AV equipment like DVD player).

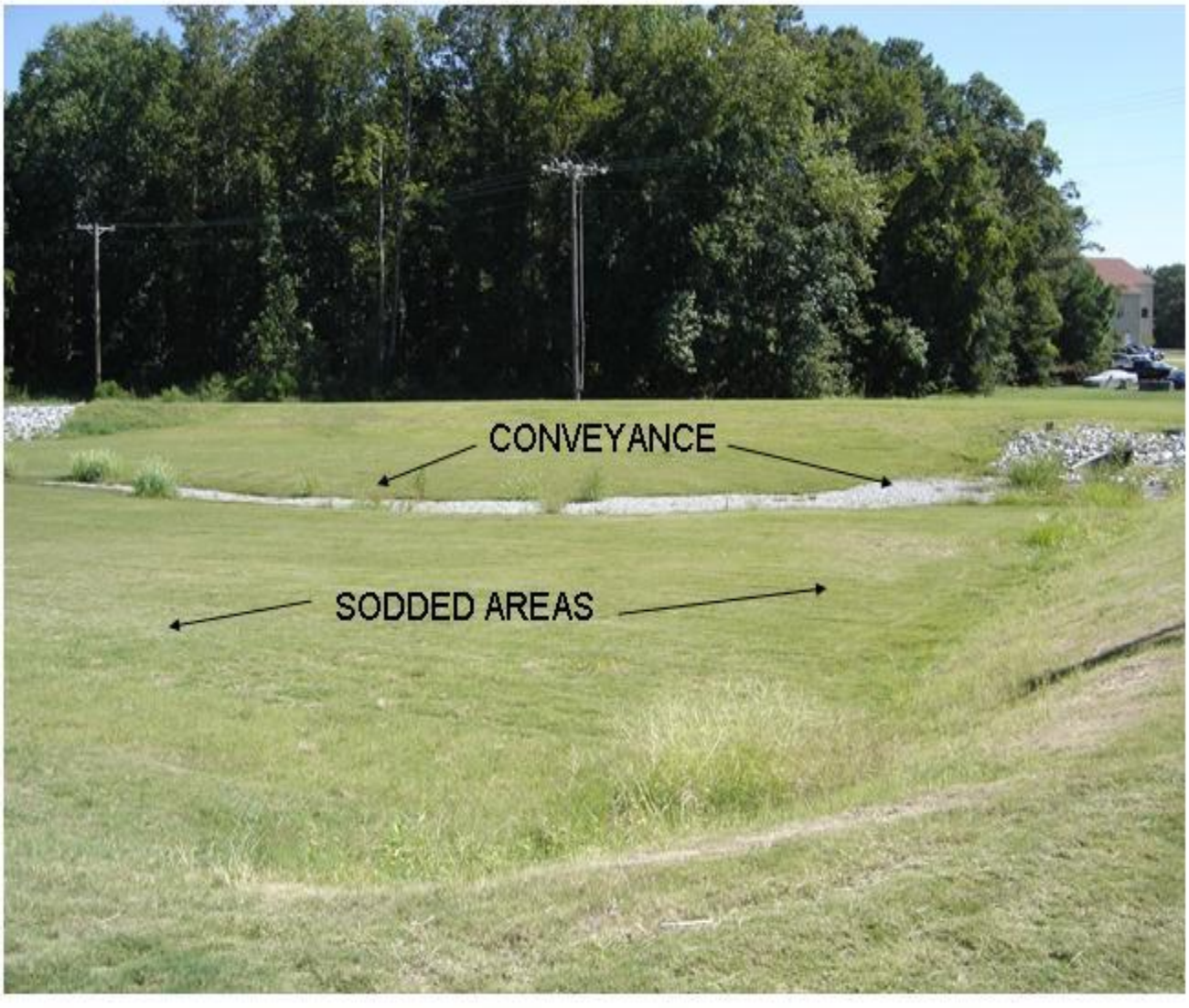

EST Classroom
Master IOS
Slave IOS
Lane 1
Lane 2
Lane 3
Lane 4
Lane 5
Lane 6
Lane 7
Lane 8
Lane 9
Lane 10
Floor Boxes
Floor Boxes
Projector
Detection Camera
Projector
Detection Camera
Compressor
Compressor
Speakers
Speakers
Screen
001159901
20 amp, 110/220 VAC 60 Htz

APPENDIX EE

Dry Detention Pond Specifications

Dry Detention Pond Specifications

1. The final grade of the floor shall be a minimum 1 foot above seasonal high water table.
2. A conveyance to be installed from all inlets to outfall.
   a. Conveyance final grade to be at or above seasonal high water table elevation.
   b. Conveyance to be lined with geo-textile and with four (4”) of stone over same. Graded 2”- 4” stone.
   c. Conveyance to be a minimum of 4 feet wide.
3. The following areas will be sodded:
   a. Bottom of detention pond
   b. Inside side slopes of detention pond
   c. Outward, ten feet from the edge of detention pond.
4. All other disturbed areas will be seeded with temporary and permanent grass.
5. Use erosion control blankets, permanent and/or temporary, blankets as required, to prevent erosion rills.


CONVEYANCE
SODDED AREAS

MINIMUM OF TEN
FEET OF SOD

APPENDIX FF
CANOOCHEE EMC PROJECT RESPONSIBILITES AND GENERAL CONTRACTOR INSTALLATION REQUIREMENTS

Canoochee
Electric Membership Corporation
P. O. Box 487 / Reidsville, Georgia 30453 / Phone (912) 557-4391

Canoochee Electric Membership Corporation (CEMC)
Project Responsibilities
At
Fort Stewart and Hunter Army Airfield:

Canoochee EMC is responsible for the operation, maintenance, and power line extension of the Fort Stewart (FS) and Hunter Army Airfield (HAAF) electrical distribution systems. Line extensions for new construction projects are designed and constructed in accordance with Rural Utility Specifications (RUS) and the National Electric Safety Code (NESC.)

Line extensions to serve new facilities at Fort Stewart and HAAF may be overhead or underground construction as required by project specifications or site conditions.

Overhead Construction
CEMC will furnish all labor and overhead distribution equipment such as wood poles, transformers, transformer assemblies, primary and secondary conductor, overhead conductor pole hardware, guying, secondary, services, and grounding as required for overhead construction.

Underground Construction
CEMC will furnish all labor and underground distribution equipment such as pad mounted transformers, transformer assemblies, concrete pad, riser assemblies, primary and secondary conductor (600 amp and smaller), meter bases, meters, lighting fixtures, lighting poles, lighting contactor, and lighting conductor as required for under ground construction.

Note: Due to Force Protection requirements, transformers will be located at least 33 feet from any building with an occupancy of 11 people or greater. When the occupancy exceeds 50 people the distance increases to 82 feet. Protection bollards will be installed by GC if required.

Conductor Terminations
CEMC will make all electrical connections of conductors terminating in over head and pad mounted transformers, street lighting, and primary conductor riser assemblies.

Conduit
In accordance to a meeting between DPW and Savannah COE on March 19th 2009, (excluding IBCTC) Canoochee EMC will provide and install for underground construction all primary conduit of 4" to 6" diameter buried a minimum of 48 inches deep for COE Projects as directed per project. Conduit will be of appropriate schedule type PVC, XLP or PE. This directive will require coordination between the GC through the appropriate DPW project manager and Canoochee EMC. Canoochee EMC requires a minimum of 14 and a maximum of 21 calendar day's written notice of the date when the installation of underground facilities may

Drawn	Edited	Approved	Date	Rev.
Ricky Simons	Charlie Brewer	Michael Wasson	4/13/10	5

1

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commence. To be considered ready for the installation of CEMC underground facilities, a site must be at final grade, but not at final compaction. CEMC will in no way be responsible for additional work required due to additional compaction or the relocation of facilities when proper coordination is not received.

GC shall furnish and install for underground construction all service entrance conductors (larger than 600amp) and conduit buried a minimum of **30 inches deep**. Conduit will be of appropriate schedule PVC, XLP or PE.

Metering
The GC will install self contained meter bases for 600 Amp and less load centers. Meter bases will be mounted on the building exterior between 3'-6" and 5'-0" above finished grade. For load centers greater than 600 Amp, Current Rated Transformer (CT) metering will be furnished by and installed by CEMC at the transformer location.

Metering (Continued)
Self-Contained meter bases will be issued to the GC (or electrical sub-contractor) at the CEMC Operating Headquarter locations shown in Table 1

Canoochee EMC Operating Headquarter				
Base	Address	Building	Contact Name	Phone Number
Fort Stewart	83 Italy St.	1099	Shawn Crosby	912-459-1112
Hunter Army Airfield	443 S. Douglas St.	1035	Joe Holton	912-459-1113

Table 1

Coordination / Scheduling
An overall project schedule will be provided by the GC to CEMC at the start of the project for CEMC to design the electrical requirements, order equipment and manage lead time and delivery schedules, clear right of way, and install the electrical facilities.

Changes of the project schedule by the GC affecting CEMC's schedule and/or scope of work will require the approval by CEMC and the Department of Public Works (DPW) or Corp of Engineering (CO) Project Manager (as appropriate.)

Adequate time will be provided by the GC in the project schedule for CEMC construction or demolition activities.

Contractually, CEMC can not start any project until a Notice to Proceed (NTP) has been received from our contracting officer.
Third party jobs fees must be paid before construction can begin.

The GC will ensure the site is on grade elevation prior to the start of work by CEMC. The CEMC work area will need to be clear of obstructions such as materials; equipment lay down areas, earthen backfill, and/or temporary services and portable structures.

Ricky Simons	Charlie Brewer	Michael Wasson	4/13/10	5	2
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The GC will provide site coordination between CEMC and its other project sub-contractors to ensure CEMC is allowed full un-restricted access to the site to install or demo of facilities in a start to competition timeframe.

CEMC will require a reasonable number of working days to complete the installation of the underground facilities. CEMC requires a minimum of 14 and a maximum of 21 calendar day's written notice of the date when the installation of underground facilities may commence. To be considered ready for the installation of CEMC underground facilities a site must be at final grade, but not at final compaction. CEMC will in no way be responsible for additional work required due to additional compaction or the relocation of facilities when proper coordination is not received.

Examples of Coordination/Scheduling conflicts:

1. CEMC is scheduled to trench where soil compaction for a parking lot is complete. CEMC trenching is not typical of compaction levels for parking lots. CEMC will not be liable for parking lot repairs if scheduled after soil compaction by GC.
2. CEMC is scheduled to install street light poles on foundations, but GC has a portion of the foundations installed. Revisit may increase project cost.
3. CEMC is scheduled to set transformers, but secondary conductors have not been installed by electrical sub-contractor and stubbed up at the transformer for termination by EMC. Revisit may increase project cost.

Canoochee EMC Scheduling Contacts

Base	Primary	Phone Number	Secondary	Phone Number
Fort Stewart	Walt Lee	912-459-1112 extension 3003	Sam Alexander	912-459-1112 extension 3002
Hunter Army Airfield	Joe Holton	912-459-1113 extension 6000	Daniel Phillips	912-459-1113 extension 6004

Table 2

Equipment Lead Time

The project schedule should include an appropriate amount of time for CEMC to order long lead time equipment as shown in Table 3.

Typical Equipment Lead Times	
Component	*Months*
Transformers, Switchgear, Circuit Protection (Reclosers)	5
Lighting Poles (Aluminum) and Luminaries	3
Overhead or Underground conductor, hardware, meters	1

Table 3

Equipment Lead Time (continued)

Fast track projects such as portable classrooms, temporary mobile offices, and other such similar structures present a challenge as contractors often erect a temporary facility faster than lead times for Aluminum street light poles and decorative fixtures.

Ricky Simons	Charlie Brewer	Michael Wasson	4/13/10	5	3
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For fast track lighting projects, wood pole construction with standard Utility (gray) Cobra head luminaries should be considered.

Right of Way Clearing
The Forestry Department at Fort Stewart and Hunter Army Airfield will coordinate the removal of all merchantable timber in the Right of Way path of Canoochee EMC's power distribution system. Upon removal of merchantable timber, Canoochee EMC will use their discretion in the determination of the right of way width and type of vegetation for removal or disposal.

Lighting
Design Parameters
The following pages define the lighting and pole standards offered by Canoochee EMC for installation at Fort Stewart and Hunter Army Airfield.

CEMC will provide lighting equipment specifications for poles, fixtures, bases, break a way bases, foundations, and base mounted pole anchor bolt patterns.

Lighting should be designed to meet both IES guidelines and Dark Sky initiatives. Considerations should be given in the design for prevention of glare and light intrusion into adjacent areas.
Base Mounted poles should be selected for areas where the poles are to be installed within 4 feet of the curb. For high traffic impact, concrete foundation should be specified for installation 36 inches above final grade. For low traffic impact, concrete foundation should be specified for installation 3 inches above final grade. For areas near road level breakaway bases will be used. **For areas with no traffic impact, Direct Bury poles should be specified.**

High Pressure Sodium and Metal Halide lighting are both utilized on Fort Stewart and Hunter Army Airfield. High Pressure Sodium is preferred for Residential areas, Motor Pools, and along major Roadways. Metal Halide is preferred for Commercial areas, Offices, and the Garrison areas of the base.

Security Cameras
Canoochee EMC does not allow security cameras to be attached to or mounted on distribution power or street lighting poles. (NESC /NEC Code Compliance requirement.)

Bollard Lighting
CEMC does not offer new bollard lighting in the lighting standards.

General Contractor installation Requirements
GC will furnish and install all foundations and conduit for underground lighting. All lighting conduits shall be 11/2"to 2" diameter and buried a minimum of **30 inches deep.** Each conduit will contain a pull string.

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General Contractor installation Requirements (Continued)
GC will install all concrete pole base foundations with three feet protruding above grade in areas where vehicles park or travel in close proximity to the street light location and/or foundations with breakaway bases. Direct buried street light poles will be installed by CEMC in areas where poles are protected or located out of vehicular parking or travel.

GC will furnish and install the anchor bolts and a pole ground in all street lighting foundations at the time the foundations are poured.

Utilities Protection at Fort Stewart
Canoochee EMC is a charter member of the Fort Stewart Hunter Army Airfield Utility Coordination Committee (FSHAAUCC). This committee is a peer group of contractors, locators, and utilities meeting the second Wednesday of each month to discuss underground dig law requirements and issues at Fort Stewart and Hunter Army Airfield.

All underground construction on both military bases is permitted by the Georgia Utilities Protection Center. Excavation requirements in Georgia require a Dig Permit obtained through the one call center..... Call before You Dig Number 1-800-282-7111.

Contractors are invited to attend these meetings to meet with utility representatives and base locator contractors for a safer work environment and protection of the military's underground infrastructure.

Ricky Simons	Charlie Brewer	Michael Wasson	4/13/10	5	5
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Canoochee
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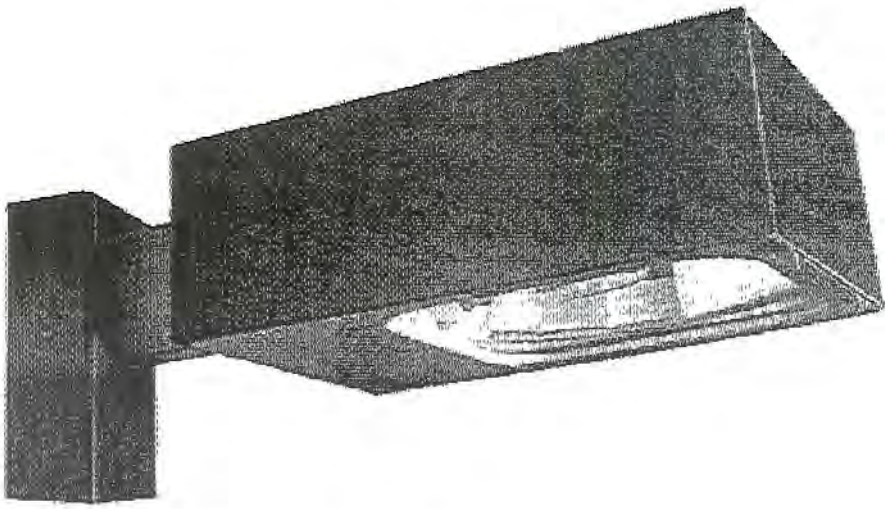
Shoebox Fixture **General Electric (GE) DECASHIELD Series**
Dark Bronze finish

Recommended for use along roadways or in parking lots where large amounts of light are desired and aesthetics are of a primary concern. The adapter allows designer to install one, two, three, or four lights per pole.



Shoebox

	Voltage	Wattage	Type	Design
M27-S17-BR	SYL Multi-Volt	175W	MH	Shoebox-Bronze
M27-S25-BR	SYL Multi-Volt	250W	MH	Shoebox-Bronze
M27-S40-BR	SYL Multi-Volt	400W	MH	Shoebox-Bronze
M27-S100-BR	SYL Multi-Volt	1000W	MH	Shoebox-Bronze

Note: These units are multi-wattage.

Shoebox Accessories

M25-S1-BR	Pole Top Tenon Adapter Square

Ricky Simons	Charlie Brewer	Michael Wasson	4/13/10	5
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Post Top Fixture **General Electric (GE) Salem Post Top Series**
Dark Bronze or Black Finish

These fixtures are recommended for use in residential areas and Garrison areas subject to high likelihood of damage. Typical example: walkways, barracks and office buildings.

Standard Post Top

	Voltage	Wattage	Type	Design
M26-PS10-BL	SYL Multi-Volt	100W	HPS	Salem Post Top-Black
M26-PS10-BR	SYL Multi-Volt	100W	HPS	Salem Post Top-Bronze
M27-PS15-BR	SYL Multi-Volt	150W	MH	Salem Post Top-Bronze
M27-PS15-BL	SYL Multi-Volt	150W	MH	Salem Post Top-Black

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Canoochee
Electric Membership Corporation
P. O. Box 487 / Reidsville, Georgia 30453 / Phone (912) 557-4391

Premium Post Top Fixtures **General Electric (GE) Dynamics 547 Series**
Black finish

Recommended for use in high visibility residential neighborhoods where the likelihood of damage is small. These fixtures may be used with fiberglass or aluminum poles.

Premium Post Top

	Voltage	Wattage	Type	Design
M26-PD15-BK	SYL Multi-Volt	150W	HPS	D547 Post Top-Black

These units used in housing areas only.

Ricky Simons	Charlie Brewer	Michael Wasson	4/13/10	5
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Canoochee
Electric Membership Corporation
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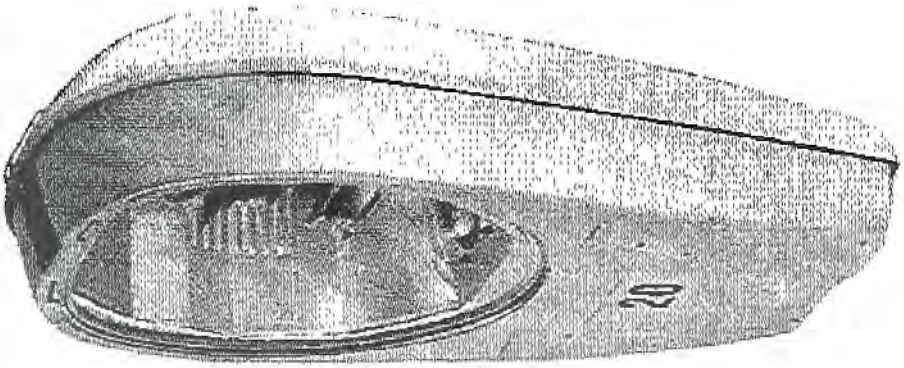
Standard Cobra head **General Electric (GE) M250R Series**
Grey Finish recommended for use along roadways where aesthetics are not of primary concern



Standard Cobra head

Model	Voltage	Wattage	Type	Design
M26-25C	SYL Multi-Volt	250W	HPS	Cobrahead-Gray
M26-40C	SYL Multi-Volt	400W	HPS	Cobrahead-Gray

Ricky Simons	Charlie Brewer	Michael Wasson	4/13/10	5	9
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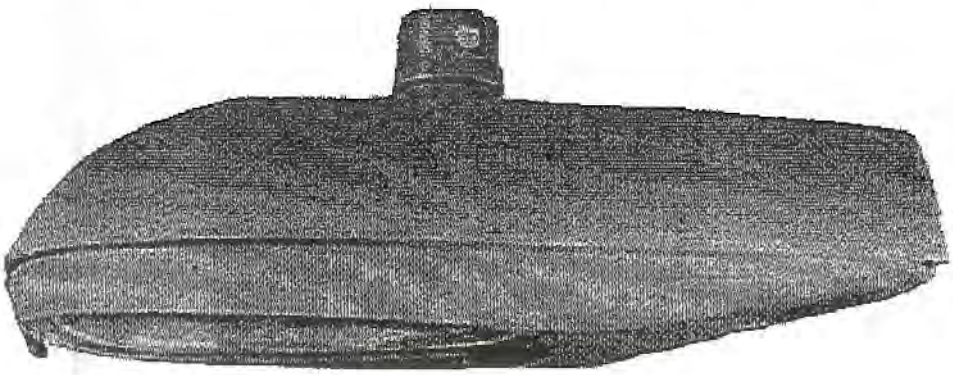
Canoochee
Electric Membership Corporation
P. O. Box 487 / Reidsville, Georgia 30453 / Phone (912) 557-4391

Premium Cobrahead Fixtures Cut-Off **General Electric (GE) M-250R Series**
Bronze or black finish

Recommended for use in non-residential areas where aesthetics are not of primary concern.



Premium Cobrahead

M26-C25-BR	SYL Multi-Volt	250W	HPS	Cobrahead-Bronze
M26-C40-BR	SYL Multi-Volt	400W	HPS	Cobrahead-Bronze
M27-C40-BR	SYL Multi-Volt	400W	MH	Cobrahead-Bronze

Premium Cobrahead Accessories

M25-C1-BR	8' Bronze Aluminum Arm Tenon Mount
M25-C2-BR-4	4' Bronze Aluminum Double Arm Tenon Mount
M25-C2-BR-8	8' Bronze Aluminum Double Arm Tenon Mount

Ricky Simons	Charlie Brewer	Michael Wasson	7/23/09	4	10
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Canoochee
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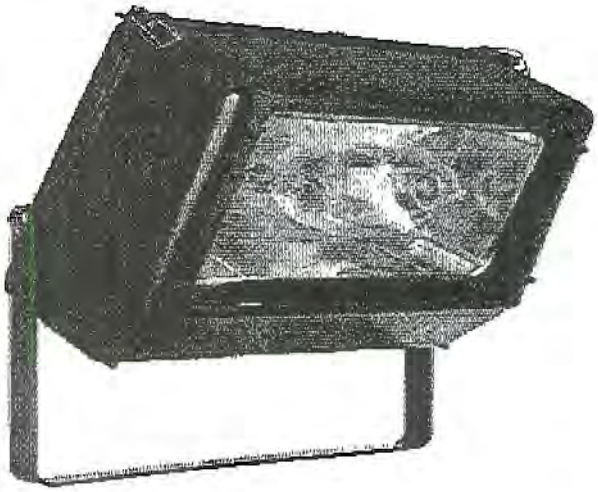
Power Floodlight **General Electric Power Directional Flood Light**
Dark Bronze

Recommended for use in areas where large areas need to be lighted and aesthetics are of secondary importance.



Floodlights

	Voltage	Wattage	Type	Design
M26-F25-BR	SYL Multi-Volt	250W	HPS	PowerFlood-Bronze
M26-F40-BR	SYL Multi-Volt	400W	HPS	PowerFlood -Bronze
M26-F100-BR	SYL Multi-Volt	1000W	HPS	PowerFlood –Bronze
M27-F40-BR	SYL Multi-Volt	400W	MH	PowerFlood -Bronze
M27-F100-BR	SYL Multi-Volt	1000W	MH	PowerFlood –Bronze

Note: 1000 watt flood lights are special order only.

Floodlight Accessories

M25-F2-BR	Double Floodlight Arm Tenon Mount Bronze
M25-F3-BR	Three Floodlight Arm Tenon Mount Bronze
M25-F4-BR	Four Floodlight Arm Tenon Mount Bronze

Ricky Simons	Charlie Brewer	Michael Wasson	7/23/09	4
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Canoochee
Electric Membership Corporation

P. O. Box 487 / Reidsville, Georgia 30453 / Phone (912) 557-4391

Direct Burial Poles

PA-16-BR	16' Aluminum Pole Bronze (12' mounting height)
PA-25-BR	25' Aluminum Pole Bronze (22' mounting height)
PA-35-BR	35' Aluminum Pole Bronze (30' mounting height)
PF-25-BL	25' Fiberglass Pole Black (Used in housing areas only)

Base Mount Poles

PA-B12-BL	12' Aluminum Pole Black (12, Mounting height, requires level foundation with grade or 13.5' w/ breakaway base)
PA-B12-BR	12' Aluminum Pole Bronze (12, Mounting height, requires level foundation with grade or 13.5' w/ breakaway base)
PA-B28-BL	28' Aluminum Pole Black (28' Mounting height, requires level foundation with grade or 29.5' w/ breakaway base)
PA-B28-BR	28' Aluminum Pole Bronze (28' Mounting height, requires level foundation with grade or 29.5' w/ breakaway base)
PA-B33-BL	33' Aluminum Pole Black (33' mounting height, requires base 36" above grade)
PA-B33-BR	33'-Aluminum Pole Bronze (33' Mounting Height, requires base 36" above grade)

Note: Black poles are special order only.

Pole Foundations

PFOUNDXS	Pole Foundation Extra Small Used for flood lights at grade
PFOUNDS	Pole Foundation Small Used for base mounting 3" above grade
PFOUNDL	Pole Foundation Large Used for base mounting 36" above grade
PFOUNDXL	Pole Foundation Extra Large Used for base mounting 36" above grade

Miscellaneous Accessories

M25-PHOTO	Photo Cell Controlled Contactor
M25-TIME	Timer Controlled Contactor
P-BREAK-BL	Breakaway Base-Black adds 1.5 feet to height
P-BREAK-BR	Breakaway Base-Bronze adds 1.5 feet to height

Ricky Simons	Charlie Brewer	Michael Wasson	7/23/09	4
Drawn	*Edited*	*Approved*	*Date*	*Revision*

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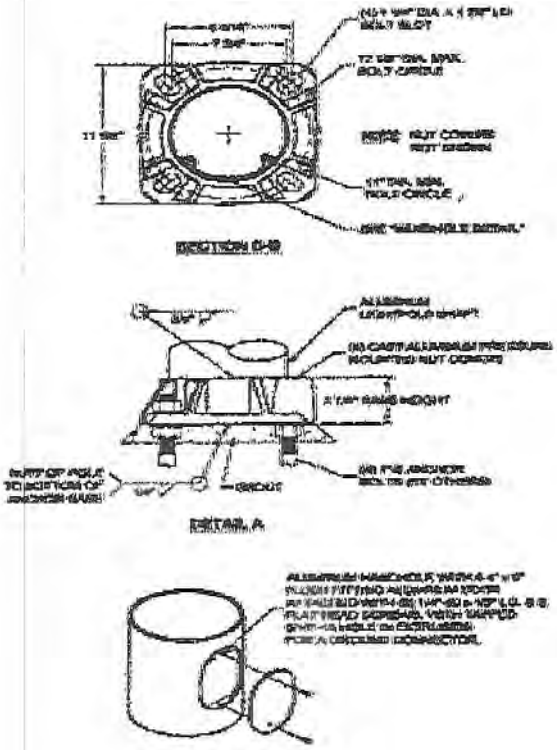

Ricky Simons	Charlie Brewer	Michael Wasson	7/23/09	4
Drawn	*Edited*	*Approved*	*Date*	*Revision*

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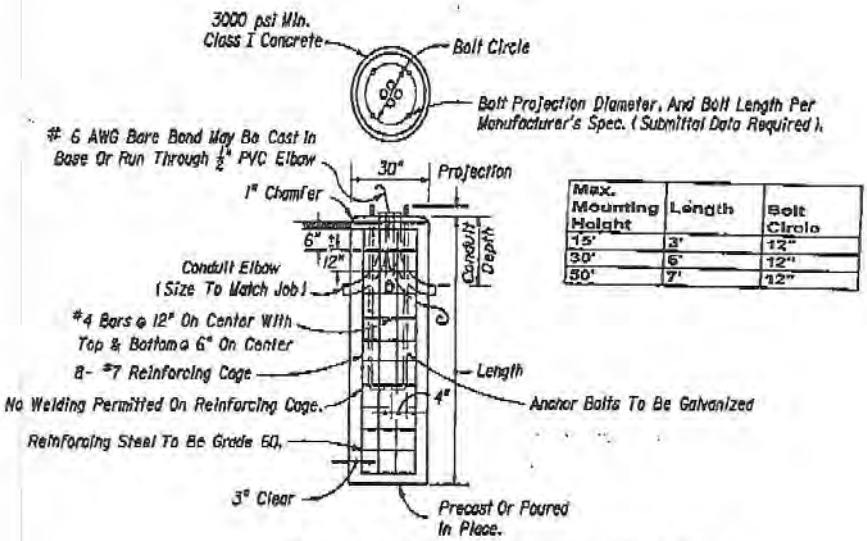
Foundations apply only to slopes of 1:4 or flatter.



Max. Mounting Height	Length	Bolt Circle
15'	3'	12"
30'	6'	12"
50'	7'	12"

METAL POLE CONCRETE FOUNDATION DETAIL

Note: For 15' or smaller pole near traffic, Foundation should be 5' in length with 30" above grade.

Ricky Simons	Charlie Brewer	Michael Wasson	7/23/09	4
Drawn	*Edited*	*Approved*	*Date*	*Revision*

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04/20/2010 TUE 10:43 FAX 19124082063 015/018

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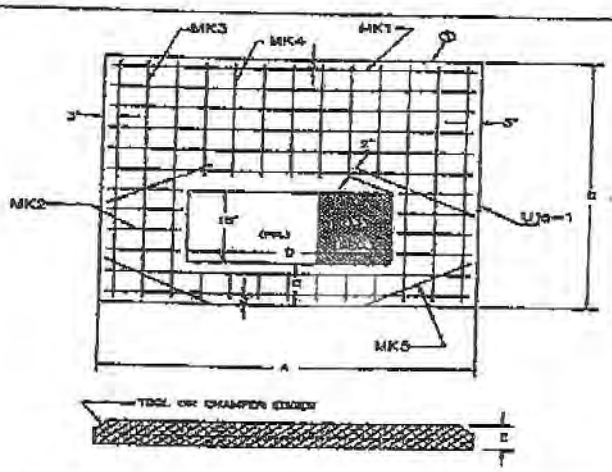

PAD	3-PHASE TRANSF. KVA	DIMENSIONS IN INCHES					REINFORCING BARS				
		A	B	C	D	E	MK1	MK2	MK3	MK4	MK5
#1	75, 112 1/2, 150, 225, 300, 500	70	[illegible]	10	42	8	7 #4 70"	4 #4 40"	8 #4 57"	8 #4 25"	4 #4 20"
#2	750, 1000 1500, 2500	104	102	10	54	8	12 #4 88"	6 #4 [illegible]"	8 #4 94"	7 #4 65"	4 #4 28"

NOTES:

1. CONCRETE TESTING, 3000 POUNDS MIN. PER SQUARE INCH; 4.5 TO 6% ENTRAINED AIR. 3/4" MAXIMUM SIZE AGGREGATE.
2. REINFORCING STEEL, ASTM-A615 GRADE 60, PLACE APPROX. 3" O.C. EACH WAY AND SECURELY TIED TOGETHER.
3. MINIMUM CONCRETE COVER OVER REINFORCING STEEL 2 INCHES UNLESS NOTED.
4. WOOD FLOAT FINISH, LEAVING NO DEPRESSIONS.

THREE PHASE TRANSFORMER CONCRETE PADS

2000 UM1-6C

http://image.hpphoto.com/rs/404F1F6C-5B9D-4EF9-B694-FCC24EB67D16/large-screen-... 3/20/2009

Ricky Simons	Charlie Brewer	Michael Wasson	7/23/09	4
Drawn	*Edited*	*Approved*	*Date*	*Revision*

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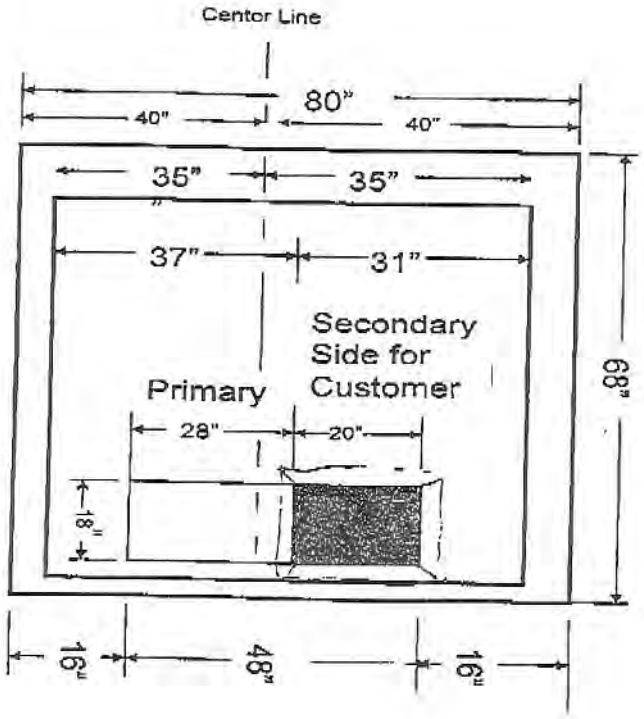
Note: Contractor to install all service entrance conduit in Secondary Side of pad opening.



Three Phase Transformer Pad

Canoochee EMC

Ricky Simons	Charlie Brewer	Michael Wasson	7/23/09	4
Drawn	*Edited*	*Approved*	*Date*	*Revision*

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Color Coding of Customer's Service Conductors. Color coding of Customer's service conductors shall be as follows in Table 3.G. [Phase arrangement shall be (A), (B), (C), front to back, top to bottom, or left to right, as viewed from the front of the service equipment and metering equipment. (N) shall be the neutral.]:

TABLE 3.G
COLOR CODING OF CUSTOMER'S SERVICE CONDUCTORS

Service Type	*Phase*			
	A	*B*	*C*	*N*
120/240V, Single-Phase, 3-Wire	RED	BLACK		WHITE
120/240V, 3-Phase, 4-Wire, DELTA				
Through Metering Equipment	RED	BLACK	ORANGE (High-Leg)	WHITE
In Service Equipment	RED	ORANGE (High-Leg)	BLACK	WHITE
120/208V, Single-Phase, 3-Wire	RED	BLACK		WHITE
120/208V, 3-Phase, 4-Wire, WYE	RED	BLACK	BLUE	WHITE
277/480V, 3-Phase, 4-Wire, WYE	BROWN	YELLOW	PURPLE	NATURAL GRAY

Green shall be used for the *grounding conductor* only.

Marking of conductors at all termination points will be approved for sizes #6 AWG and larger.

Per COA Ordinance No. 000928-107, Section 110-35 Color Coding of Electrical Conductors – ALL COLORS SHALL BE CONSISTENT THROUGHOUT EACH SYSTEM. (Four wire wye secondary services from AE to multiple occupancy buildings require that the Customer install a four wire wye service to each occupent to satisfy to color consistency requirement of this COA ordinance.)

Note: Normal Rotation For Canoochee EMC Is Clock-Wise.

Ricky Simons	Charlie Brewer	Michael Wasson	7/23/09	4
Drawn	*Edited*	*Approved*	*Date*	*Revision*

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APPENDIX GG
LINES OF DEMARCATION FOR
CANOOCHEE EMC

Canoochee
Electric Membership Corporation
P. O. Box 487 / Reidsville, Georgia 30453 / Phone (912) 557-4391

Line of Demarcation for Canoochee EMC facilities at Fort Stewart and Hunter Airfield

Canoochee EMC operates and maintains the base electrical distribution systems at Fort Stewart and Hunter Army Airfield. The interface between Canoochee EMC's facilities and those operated and maintained by others (such as Department of Public Works (DPW)) is known as the ***line of demarcation.***

Transmission lines and structures entering both military bases are owned by Georgia Power and operated and maintained by the Georgia Transmission Authority.

Electrical substations on Fort Stewart and Hunter Army Airfield are owned, operated, and maintained by Georgia Power Company and Canoochee EMC.

Electrical overhead and underground distribution circuits serving both bases originating in the electrical sub-stations are privatized and operated and maintained by Canoochee EMC.

Canoochee EMC and Georgia Power Company also provides primary metered electrical distribution from off base electrical sources to Camp Oliver, CACTAF, Shoot House, and other ranges and complexes north of Highway 144. Canoochee EMC operates and maintains the distribution power line and transformation up to the secondary meter point.

1-Ricky Simons	8/1/08	Michael Wasson	8/1/08	0
Drawn	*Date*	*Approved*	*Date*	*Revision*

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Lighting circuits originating from CEMC transformers are operated and maintained by Canoochee EMC.

Specifically, for underground construction,
.

- From the source (transformer) to the point of metering is the responsibility of Canoochee EMC.

- From the point of metering to the first downstream device such as a breaker or the main electrical panel, load is the responsibility of the Military, Department of Public Works, Winn Army Hospital, National Guard, or any other agencies or facilities responsible for operation and maintenance of their facility.

- **Example**: Services less than 600 amp capacity are metered on a meter pole or the side of building. Services greater than 600 amp capacity is usually metered on the transformer.

Additional examples of the line of demarcation for over head, underground, and lighting applications are shown on pages 3 and 4.

For additional information, contact the following Canoochee EMC offices for assistance on questions regarding the line of demarcation:

Base	During Business Hours	After Business Hours
Fort Stewart	**912-459-1112**	**800-459-0134**
Hunter Army Airfield	**912-459-1113**	**800-459-0134**

Table 1

Note: Business Hours are 7 a.m. to 4 p.m. Monday through Friday.

2-Ricky Simons	8/1/08	Michael Wasson	8/1/08	0
Drawn	*Date*	*Approved*	*Date*	*Revision*

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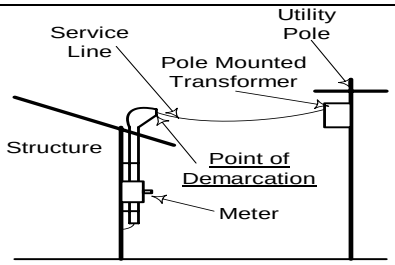
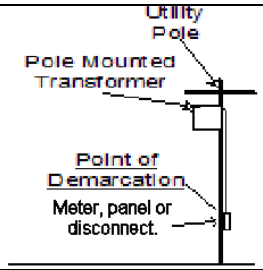
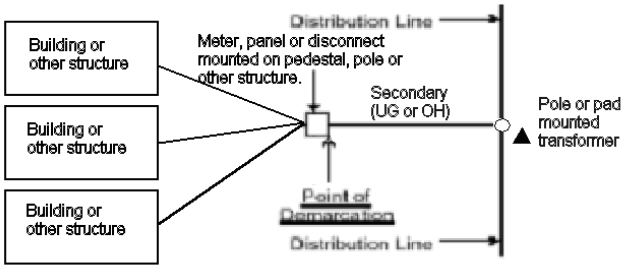
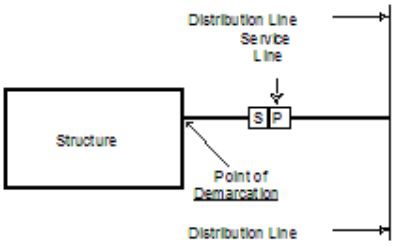
Overhead Service Applies to metered and non-metered locations. Demarcation is at the mast head.	
Underground Secondary on Pole. Demarcation is at the meter, panel or disconnect device.	
Service to Panel, Disconnect device or meter mounted on pedestal, pole or other structure. Not applicable to lighting or residential circuits. Demarcation is at the entry point into the meter, panel or disconnect device.	
Underground Service to non-residential location. Demarcation is at the entry to the panel or disconnect device. Typically for 600 amp or less.	

3-Ricky Simons	8/1/08	Michael Wasson	8/1/08	0
Drawn	*Date*	*Approved*	*Date*	*Revision*

Canoochee
Electric Membership Corporation
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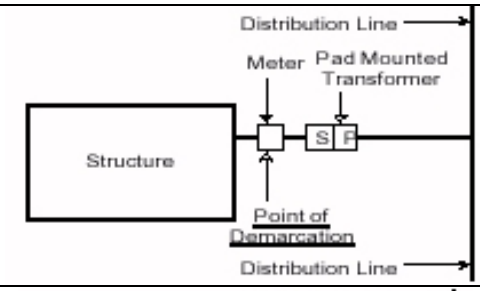
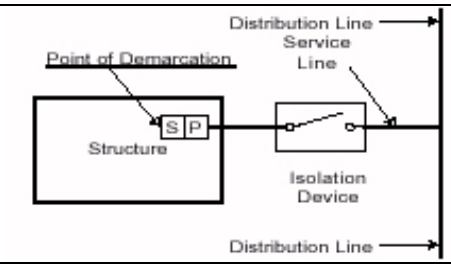
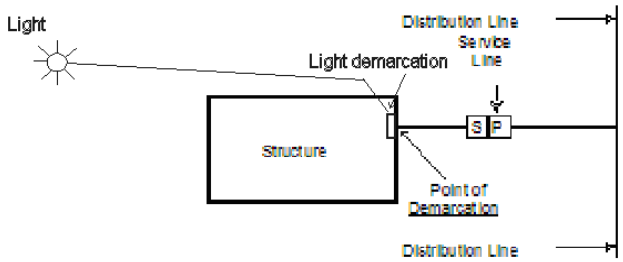
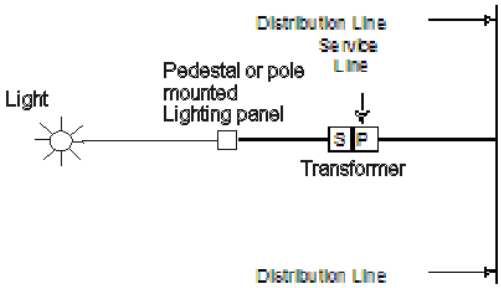
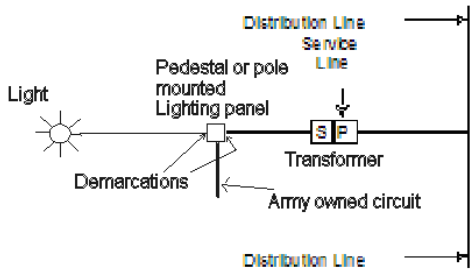
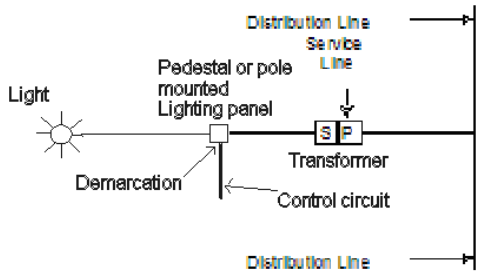
Underground Service to residential location. Applies to units with secondary panels between the transformer and the residence. Demarcation is at the meter or meter base. Typically for 600 amp or greater.	
Indoor Transformers. Demarcation is at the secondary lugs of the transformer.	

Lighting Systems

Lighting circuit originating from a building. Does not include interior panel, contactors or controls. Lighting demarcation at lighting circuit termination into panel.	
Lighting circuits originate from a panel mounted on a pedestal, pole or other structure. The panel is served directly from a transformer. No government-owned circuits exit the panel. No demarcation exists… everything to the light is CEMC-owned.	
Lighting circuits originate from a panel serving Army-owned circuits. Demarcations exist on the incoming and outgoing entry points. The panel and circuits for non-lighting loads are owned by the Army.	

4-Ricky Simons	8/1/08	Michael Wasson	8/1/08	0
Drawn	*Date*	*Approved*	*Date*	*Revision*

Canoochee
Electric Membership Corporation
P. O. Box 487 / Reidsville, Georgia 30453 / Phone (912) 557-4391

Lighting circuits from panel used exclusively for lighting but with external controls. Typical for ball fields. Any external controls and the control circuits are Army-owned.	

5-Ricky Simons	8/1/08	Michael Wasson	8/1/08	0
Drawn	*Date*	*Approved*	*Date*	*Revision*

APPENDIX HH

WATER AND SANITARY SEWER EXTENSION SUBMITTAL FORM

WATER & SEWER EXTENSION SUBMITTAL

Department of Natural Resources
Environmental Protection Division/Coastal District
One Conservation Way
Brunswick, Georgia 31520
912-264-7284

For Projects in the Following Counties: *Appling, Atkinson, Bacon, Brantley, Bryan, Bulloch, Camden, Candler, Chatham, Charlton, Clinch, Coffee, Effingham, Evans, Glynn, Jeff, Davis, Liberty, Long, McIntosh, Pierce, Screven, Toombs, Tattnall, Ware, Wayne*

This Project Includes Sewerage - ____ **Water Supply - _____**

[x] Plans (two copies, P.E. stamped)
[x] Specifications (two copies, P.E. stamped)
[x] General map of proposed extensions, outlined proposed service area, system, and flood plain contours and elevations if applicable.

[x] Project Description, design data
[x] Certified statements (see page 4)
[x] Copy of SWCD Report of Technical Review

Name of Local Government_____

Local government official_____

Mailing Address_____

City, County, State, Zip Code_____

Has Report of Technical Review been obtained? **X** yes _____no
If yes - attach copy. The Report of Technical Review is obtained from the Issuing Authority for Land Disturbing Permits.

Project Name or Identification – _____

Designing engineer(s) **- _____**

GA P.E. # _____ Expiration Date _____

_____
Mailing Address

Name of Developer (if not a local government)

_____
Name

_____
Mailing Address

_____
City, County, State, Zip Code

Sewerage

Wastewater Treatment Facility that will treat wastewater:

Name _____ Permit flow _____MGD

List, by month, the average daily flow (MGD) and effluent concentrations (mg/l) for biochemical oxygen demand (BOD_5), total suspended solids (TSS)and Ammonia Nitrogen if applicable (NH3) for the immediately preceding 12 months for the wastewater (on discharge monitoring reports).

Month	Flow	BOD_5	TSS	NH_3	Month	Flow	BOD_5	TSS	NH_3

Proposed service area (this project).
Immediate _____ acres Ultimate _____ acres

Type of developments: (check as applicable)
Industrial _____ Residential ___ Commercial _____ Other_____ (explain)

Population to be served
Population ____Density/acre _____ person/acre

Per capita wastewater contribution
Average _____ GPD Peak _____GPD

If receiving industrial wastewater, describe industrial waste characteristics.

_____

_____

_____

_____

Quantity _____ GPD. Describe pretreatment received (if any)

_____

(use extra sheet if needed)

Average Design Flow (this project)_____GPD Peak_____ GPD

Design BOD (this project)
Average _____lbs/day

List nominal pipe diameter(s) and length

_____

No., size and type of pump stations (if any)

_____

Submit design calculations with this form.

Water Supply

Number of Sources:_____ Total Production capacity: _____ (gpm)

Number of Service Connections Proposed:_____

Number of Service Connections Existing: _____

Treatment Type:_____ Storage Type __elevated tank_____ Total Volume :_____ (gal)

Maximum Elevation in Development: _____(ft)

Size(s) and Lengths of Water Main in Project:_____

If the project is supplied by an existing water system, please include the following:

Water system Supplier's Name: _____ WSID Number: _____

Static Pressure (point of tie-in): _____(psi) at _____feet elevation

Flow Available: _____ (gpm) at _____ (psi) residual

Size of Water Main at Point of Tie-in to Project:_____

Source of Funding (GEFA,SRF,LOCAL,ETC: _____

Name of the Georgia P.E. that project inspector will report to:

_____ Georgia P.E. _____

Certification Statements Required for Sewerage:

Provide a certified statement by the authority responsible for treatment of wastewater from the project stating a) it has reviewed this project, b) it has adequate transport and treatment capacity to treat wastewater from this project, c) is willing to accept the project wastewater for treatment, d) all provisions of erosion and sediment control program will be enforced and e) none of the sewers, services or any other utilities associated with this project are constructed on or serving structures constructed or proposed to be constructed on solid waste landfills.

Certification Statements Required for Water Supply:

Provide a certified statement from the owner of a new, privately-owned public water system outlining the reasons why the proposed project cannot connect to an existing local governmentally owned water supply system. A written letter from the nearest governmentally owned City or County owned water system, denying owner's request for water service must be attached.

Provide a certified statement by the applicable local government, certifying that the proposed water system development project and the appurtenances pertaining to the water system, are not located on or in close proximity to an abandoned landfill or any other site used for waste disposal.

Provide evidence of availability of water. Requests for subdivisions, when connecting to existing distribution systems, must include documentation that the project has been coordinated with the supplying water system. A twenty-four hour pressure test chart and flow information which was taken at the point nearest to the tie-in of the existing system must be submitted.

General Certification Statement Required for All Projects*:*

Provide a certified statement from the applicable local government that the project is consistent with the approved "Service Delivery Strategy"

Name of the local government who will own and maintain the proposed sewers and/or water mains if it is different from the authority responsible for treatment of wastewater from this project.

Name_____

TO THE BEST OF MY KNOWLEDGE, I CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND CORRECT.

SIGNATURE OF RESPONSIBLE LOCAL GOVERNMENT OFFICIAL OR PRIVATE OWNER (Must be the signature of the local government official if local government is providing water and/or sewer service.)

_____

Name (Print)_____

Title or Position _____

Date _____

Additional Comments:

APPENDIX II

Contractor Storage Areas

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
954 WILLIAM H. WILSON AVENUE
FORT STEWART, GEORGIA 31314-5000

REPLY TO
ATTENTION OF

IMSE-STW-PWF

AUG 05 2009

MEMORANDUM FOR All US Army Garrison Fort Stewart/Hunter Army Airfield Directorates and Directorate of Contracting

SUBJECT: US Army Garrison, Fort Stewart and Hunter Army Airfield Policy Memorandum #10 - Design and Maintenance of Contractor Storage Areas

1. PURPOSE: To set forth the Fort Stewart and Hunter Army Airfield policy regarding on-post contractor operations and storage areas.

2. APPLICABILITY: This policy applies to all contractors conducting operations on Fort Stewart and Hunter Army Airfield.

3. POLICY: On-post contractor operations and storage areas must be maintained in an overall clean and orderly condition. To ensure a minimum level of upkeep and uniformity contractors must:

a. Submit to the Contracting Officer Representative (COR) a detailed sketch depicting the location and view of all facilities placed on, and all improvements to be made to, a storage site; obtain written approval from the Directorate of Public Works (DPW) prior to placing any facilities on or making any improvement to the site; and bear all expenses associated with establishing and maintaining the site.

b. Install and maintain a six foot high chain link fence around all storage yards.

c. Install and maintain appropriate weatherproof signs identifying the contractor and the governing contract; locate such signs on the main gate to each storage yard and on any trailer; and list on said signs the names(s) and phone number(s) of the emergency point(s) of contact responsible for the site and available to resolve problems at all times regarding the site.

d. Install and maintain appropriate weatherproof signs on all storage containers identifying the owner of the container and the governing contact; keep all storage containers inside the fenced storage yards, and align storage containers in a neat and orderly manner.

IMSE-STW-PWF
SUBJECT: US Army Garrison, Fort Stewart and Hunter Army Airfield Policy Memorandum #10 - Design and Maintenance of Contractor Storage Areas

e. Stack and arrange all materials not maintained inside an enclosed storage container in a neat and orderly manner inside the fenced storage yard. Where practical, place all materials on pallets, not directly on the ground.

f. Allow no trash or other debris to accumulate in an unsightly manner; and coordinate with the COR on the proper placement and use for dumpsters.

g. Cut and maintain grass and weeds to a height of no more than 6 inches; and maintain all hedges, bushes and other vegetation growth in a neat and presentable manner.

h. Place cone and barrier materials only when and where needed to protect work areas and collect immediately upon completion of the work.

i. Remove all materials, office trailers, storage containers, fence and utilities at the conclusion of the contract; and restore the site to its original grade and condition including seeding with permanent grasses as required.

4. CONSEQUENCE OF NONCOMPLIANCE: Should a contractor fail to comply with requirement in paragraphs 4a-i, or any changes or modification thereto, the contractor's use of such sites and facilities may be terminated and the contractor will be required to move its operations to an off-post location.

5. PROPONENT: The point of contact is the Directorate of Public Works, Contract Construction Branch, at (912) 767-3872 or DSN 870-3872

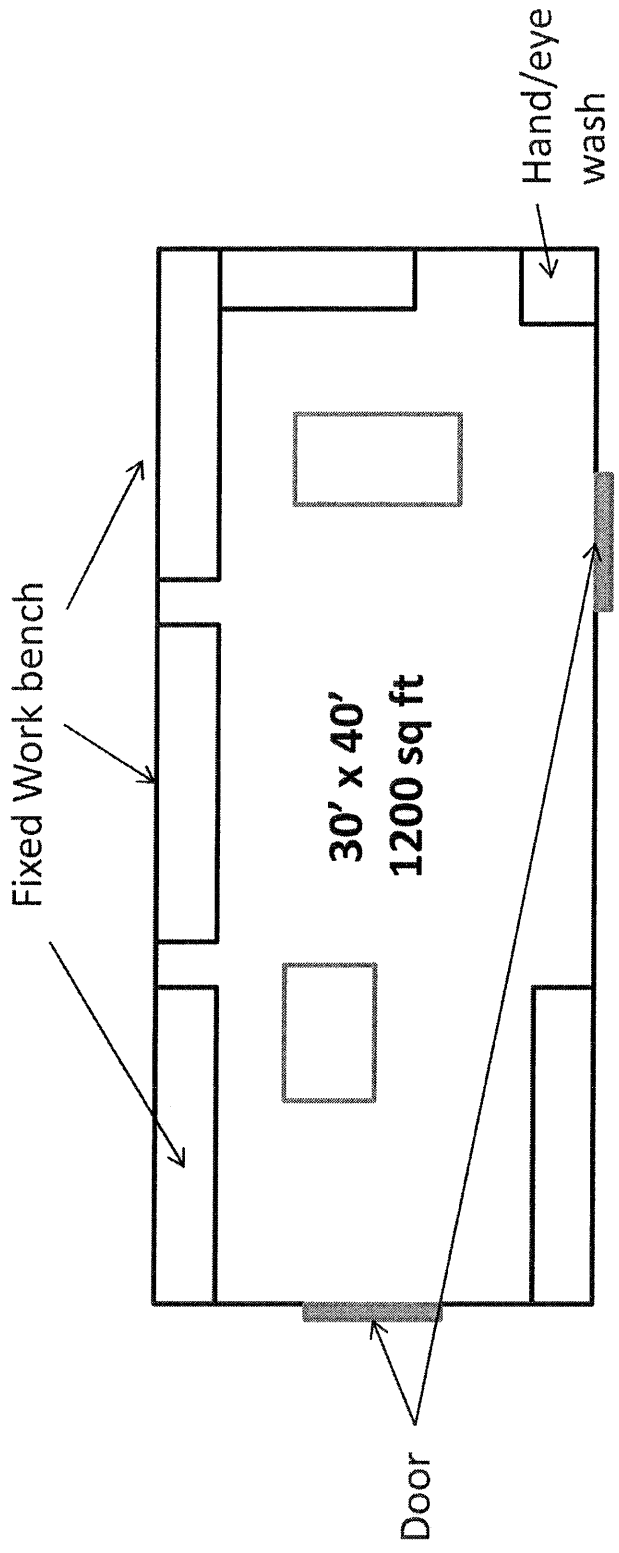
KEVIN W. MILTON
COL, FA
Commanding

APPENDIX JJ
MAINTENANCE TECH REQUIREMENTS AND CONCEPT FLOOR PLAN

Electronic Technician (4)

- Must accommodate 4 WTA electronic technicians.
- Proper ventilation exhaust for the workstation.
- Built in work benches.
- Drop down lighting.
- Center repair station with built-in drawers and parts bins Capable of handling 200 lbs.
- Hand/eye wash station
- Support contract (fire wire) capabilities and GFE Phone/ LAN access.
- Lockable weapon storage units.
- Weapons storage capability
- 6 dedicated 20 amp 110V electrical outlets cabinet mounted.
- Mounted parts bin above workstations.
- Anti static plate/electrical static discharge mat.

Maintenance Tech (4)



2 ea EST Technicians
2 ea COFT Technicians

APPENDIX ZZ

Corrections to Project Specific Requirements

The requirements of this Appendix SUPERCEDE the requirements indicated in Section 01 10 00, Paragraphs 6.1 through 6.13.

6.0 PROJECT SPECIFIC REQUIREMENTS FORT STEWART, GA

6.1. GENERAL

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

6.2. APPROVED DEVIATIONS

The following are approved deviations from the requirements stated in Paragraphs 3 through 6 that only apply to this project.
***3**
6.2.1 Bid Options:

Bid Option One (1): Provide a 6 Way, 4 inch duct line and manholes from communication connection manhole in front of building 1805 at 15th Street to Essayons Avenue.(See utility drawings in Appendix C for approximate route of duct line which is approximately 3500 LF)

Bid Option Two (2): Provide 900 pair AWG copper telephone cables, and 72 strands of single mode fiber optic cables in duct provided in Bid Option One (1). (See utility drawings in Appendix C for approximate location of route for duct line)

NONE

6.3.1. General:

All the appendices, drawings, and specifications included in the RFP package are additional requirements that apply to this project.
***3**
This is a Military Munitions Response Program site and the site investigation is still ongoing.

6.3.1.1. Site Plan

A preliminary site layout plan is provided for design and development purposes. The site plan has been approved by the installation and should not be revised except to accommodate final building design. Develop the site plan based on actual building footprints, within the LIMITS OF CONSTRUCTION shown on the drawings.

6.3.1.2. Limits of Construction Overlap

The LIMITS OF CONSTRUCTION between this project and other adjacent projects overlap as indicated on the site plan. Maintain and repair the site, including permits and fees within the LIMITS OF CONSTRUCTION during the construction of the facilities at no additional cost to the Government. Coordinate overlapping and adjoining construction to avoid conflicts and construct a complete, integrated, and useable project. Initiate project coordination between this and other projects within 14 days of receipt of NTP and biweekly there after. Coordinate with other contractors through the Contracting Officer. Adjacent projects that are or will be under construction during this contract's duration are indicated on the drawings.

6.3.1.3. Future Coordination

A master plan for adjacent projects is not provided. Coordinate project design and construction (e.g., grading, contour lines, finish floor elevations, storm drainage, roads, sidewalks, POV parking, utilities, water, and sewer) with the adjacent projects.

6.3.1.4. On-Post Recycling Center
***3**

There is an operating recycling center on-Post. Fort Stewart/Hunter Army Air Field has a mandatory recycling program. The Installation Mandatory Recycling Guidance is included under Appendix E, Environmental Information - "Recycling Policy". Recyclable materials listed in the mandatory recycling policy generated during the entire term of any construction, demolition, or renovation contract may be turned over to the Ft. Stewart or HAAF Recycling Program. Contractors must contact the COR who will coordinate with the DPW, Environmental Waste Management Section to arrange for turn-in of recyclable materials. In areas where large amounts of scrap metal or cardboard will be generated, it is possible that a collection bin/container could be provided at no cost to deposit these materials.

If any of the materials are recycled by the contractor or taken to a recycling center off post, the contractor will provide copies of all salvage weight/scale tickets showing the in, out, and tare weights of each load to the COR/COTR at the end of each month. The COR/COTR will provide copies of these tickets to the Fort Stewart Waste Management Section.

6.3.1.5. Waters of the U.S. and State Waters

There are no jurisdictional wetlands within the project limits shown.

6.3.2. Site Structures and Amenities

6.3.2.1. Storm Drainage System

Construction and material specified for storm drainage installation shall be in accordance with the State's DOT requirements. All storm drainage lines constructed under organizational vehicle hardstand, entrance drives, or surfaces subject to vehicular traffic shall be reinforced concrete pipe with watertight joints.

6.3.2.2 Finished Floor

The finished floor elevation of the building shall be a minimum of 6 inches above the finished grade and above the 100-year base flood elevation. Finished earth grades shall be sloped away from the building at a rate of 5 percent for the first 10 feet.

6.3.2.3 Dumpsters
***3**
A dumpster enclosure for trash collection and recycling will be provided at the east end of the parking lot. One trash dumpster and one recycling dumpster will be required. The Contractor shall ensure that dumpster screening is compatible with the building it serves. Dumpster enclosure area shall be located as shown on the drawings. Dumpster enclosures' openings must be a minimum of 11 feet wide per dumpster.

6.3.2.4 POV Parking
***3**
Construct a parking lot to provide 116 POV parking spots, ~~six~~ 10 motorcycle parking spaces and bicycle racks. The parking lot shall include five parking spaces designated for vehicles serving individuals with disabilities. These spaces are included in the 116 POV spaces. The parking lot design shall be in accordance with the ADA Accessibility Guidelines and other applicable requirements. The general parking lot layout is shown on the site plan. Provide POV spaces that are a minimum of 9 feet wide by 18 feet deep.

6.3.3. Site Functional Requirements:

6.3.3.1. Storm water Management (SWM) Systems.

(a) Design and construct an SWM system capable of controlling the runoff. Locate the SWM system within the Limits of Construction shown on the drawings.
(b) Additional information:

Design and construction of the POV parking lot, access drives and sidewalks are part of this project. See the attached site plan for layouts.

To the extent possible within the contract cost limit, post development runoff shall be less than or equal to the predevelopment runoff. Storm water design shall also consider future development upstream and that flows through the project site. Wet detention ponds are not allowed. Grade all sites to drain without ponding of water. See Appendix EE-Dry Detention Pone Specifications. A new dry detention pond shall be constructed South and West of the building. Runoff will be routed to the pond by means of pipes and sheet flow from the site and other contributing areas. Detention pond design

should take into consideration the high water table in this area.

Storm water design shall follow the United States Environmental Protection Agencies (USEPA) Technical Guidance on Implementing the Storm water Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act. Utilization of the Coastal Storm water Supplement (CSS) in the Georgia Storm water Management Manual is required.
***3**
(c) Provide a Storm Water Pollution Prevention Plan for approval. Keep the approved plan onsite at all times for inspection by EPA, Georgia Department Natural Resources (Georgia DNR), and Fort Stewart/Hunter AAF environmental personnel. To the extent possible within the contract cost limit, post development runoff shall be less than or equal to the predevelopment runoff. Storm water design shall also consider future development upstream and that flows through the project site. Wet detention ponds are not allowed. Grade all sites to drain without ponding of water. See Appendix E for specification Section 01354 “Erosion and Sedimentation Control”, “Erosion, Sedimentation and Pollution Control Plan Checklist Guidance Document”, specification section 01355A, “Environmental Protection”, and Appendix EE Dry Detention Pond Specifications.
***3**
A dry detention pond shall be constructed south and west of the building. Runoff will be routed to the pond by means of pipes and sheet flow from the site and other contributing areas. Detention pond design shall take into consideration the high water table in this area.

6.3.3.2. Erosion and Sediment Control

In accordance with Section 01 57 20.00 10, provide an Erosion and Sediment Control Plan, approved by the Georgia Soil and Water Conservation Commission and complying with the requirements set forth in the Fort Stewart/Hunter AAF specification Section 01354 entitled Erosion and Sedimentation Control prior to construction. See Appendix E. Any violation to such permits will result in the immediate shutdown of work until corrective measures have been taken at the Contractor’s expense. Implement any additional erosion and sediment control measures necessary to retain sediment within the boundaries of the project sites during all phases of construction. Ensure at least one GSWCC certified individual is available on-site during land disturbing activities (LDA). In the event that the GSWCC certified individual leaves the site and is the only individual on-site that is certified, then stop all LDA until the certified individual returns.

6.3.3.2.1. Notice of Intent (NOI) Document

Submit the NOI, and approved Erosion and Sediment Control Plan, and land disturbance fees in the amount of $80/disturbed acre to DPW Environmental Branch.

The DPW will review the NOI package and provide comments to the Contractor. The Contractor shall revise and resubmit the NOI package for DPW signature. The DPW will submit the completed NOI package via certified mail to the State of Georgia. The NOI package must be received by the Georgia Environmental Protection Division at least 14 days prior to any land disturbing activities.

Early project coordination with the representative from the National Resources Conservation Service (NRCS) at Fort Stewart, Mr. Jim Freeman at 912-767-7829 is highly recommended.

6.3.3.2.2. Notice of Termination (NOT) Document

When 70 percent of the permanent vegetation utilized to stabilize 100 percent of the disturbed acreage is established, coordinate a site visit with the Environmental Division [POC, Russell Moncrief, at (912)767-0271] and submit the NOT to:

DPW-Environmental Division
Attn: Russell Moncrief
550 Frank Cochran Dr., Bldg. 1137
Fort Stewart, GA 31314

The DPW will sign and submit the NOT package via certified mail to the State of Georgia, Environmental Protection Division, provided the DPW Environmental Branch concurs with the Contractor’s 70 percent established vegetation calculation.

6.3.3.3. Vehicular Circulation. Eliminate conflicting movements within parking areas and address any traffic impacts within 1/2 mile of the project limits.

6.4. SITE ENGINEERING

6.4.1. Existing Topographical Conditions

6.4.1.1. See Attachment J Drawings for Topographic, conceptual or final Site Layout Drawing and utility survey. Coordinate the design with tie in points provided. Verify the Government-furnished survey and obtain all additional survey information that may be required for design and construction of the project. Bring any discrepancies which are found in the Government furnished survey to the immediate attention of the Government for clarification. Perform any additional surveys required to complete this project at no additional cost to the Government.

6.4.1.2. Bring any discrepancies which are found in the furnished plans to the attention of the Contracting Officer. Complete the Site Layout Plan based on actual building footprints.

6.4.2. Existing Geotechnical conditions:

See Appendix A for a preliminary geotechnical report.

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

6.4.4. Pavement Engineering and Traffic Estimates:

6.4.4.1. A professional engineer, licensed in the State of Georgia, shall design all rigid and flexible pavements in accordance with the Contractor's final geotechnical report.

6.4.4.2. Additional information

Flexible and rigid concrete pavement shall be designed in accordance with one of the following:

(a) The USACE Pavement Transportation Computer Assisted Structural Engineering (PCASE) program,
(b) American Association of State Highway and transportation Officials (AASHTO) or,
(c) The applicable Georgia Department of Transportation standards.

MRAP Vehicles to be driven through the EST drive through classrooms on the first floor vary in size and weight. The minimum vehicles which need to be accommodated by this facility are:

MAXPRO, Height 159 inches (13.25') Width 120 inches (10') GVWR 43,500 lbs

RG33, Height 134 inches (11.17') Width 113 inches (9.42') GVWR 40,000 lbs

Caiman, Height 143 inches (11.92') Width 121 inches (10.08') GVWR 50,620 lbs

Cougar, Height 123 inches (10.25') Width 103 inches (8.58') GVWR 52,000 lbs

Pavements shall be designed with a life expectancy of 25 years with normal maintenance. The pavement design will consider the vehicles assigned to this facility. The Contractor shall base his actual design thickness on the soil borings data for this project.

Regardless of the pavement design, a minimum flexible pavement section shall consist of 2 inches of asphalt and 6 inches of gravel base.

Pavement markings and traffic signage shall comply with the Installation requirements and with the Manual on Uniform Traffic Control Devices.

All handicap privately-owned vehicle (POV) parking lots shall meet the ADA Accessibility Guidelines for accessible parking spaces.

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

6.4.4.3. Vehicular Parking Areas

(a) Do not use permeable pavements (e.g., segmented pavers, pervious concrete, or pervious asphalt) in vehicular parking and other pavements.
(b) Design parking area surface slopes between 0.5% and 2.0% with a maximum of 3% in the parking stalls.
(c) Design parking areas to avoid ponding.

6.4.4.4. Flexible Pavement Design

(a) Design heavy duty flexible pavements to support H-20 loading.
(b) Design light duty flexible pavements to support 5,000 lb axial loading.
(c) Pavement designs over cohesive soil subgrades require under-drain systems.
(d) The flexible pavement design shall be larger of the calculated flexible design thickness and the minimum flexible design thickness.

6.4.4.5. Rigid Pavement Design

(a) Design rigid pavements to support H-20 loading.
(b) The minimum pavement section shall be 6 inches rigid concrete pavement over 6 inches of compacted aggregate base course.
(c) Pavement designs over cohesive soil subgrades require under drain systems.
(d) Provide a concrete joint layout plan for all concrete pavements. Show joint spacing, joint types, and joint grading.

6.4.4.6. Sidewalks

(a) Locate sidewalks a minimum of 5 feet from main roads and streets. Slope sidewalks to meet all requirements for ADAAG. Construct sidewalks of Portland Cement Concrete.

6.4.5. Traffic Signage and Pavement Markings. Provide traffic signs and markings per Georgia State Department of Transportation requirements and MUTCD.

6.4.6. Base Utility Information

Utilities at Fort Stewart/Hunter AAF are a combination of Government-owned/privately-maintained and completely privatized. The Contractor shall coordinate with the installation and private utilities. Prior to the start of construction, perform utility coordination meetings with the Contracting Officer, Fort Stewart/Hunter AAF utility personnel, and the privatized utility companies. Do not interrupt utility service for buildings adjacent to this project site, except with installation approval. Coordinate approved outages thru the COR. Use the coordination meetings to identify all utility lines impacted by project construction and verify working status of the existing lines. Coordinate the proposed work on impacted utility lines with the appropriate utility company. Utility impacts to be coordinated shall include, but not be limited to, removals, temporary service and removal, and permanent relocations.

Accomplish any utility relocation to construct the facilities in such a manner as to minimize the impact to other users. The Contractor shall bear the cost of installation and relocation of all utilities except as noted otherwise.

6.4.6.1. Electrical Service

Electrical Service on this installation is privatized. Canoochee EMC, the privatized utility company, will design and install primary power distribution equipment and cabling to and within the project site under separate contract. See paragraph 6.9 for additional information.

6.4.6.2. Site Lighting
***3**
Design site lighting as required for safety and convenience. Within 5 feet of the building, provide and install fixtures that are architecturally compatible with the building and blend in well with the surrounding buildings. The privatized utility company will provide and install lighting beyond the building 5-foot line. Design site lighting beyond the building 5-foot line using standard fixtures approved by the privatized utility company. See paragraph 6.9 for additional information as well as Appendix FF “Canoochee EMC Project Responsibilities and General Contractor Installation Requirements”, and Appendix GG “Lines of Demarcation for Canoochee EMC”.

6.4.6.3 Communications Service

The Government owns communication service on this installation. Design and install outside plant (OSP) communication infrastructure including cabling. See paragraph 6.9 for additional information.

***3**

Service into building shall provide 100 pair AWG copper telephone cables and 12 strands of single mode fiber optic cables.

6.4.6.4. Sanitary Sewer Service

The Government owns the sanitary sewer service on this installation. Sanitary sewer service will connect to a new sanitary sewer on the west side of the facility main that is being constructed as part of the new TEMF facility (PN 68796). All design work should be coordinated with the installation.

Government point of contact is Fred Cavedo, 912-767-5499. Refer to Appendix HH for EPD Water and Sanitary Sewer Extension submittal form. Contact Stanley Thomas, Water, Wastewater, and Landfill Compliance Program Manager, Environmental Compliance Branch, Directorate of Public Works 1550 Frank Cochran Drive, Bldg. 1137 Fort Stewart, Georgia 31314-4940; Phone: 912-767-4139.

6.4.6.5. Storm Drainage Service

The Government owns the storm drainage system on this installation. Government point of contact is Fred Cavedo, 912-767-5499.

6.4.6.6.6. Water Service

The Government owns the water service on this installation. Maps are available through the installation. Government point of contact is Fred Cavedo, 912-767-5499. Design and construct water lines from the connection point to the building. The connection point for this project is located near 15th Street as indicated on the utility drawings included in Appendix C and J. Coordinate with installation Environmental personnel on chlorination requirements. The following are required elements for the water distribution system:

a. Backflow prevention devices and post indicator valves on the fire lines where needed
b. Water service connections must be metered
c. Air release valves at high points in the water mains.

***3**

Refer to Appendix HH for EPD Water and Sanitary Sewer Extension submittal form.

Contact Stanley Thomas, Water, Wastewater, and Landfill Compliance Program Manager, Environmental Compliance Branch, Directorate of Public Works, 1550 Frank Cochran Drive, Bldg. 1137 Fort Stewart, Georgia 31314-4940; Phone: 912-767-4139 for Water system permit requirements.

6.4.6.7. Natural Gas Service

Natural gas is available in the project area along 15th street. If it is determined the natural gas is needed for this project, the design, routing, tie in, and installation of the exterior gas distribution system (up to and including the gas meter/regulator assembly) shall be accomplished by the Design/Build contractor. Natural gas meters to be provided shall be compatible with the buildings DDC system. Fort Stewart purchases natural gas through a Defense Energy Supply Company (DESC). The utility is distributed locally by Atlanta Gas Light. The installation receives natural gas on a firm basis. Point of contact at Fort Stewart for gas service line capacity, size, routing, and points of connection to the gas distribution system is Fred Cavedo, 912-767-5499.

6.4.6.8. Hydronic Piping

No existing chilled water or heating water distribution lines are available in or near this project area.

6.4.6.9. Local Telephone Service

The local telephone company will design and install outside plant (OSP) local telephone service (e.g., subscription service to permanent party barracks). Coordinate with the local telephone company to assure ductline entry into the building.

6.4.6.10. Cable TV Service

Cable TV service on this installation is privatized. The local cable company will design and install CATV distribution to and within the project site. Coordinate with the local cable company to assure ductline entry into the building. See paragraph 6.9 for additional information.

6.4.7. Cut and Fill

Earth cut and fill slopes shall not exceed 3 horizontal to 1 vertical. Retaining walls are an option to limit the amount of cut and fill.
***3**
A 3 to 4 foot tall retaining wall is anticipated along the southeast boundary of the site (approximately 160 LF). The westernmost portion of the existing fence for Building 1808 will need to be relocated above the retaining wall.

A small man-made pond exists on the westerly side of the project. The installation has authorized that this pond may be filled to accommodate the construction of this project.

6.4.8. Borrow Material

Borrow areas are available on the installation. The borrow pit locations have been indicated on the drawing included in Appendix J and for borrow pit procedures see Appendix E “Borrow Pit Procedures”. The contractor shall confirm the availability of the required fill quantities with the COR since borrow pits are available on a first come, first serve basis. Due to high groundwater levels, dewatering/pumping of borrow pits must be expected. Proper sedimentation and erosion control BMP’s must be implemented. Waste area is not available on the installation.

6.4.9. Haul Routes and Staging Areas

6.4.9.1. Haul routes are shown on the site drawings. The Installation must approve any requested changes to the haul routes shown. Coordinate with the installation through the COR.

6.4.9.2. Additional Site Requirements

(a) Employee parking. Employees shall park privately owned vehicles in an area designated by the Contracting Officer. This area will be within reasonable walking distance of the construction site. Employee parking shall not interfere with existing and established parking requirements of the Installation.
(b) Temporary Utilities. All temporary utilities (e.g., water, sewer, electrical, and telecommunications) will be at the Contractor’s expense and subject to Fort Stewart/Hunter Army Air Field regulations. The utility cost information is located at Appendix K. Negotiate and contract with the privatization utility directly without benefit of the Government. The contractor shall not rely on permanent power infrastructure for temporary power.
(c) Storage Area. Trailers, equipment, or materials shall not be open to public view with the exceptions of those items which are in support of ongoing work on any given day. Locate the staging area within the Limits of Construction unless previously approved by the Contracting Officer and the Installation. Comply at all times with the Fort Stewart Command Policy Memorandum, Subject: Design and Maintenance of Contractor Storage Areas. A copy of the memorandum is included in Appendix II.

6.4.10. Clearing and Grubbing:

6.4.10.1. Tree Removal and Timber Harvesting Requirements

Submit a tree removal plan as soon as possible after receiving Notice-to-Proceed. Show the new tree line on a site layout plan. The new tree line should take into account all buffer requirements, roads, wetlands, streams, etc. Trees on the project site are Government property and therefore the Government through the established Fort Stewart/Hunter AAF timber disposal process will sell all merchantable trees identified and approved for removal. Delineate the clearing limits by surveying and flagging the perimeter trees with red flagging tape. Notify the Government when this has been accomplished. Designate a representative knowledgeable about the clearing limit surveying and flagging to answer any questions that may arise regarding clearing limits. The Government and Contractor will determine the site start point of the clearing operation. Once the Contractor delineates clearing limits , the Government will determine the volume of merchantable timber to be harvested and then advertise, sell, and remove all merchantable timber within 120 days of notification of the clearing limits delineation. Clearing will begin no later than 60 days after the Government and Contractor have agreed on the clearing limits. Merchantable / saleable timber classification is driven by local market conditions and the discretion of the Government timber harvester. Pine and hardwood trees greater than 6 inches in diameter at 4.5 feet above the ground (DBH) and at least 25 feet to a 3-inch diameter top shall be considered as merchantable timber. Trees may be classified as non-merchantable due to size (too small or too large), deformities, accessibility to harvest the trees,

metal contamination, and/or any other factor that may affect the Timber Harvest Contractor's ability to efficiently harvest, transport, and sell the trees. Timber harvesting, to include removal of non-merchantable trees as fuel wood, can be implemented before the issuance of a NPDES permit, provided that the guidelines established by the Georgia's Best Management Practices (BMP's) for Forestry Manual are followed, and no ground disturbing activities in areas to be constructed or developed (to include grading and grubbing) occur until the NPDES permit and soil erosion control plan is in order. Ground disturbance activities and guidelines for the stabilization of sites such as, but not limited to, roads, stream crossings, log decks, skid trails, firebreaks and others must follow the Georgia Forestry BMP's manual recommendations. After the Government's Timber Harvest Contractor has cleared a minimum of 5 acres, the Contractor may begin any clearing and grubbing required under the contract once all required environmental permits are in place. Remove all trees or any portions of trees remaining on site after the Timber Harvest Contractor has completed his operations.

6.4.10.2. Timber Harvesting in Wetlands and Streamside Management Zones

If clearing of trees is required within 25 feet of the wrested vegetation of either side of a stream and/or state water, acquire a stream buffer variance from the Georgia Environmental Protection Division (EPD) before the trees can be removed. If at the time of timber harvest, stream buffer variance permits have not been acquired, then the stream buffer areas must remain untouched until the required stream buffer variance permits have been issued. Cut and stockpile all merchantable trees in stream buffer areas. Stockpile all merchantable trees that meet the following criteria on the foot print of the construction site for pick-up by the Government timber harvest contractor.

(a) Pine Sawtimber is a minimum of 10 inches diameter at breast height (DBH) and 25-foot length to an 8-inch top.

(b) Pine Pulpwood is a minimum of 6 inches in DBH and 25-foot length to a 3-inch top.

(c) Hardwood Pulpwood is a minimum of 6 inches DBH and 25-foot length to a 3-inch top.

(d) Hardwood Sawtimber is a minimum of 12 inches DBH and 16.5-foot length to a 12-inch top.

6.4.10.3 Harvesting Streamside Management Zones and Wetlands

(a) Use site-specific equipment and methods to minimize water quality impacts, including high-flotation, low-pressure harvesting equipment, shovel logging, or cable yarding.

(b) Concentrate skid trails and use logging slash, mats or other techniques to minimize soil compaction and rutting.

(c) Use techniques that minimize soil disturbance, such as backing trees out with machine, using low ground pressure equipment, using equipment with a boom or cable winch.

(d) Maintain the integrity of stream banks.

(e) Minimize the exposure of mineral soil by spreading logging slash and using it to drive over.

(f) Follow Federal mandated stream and wetland crossing procedures.

(g) Ruts cannot be deeper than 12 inches in wetland areas and stream variance areas

(h) Must avoid;1) using de-limbing gates or trees as de-limbing gates in the wetlands or stream variance areas or 2) Leaving tops in stream channels.

6.4.10.4. Slash and Residual Tree Removal

Submit a written plan for disposal of all remaining timber at least 15 days prior to any removal. Indicate the method of disposal and the location. The disposal shall occur in one of the following ways unless the Government otherwise approves:
(a) Chip the debris and haul off Fort Stewart/Hunter AAF.
(b) Chip the debris and use as mulch for landscaping. Chips used for this purpose cannot exceed a depth of 3 inches.
(c) Haul debris to a non-Government landfill off of Fort Stewart/Hunter AAF

6.4.10.5 Clearing and grubbing area must be cleared free of organics to a depth where suitable soil for construction is obtained.

6.4.11. Landscaping:

Comply with the following references:

(a) Specification SECTION 32 93 00, EXTERIOR PLANTS. It is the standard for all Installation-wide landscape plantings.
(b) Plant trees, shrubs and grasses in accordance with Fort Stewart's approved plant list palette (See Appendix I).
(c) Submittals in accordance with Section 01 33 00 SUBMITTAL PROCEDURES shall be provided to the DPW Landscape Architect prior to the installation of any plants, trees, shrubs or grasses for the following:
SD- 04 Samples:
Topsoil - submit one pint
Mulch - submit one pint

SD-06 Test Reports
Topsoil Composition Tests; Soil Test of proposed landscape planting areas
Percolation Test; Percolation Test of proposed landscape planting areas

6.4.12. Turf: All disturbed grass areas not under the building or paving are to be sodded. All other areas may be seeded.

(a) Use Centipede grass (Eremochloa ophiuroides) for low traffic grass turf areas.
(b) Use Zoysia grass (Zoysia spp) for high traffic grass 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. 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 Stewarts'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 Stewart'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:

Fort Stewart is currently implementing an architectural design theme called "Southern Living Station of Choice," implying that the installation has all the amenities that would cause a military service member to request being stationed at Fort Stewart. The architectural characteristics of this theme are reminiscent of the Southern Colonial Revival style. It incorporates specific architectural features such as porticos, verandas, columns, low-pitched hip or gable roofs and regular patterns of fenestration. Building materials such as brick, concrete masonry units and stucco are used and the

range of colors is limited to emphasize earth tones and white. When properly combined, these elements create an architectural image which expresses continuity with Georgia architectural traditions. (See appendix “F”.)

Design Techniques for Consistent Structural Character

Fort Stewart seeks to further achieve consistency in design throughout the visual zones by applying the design preferences of the Southern Living Station of Choice theme. Development of consistent character provides a coherent ‘sense of order’ and ‘sense of place.’ This relationship of design comes from using compatible scale, massing, form, color, texture, materials and fenestration. These design principles are explained in the following paragraphs and the Fort Stewart IDG

(a) Scale, Scale refers to the size of a building façade in relation to humans. Buildings with predominant vertical façades, which dwarf the individual, are defined as monumental in scale. Buildings with more horizontal façades, designed to relate to the size of the human figure, are defined as human scale. Most buildings on Fort Stewart are and should be human rather than monumental scale. Monumental architectural design is typically utilized for more prominent or ceremonial buildings, such as headquarters complexes and worship facilities. These types of buildings make use of large, glazed areas at entrances and oversized fenestration to create a more dominant scale. The new Post Chapel (Bldg. 500) is an example of a monumental-scale building. All new construction on Fort Stewart should be compatible in scale with adjacent buildings. Relief should be provided through roof form, fenestration, building projections, and landscape plantings. Creation of human-scaled buildings on Fort Stewart will be achieved by limiting the height of buildings to no more than three stories, terminating buildings with low-pitched (between 3:12 and 5:12 pitch) hipped or gabled roofs with dormers or gables, and designing buildings with regular fenestration patterns.

(b) Massing, Massing refers to the overall bulk or volume of a building. The size and proportion of individual buildings should be designed to be proportionally compatible with adjacent buildings (see Fig. 8.20 in the Fort Stewart IDG). The massing of the majority of buildings and structures on Fort Stewart is broken up by complex roof configurations, gabled entrance porticos, projecting bays or piers or alternating window and wall bays.

(c) Form, The form of a building is determined by its size, mass, shape, and proportions. The use of similar building forms provides continuity to the installation architecture. The result is a more aesthetically pleasing environment. Low-scale, rectangular building forms are repeated throughout Fort Stewart.

(d) Color, The use of a color scheme that is consistent throughout the installation results in continuity of buildings and contributes to a sense of place. However, color schemes throughout the installation often vary according to the visual zone and visual theme in which the structure is located. Fort Stewart has broadly-defined color schemes for each visual zone in the cantonment area (see Section 8.14 in the Fort Stewart IDG). For instance, the preferred colors (and materials) of buildings in the Headquarters Visual Zone is red (brick) walls and patina green (sheet metal) roofs. New construction on Fort Stewart must adhere to the defined color schemes.

(e) Texture, The use of materials with similar texture in buildings helps to provide visual continuity for the installation.

(f) Materials, The use of the same materials in the exterior finish and trim of buildings help provide visual continuity. Fort Stewart has identified the primary and secondary building materials for walls, wall openings, and roofs for each visual zone. For instance, the preferred materials (and color) of buildings in the Headquarters Visual Zone are brick walls (red) and sheet metal roofs (patina green). Designs for new buildings or structures on Fort Stewart should use the materials listed in the Fort Stewart IDG.

(g) Fenestration, Fenestration is the design and arrangement of windows in the walls of a building. Windows should be similar in design, size, and proportion for architectural compatibility and visual consistency. A regular fenestration pattern and avoidance of continuous bands of windows across entire facades are two of the design preferences for buildings on Fort Stewart.

(h) Building Entrances, Fort Stewart has emphasized prominent building entrances for new construction. This design emphasis creates a definitive sense of entry appropriate to the size or importance of the building. Evidence of this can be seen at both the Soldier Service Center and the Post Exchange (see Figs. 8.23 and 8.24 in the Fort Stewart IDG). This trend should continue.

Building entrances are designed to conform to the following guidelines:

The entrance to a building should be in a prominent location and should be oriented toward the primary adjacent public spaces, such as a courtyard, lawn, parking lot, or street.

The preferred configuration of a primary entrance for a building of large size or importance is a double door entry under a full-height, front-gabled portico supported by classical-style columns. For other types of buildings, the main entrance should consist of a small gabled portico or gabled hood over a double door or recessed entry (see Fig. 8.25 in the Fort Stewart IDG). An entrance should not be barrel-vaulted.

The details of an entrance should be designed to provide continuity with other entrances to the building and the entrances of adjacent buildings.

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 the Fort Stewart IDG for exterior colors that apply to Architectural character at Fort Stewart. 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) Lockset cylinders shall be fully compatible with products of the Best Lock Corporation and shall have interchangeable cores which are removable by a special control key. Cores shall have seven pin tumblers and shall be factory set using the A4 system and E keyway. All locksets and exit devices shall accept the same interchangeable cores.
(c) If the project includes any elevators, provide an elevator inspector, licensed by the State of Georgia, who shall inspect the installation and provide testing of all new elevators and certify in writing that they meet all requirements.
(d) Color match all exterior louvers, vents, exhaust grilles, etc. to the surrounding building finish material, unless otherwise specified by the Installation.
(e) Use standard size brick (or standard size brick veneer) for all exterior brick facades.
(f) Submit exterior finishes for (Installation Master Planning Division, DPW) Government approval (GA).
***3**
6.5.3. ~~Not Used~~ Special Requirements

Provide specific pieces of contractor fabricated, and padded firing platforms similar to existing platforms currently being used at the installation in similar facilities. The General Contractor shall verify the platforms required and include the cost of designing, and providing the platforms.

Provide insulated roll up coiling doors to provide clearance above vehicles being used in training exercises.
Provide dimming capability for lights in EST Classrooms.

6.5.4. INTERIOR DESIGN

Provide a complete CID Design including SID and FF&E as per 01 33 00. Provide interior signage for way finding and safety, including room numbers and names near every entry door to an interior room.

For more specific direction of USACE NAO Interior Design Policies, Procedures, and required format, reference document CENAO-TS-E Design Guide Technical Services Division Engineering Branch Design, Chapter 12 Comprehensive Interior Design (as to date last revised March 2010) and RFP Section 01 33 16 Attachment A for Structural Interior Design (SID) Requirements and Attachment B for Furniture, Fixtures and Equipment (FF&E) Requirements, as well as all inclusive documents within. For federal guidance on CID requirements reference UFC 3-120-10 Interior Design, Operation Order 2009-30, Annex N, Appendix 1, Tab 6 (Furnishings), and Huntsville Center Furniture PMP Guide, as well as all inclusive documents within. A schedule for FF&E and SID submittal must be presented to USACE PM/DTL for approval by USACE Interior Designer before design begins. Schedule shall reflect all milestones including but limited to initial interview with Users, all Interior/design team meetings, submittal and review periods for required submittals, procurement timeline, installation dates and final acceptance date.

6.5.4.1 Project specific additional Structural Interior Design (SID) Requirements:

a) Provide a sign on the exterior side of the mechanical room door that states "In Case of Emergency Call DPW Work Desk at (number to be provided)". Coordinate sign size, font, material, installation method, etc. with signage provided in remainder of facility. Verify accuracy of telephone number prior to fabrication of sign. Sign construction shall be intended for interior installation or exterior installation.

b) In reference to 01 10 00 paragraph 5.3.5.5, provide interior signage that conforms to UFC 3-120-01 Air Force Sign Standards (applies to Army projects). Coordinate all signage requirements, including message content, room numbering, and placement with User and COR. Provide signage for all rooms, unless otherwise noted or directed by the Contracting Officer.
c) Signage shall comply with requirements of ADAAG and UFAS (Uniform Federal Accessibility Standards).
d) In reference to 01 10 00 paragraph 5.3.5.6 window treatment, provide at interior windows where privacy is required, such as an office. Where required, horizontal blinds shall be a commercial grade for heavy use.
e) If wood is required for interiors, it shall be a medium range in color.
f) If incorporated into the building color theme, including Furniture, Fixtures and Equipment (FF&E) components, an accent color shall be used minimally and approved by User/Garrison and Corps of Engineers.
g) Variation of color and/or floor patterns is desired to visually shorten long corridors and add interest.
h) Coordinate type of luster for VCT floor polish with the Officer Representative (COR).
i) In addition to color guidance provided in Section 01 10 00, paragraph 5.3.5.3 Color, provide finish color and pattern selections that help hide soiling. Examples of soiling include, but are not limited to: - boot marks and tracked in dirt on floors - marks and fingerprints on doors and door frames, systems furniture panels, overheads and tack boards, etc.
j) Consider building maintenance, functionality and future flexibility when designing the building interior.

6.5.4.2 Project specific additional Furniture, Fixtures and Equipment (FF&E) Requirements:

(a) Notwithstanding provisions in other sections of the RFP that state the furniture procurement is not included in 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.
(b) To meet the LEED requirements, provide trash and recycle receptacles in a designated area on each floor for all facilities, unless otherwise noted. Do not provide recycle bins in recycle rooms, these will be government furnished/government installed by DECAM.
(c) If required, include artwork or artificial plants in FF&E.
(d) Refer to paragraph 3.4.5.8B/COF Furniture Chart for specific furniture requirements. Note that furniture selection requirements included in 01 33 16 Attach B, paragraph 1.3 Furniture Selection and its subparts include general furniture requirements that are applicable to a variety of different facility types. For example, furniture systems are not required for this facility type.
(e) For admin areas, provide caster chairs with appropriate floor casters.
(f) Coordinate furniture with all electrical/data/com outlets.
(g) At all desks, keyboard trays are required unless requested by the User to be deleted.
(h) Provide lockable desks and workstations, filing cabinets and storage. Key all locks within a one person office the same; key all one person offices within a building differently. If an office or open office area has more than one workstation, key all the workstations differently, but key all locks within an individual workstation the same.
(i) Recommend that case good modesty panels at walls be of a height or be hinged to allow access to building wall electrical outlets and communication jacks.
(j) Case goods shall be steel construction with plastic laminate work surfaces. Storage shall also be steel construction.
(k) Provide LED task lighting where task lighting is required.
(l) Provide conference room tables with grommets and wire management to access power and comm. at the floor.

6.5.4.3 Interior Finishes:

(a) Carpet: : Carpet shall meet all the requirements in the Air Force Interior Design Guide. Carpet shall be loop pile or cut and loop in type 6-6 nylon, carpet tiles. All carpet shall have a minimum density of 6,000. Size shall be a minimum of 24"x24" with a high performance backing system installed with releasable adhesive or a stick on backing system. Large dye lot capacity with clear, crisp colors shall be provided. Transition strips shall be compatible in color with the flooring material and securely fastened. Custom color/design shall not be provided if it increase the cost.

(b) Wall Tile: Wall tile shall comply with Applicable Criteria identified in Paragraph 4. Substrate for wall tile shall be mortar setting bed or cement backer board (gypsum board is not acceptable). Tile shall be impact resistance with a minimum breaking strength for wall tile of 90lbs. Tile shall be impact resistance with materials. Wall tile shall be a minimum of 4"x4" in private areas and larger in common/public areas. Tile shall be a minimum of standard grade and it is encouraged to specify a higher quality in common/public areas.

(c) Floor tile shall be porcelain or have a color through body. Floor tile shall have less than 0.5 moisture

absorption. Tiles shall be unglazed, non-slip and cushioned edge; suitable for heavy traffic. Provide base of same or suitable material. Tile shall be impact resistant with a minimum breaking strength for floor tile of 250 lbs. Tile shall contain low VOC emitting, recycled, and/or bio-based materials. Floor tile shall be Class IV, heavy traffic, durability classification as rated by the manufacturer. Tile shall be a minimum of standard grade/color and it is encouraged to specify a higher quality in common/public areas. Provide marble threshold under doors where ceramic tile floor meets a different floor finish. Floor tile shall be a minimum of 8"x8" in private areas and 12"x12" in common/public areas.

(d) Resilient Flooring: Resilient flooring shall be an ungraded type of vinyl composition tile, Class 2, through color/pattern and composition, 12"x12"x1/8" thickness as a minimum. Installation of flooring shall be per manufacturer's instruction, and shall include all necessary accessories. Solid color tile shall not be used.

(e) Paint: Paint shall have an eggshell finish on the walls and satin finish on the trim throughout the facility. Paint should have low VOC, be water based and not contain lead, chromate, asbestos and mercury. Spray on application shall be used. Paint shall have a minimum of 8,000 scrubs to failure for durability. Interior walls of EST Classrooms shall be painted Flat Black.

Interior building signage requirements: No additional requirements.

6.6. STRUCTURAL DESIGN

6.6.1. Foundation

Treat sub-grades under all facility foundation to resist subterranean and other wood destroying insects known to exist in the vicinity of the site. Such treatment shall be in accordance with the environmental criteria referenced in this document.

6.6.2. Slabs on Grade

Provide all interior slabs on grade, including storage and mechanical rooms, garages, and carports with a moisture vapor barrier consisting of lapped polyethylene sheeting having a minimum thickness of 6 mils and a minimum 4-inch thick capillary water barrier. Provide capillary water barrier of clean, washed, sand, poorly graded rock, crushed gravel, or natural gravel. Conform to ASTM C 33 for fine aggregate grading with a maximum of 3 percent by weight passing ASTM D 1140, No. 200 sieve (wash), or coarse aggregate size Nos. 57, 67, 7, 78, or 89.

6.6.3. Structural Loading

(a) For Seismic and Wind Load Analysis, the occupancy factor shall be II, as indicated in the most recent version of ASCE 7.
(b) The wind analysis shall be based on a minimum design wind speed of 110 mph for Ft Stewart and 120 mph for Hunter AAF.
(c) For seismic design (Site Class B), the maximum considered earthquake (MCE) spectral response acceleration at short periods and 1 second period shall be, Ss= 29 %g for Ft Stewart and 38 %g for Hunter AAF and S1 = 10 %g for Ft Stewart and 12 %g for Hunter AAF..
(d) Snow load is Zero.
(e) Roof Live Loads (20 psf minimum)
(f) Frost Penetration is Zero.

6.7. THERMAL PERFORMANCE

No additional requirements

6.8. PLUMBING

6.8.1 In all toilet areas requiring water closets, provide elongated floor mounted vitreous china flush tank type with vitreous china lid with rear discharge.

6.9. SITE ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.9.1. General.

Provide site development work as shown on the drawings and as described in this RFP.

6.9.1.1 .See Appendix C: UTILITY CONNECTIONS for additional information and points of contact.

6.9.1.2 Hold site coordination meetings at the start of design and when necessary thereafter. Meet with all applicable parties, including the installation Network Enterprise Center (NEC), the privatized electric Utility Company, the local cable television (CATV) company, and the Contracting Officer's Representative (COR). Address all design, demolition, and construction work including schedules, capacities, equipment selection, equipment locations, utility routing, connection points and final connection responsibilities.Route all coordination including exchanges of information between the Design-Build Contractor and the installation DPW, NEC, the Utility Company, the local CATV company information and other utility entities through the COR. Coordinate the installation of all privatized utilities to avoid conflicts and ensure all utilities are in place prior to landscaping

6.9.2. Exterior Electrical Distribution System

6.9.2.1. Primary Service General

Canoochee EMC owns, manages, and maintains the primary distribution system at Ft. Stewart The existing primary power distribution system is a 24900/14400 volts, three-phase, four-wire, grounded wye system. The Utility Company will design and construct site electrical primary distribution infrastructure, cabling, equipment, provide and install meters, and the service transformer(s). The Utility Company will install secondary service cable from the point of metering to the service transformer. The Utility Company will demolish existing exterior primary lines and equipment no longer required on the project site(s). For all services, the utility will install the cable terminators and connect to the transformer. The Utility Company's work will be under separate contract with the Government and is not part of this contract.

6.9.2.2. Coordination of Schedules. Develop a schedule with the Utility Company concerning transformer delivery times and any offsite utility upgrade projects required to provide power to this project. Coordinate all schedules to insure that all projects are completed without compromising the Beneficial Occupancy Date.

6.9.2.3. Outages. Schedule outages on the existing systems for off peak times (nights and weekends) and obtain approval from DPW. Give a minimum of 2 weeks advance notification of outage. Make full preparations before the outage, in order to minimize the downtime duration.

6.9.2.4 Secondary Service and Exterior Circuits.

(a) Design and construct the site electrical secondary distribution (e.g., site electrical service entrance ducts, site electrical service entrance conductors between the building service equipment and the point of metering, and site feeder and circuit conduit and conductors for sump pumps, irrigation pumps and other electrical and mechanical equipment).
(b) Coordinate the location for the meter with the Utility Company. Services requiring greater than a 600 amp capacity are typically metered at the service transformer.
(c) Secondary service duct-lines shall be direct-burial, thick wall type, Provide concrete encasement in areas subject to vehicular traffic. Transitions from below-grade to above-grade shall be galvanized rigid steel. Fittings for steel conduit shall be steel threaded or compression type. Secondary service duct-lines shall include a minimum of one spare duct, sized to match the filled ducts.
(d) Provide a 1-inch conduit from the electric utility meter to a data collection point located inside the building communications room.

6.9.2.5 Service Transformer. Furnish demand load data to the utility and the COR in a timely manner to facilitate Utility Company's transformer procurement. Determine the secondary voltage and provide that information to the Utility Company. Obtain transformer impedances from the Utility Company to perform electrical calculations Coordinate the location of the service transformer with the Utility Company. The local utility company will provide and install the service transformer.

6.9.2.6 See Appendix FF, For CANOOCHEE EMC PROJECT RESPONSIBILITIES and GENERAL CONTRACTOR INSTALLATION REQUIREMENTS and Appendix GG EMC Demarcation for additional information. The Contractor (identified as GC in the appendices) shall comply with all requirements within these appendices unless otherwise indicated.

6.9.3 Exterior Lighting

6.9.3.1 Design all site lighting within the project site. The design shall comply with the recommendations of the Illuminating Engineering Society of North America (IESNA) and shall be based on standard full-cutoff fixtures of the Utility Company

approved for use at Fort Stewart. Coordinate the lighting design and conduit routing with Canoochee EMC to ensure timely procurement and installation of equipment by the Utility Company. See Appendix FF for additional exterior lighting design and construction responsibilities and Appendix GG for EMC Demarcation Line.

6.9.3.2 The Utility Company owns and maintains site lighting, defined as all exterior lighting outside of the building 5 foot line, Site lighting includes but is not limited to roadway, walkway, parking, hardstand, physical training (PT) field, sports and area lighting.

6.9.3.3 The Contractor is responsible for design and construction of exterior lighting mounted on the new buildings. Wall mounted site lighting fixtures shall be the fully shrouded, full cut-off type, compatible with the building architecture. The Contractor is responsible for lighting of walkways within 5-feet of the building. Lighting shall be controlled automatically.

6.9.3.4 Calculate the site lighting power densities and demonstrate compliance with the requirements of ASHRAE 90.1 and LEED (where applicable). Coordinate with the Utility Company to obtain information required to calculate the site lighting power densities.

6.9.3.5 The Utility Company will demolish existing lighting structures and associated site conduit and wiring no longer required on the project site(s).

6.9.3.6 All Electric Utility Company work will be under a separate contract with the Government. Such work is NOT part of this contract.

6.9.3.7 For additional guidance regarding the separation of responsibilities between the Contractor and the Utility Company (Canoochee EMC), see Appendix FF, For CANOOCHEE EMC PROJECT RESPONSIBILITIES and GENERAL CONTRACTOR INSTALLATION REQUIREMENTS and Appendix GG EMC Demarcation for additional information.

6.9.4. Exterior Communication Services

6.9.4.1. Coordinate and obtain approval for the telecommunications design from the NEC Quality Assurance Officer prior to construction.
***2**
6.9.4.2 Connect to the OSP, extending a new duct-line, manhole and cable system to the building main communications room. Coordinate the sizes and quantities of the conduits between manholes with the installation NEC. Terminate cables on protected entrance terminal blocks in the building main communications room. Coordinate the duct bank and OSP cabling design and construction with the installation NEC. The NEC will provide location of duct bank and OSP cabling connection point. Coordinate design with the Network Enterprise Center (NEC) Quality Assurance Officer. The NEC and the US Army Information Systems Engineering Command (ISEC) must concur with the design prior to construction.

6.9.4.3 All duct-lines shall include one duct with 3-way Maxcell inner-duct.

6.9.4.4 Provide a minimum of 4 weeks advance notification to NEC through the COR prior to any demolition of communication lines or equipment. See Appendix C: UTILITY CONNECTION INFORMATION for additional information.

6.9.4.5 Provide 50 feet of service loop at the building communications room and in each manhole and hand hole. Tag all cables.

6.9.5. Cable Television (CATV) Service

6.9.5.1 Comcast Cable is the local cable television (CATV) company at Fort Stewart. Comcast will provide and install service cabling throughout the project site, terminating at the head-end equipment in each building under separate contract with the Government. That work is not part of this contract.
***3**
6.9.5.2 Coordinate site work and site/facility interfaces with Comcast Cable. Coordination shall include interface requirements between the building CATV system and the site CATV system. Provide CATV outlet at the 3 locations indicated on the concept floor plans and at other locations as required by the RFP.

6.9.5.3 Comcast will provide and install head-end equipment. Coordinate head-end equipment locations with Comcast and NEC.

6.9.5.4 Extend one 4-inch duct from the CATV backboard location to a location specified by Comcast.

6.9.5.5 See Appendix C: UTILITY CONNECTIONS for additional information and points of contact.

6.9.6 Cathodic Protection. Obtain soil resistivity data on site to assist in determining the cathodic protection requirements.

6.10. FACILITY ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.10.1. Telecommunications Systems

6.10.1.1. LAN hubs and other communication electronics shall be Government-furnished, Government-installed (GFGI); all other equipment shall be Contractor-furnished, Contractor-installed (CFCI). Connect the BCS with the outside plant (OSP) Notify the Contracting Officer and the NEC Quality Assurance Officer 14 days prior to connection between the BCS and OSP. Representatives of the Contracting Officer and the NEC Quality Assurance Officer will witness the connection.

6.10.1.2. Coordinate design with the Network Enterprise Center (NEC) Quality Assurance Officer. The NEC and the US Army Information Systems Engineering Command (ISEC) must concur with the design prior to construction. See Appendix C: UTILITY CONNECTIONS for NEC points of contact.

6.10.1.3 See Appendix DD for specific requirements and layout of EST Classrooms.

6.10.1.4 Communication Jacks shall be color coded as follows: Voice - White, Data/NIPRNET – Blue and SIPRNET – Red

6.10.1.5 Coordinate mounting height(s) of outlet(s) required with mounting height of device (CATV, power, data etc.), being provided.
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6.10.1.6 Provide one 8-pin modular (RJ – 45 type) connector in a single gang outlet faceplate with mounting lugs, labeled voice use in the break room.

6.10.2. Intrusion Detection System

6.10.2.1. Where an Intrusion Detection System (IDS) is required by paragraph 3, the Design-Build Contractor shall provide power, communication, and signal circuits including all wiring, conduit, and boxes for the IDS system. The Government will provide and install the actual sensors (door alarm sensor, passive infrared motion sensor, and the duress alarm sensor, etc) and the Control Unit.

6.10.2.2. Provide a dedicated 20A, 120VAC circuit with a ground wire to the IDS Control Unit enclosure. The conduit for the IDS telephone line shall originate at the communications backboard and terminate in the IDS Control Unit enclosure. The enclosure shall be GFCI. Coordinate with the Physical Security Division (912) 767-8490.

6.10.2.3. Each alarm sensor shall report to the IDS Control Unit. Wiring for the balanced magnetic switch (door alarm sensor) and the duress alarm sensor(s) shall each be a 22 AWG, 2-conductor, stranded wire. Wiring for the PIR motion sensor(s) shall be a 22 AWG, 4-conductor stranded wire. Terminate wiring and conduit for the door alarm sensor near the opening side of the door, adjacent to the ceiling with a 4-inch square metal box. Coordinate locations and connection points with the Installation Physical Security Officer during design. Coordinate the IDS requirements including final sensor box locations with the Fort Stewart Physical Security Division (912) 767-8490. The Government's ICIDS contractor will complete the installation of the sensors and program the control unit to put the system on-line at the monitor station.

6.10.3. Cable Television System

6.10.3.1. Where cable television (CATV) is required, design and install the complete building CATV system in accordance with the I3A. Provide cable television outlets in each reception area, private office, open office, lounge, conference room, training room, classroom, snack bar and elsewhere as appropriate.

6.10.3.2. Coordinate CATV requirements with the local CATV company, Comcast Cable. Coordination includes interface requirements between the building CATV system and the site CATV system. See Appendix C: UTILITY CONNECTIONS for Comcast points of contact.

6.10.3.2 Coordinate mounting height of outlet(s) with mounting height for TV.

6.11. HEATING, VENTILATING, AND AIR CONDITIONING

6.11.1. Utility Monitoring and Control System (UMCS)

Integrate the control system to the installation's existing UMCS. The existing UMCS is a Johnson Controls (Metasys) UMCS, which is a web-based system. The UMCS is located in Building 1134 and is capable of handling both BacNet and LonWorks protocols. The point of contact for UMCS is Energy Engineer, Mr. Fred Lewis (912-767-5034). The building level controllers shall utilize LonWorks technology. A contractor certified by Johnson Controls (Metasys) shall install and integrate the building control system. Submit certification documentation for the proposed control system. Before starting the design, meet with the operating staff to discuss the installation's requirements for graphics and programming.

6.12. ENERGY CONSERVATION

6.12.1. 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 renewable energy features are included in this project.

6.13. FIRE PROTECTION

6.13.1. The building fire alarm and detection system (FADS) shall be an addressable Class A system fully compatible with the base-wide Monaco D21 central fire alarm system. Coordinate fire alarm zone descriptions and number with the fire department. The FADS shall include an integrated radio transceiver, Monaco BT-X or approved equal. Manual pull stations shall be metal, double action type, and shall not use break rods. Key the FADS to the LS-300 keying standard in all cases. Coordinate the fire alarm requirements with the Fort Stewart Fire Chief [Donald Hollis at (912) 767-2636, email address: mailto:donald.hollis2@us.army.mil.

6.13.2. Provide a Knox 3200 Series recessed wall mounted key vault for Fire Department use at each building exterior. Locate adjacent to the main building entrance. Coordinate purchase of key vault through the Installation Fire Department for purchase order information and forms.

6.13.3. Provide an exterior post indicator valve with tamper switch reporting to the fire alarm control panel (FACP) on the sprinkler service main.

6.13.4. Protection of Piping Against Earthquake Damage: Protect sprinkler and fire pump piping systems against damage from earthquakes. Seismic protection shall include both flexible and rigid couplings, sway bracing, seismic separation assemblies where piping crosses building seismic separation joints, and other features as required by NFPA 13.

6.13.5. Fire Pump: Determine if a fire pump is required based on fire flow test data and fire protection system design requirements. If a fire pump is required, provide a complete fire pump system installation.

6.13.6. Fire Extinguisher Cabinets and Brackets: Provide semi-recessed cabinets in finished areas and provide brackets in non-finished areas (such as utility rooms, shops, and vehicle bays). Note the location of cabinets and brackets on the architectural drawings. Fire Extinguisher cabinets and brackets shall accommodate a minimum 10-pound ABC extinguisher.

6.13.7. Mass Notification System (MNS): Provide a combined system or equivalent that performs both as an individual building MNS and as the building Fire Alarm voice evacuation system.

6.13.7.1. The MNS shall be fully compatible with and integrated into the base wide Mass Notification System manufactured by Acoustic Technology Inc. (ATI) and shall be capable of accepting all pre-recorded messages as well as live messages from a remote site by way of dry contacts and 600 ohm audio inputs.

6.13.7.2. Coordinate work and site/facility interfaces with ATI Systems. Procure and install the ATI interface ATI Systems uses a wireless Motorola radio system. Coordinate interface requirements between the building MNS system and the site MNS system. Key the MNS to the LS-300 keying standard in all cases. The ATI Systems point of contact for procurement and installation is Antonio Cracchiolo at (617) 567-4969 x307. The contact for coordination of the tie-in at Fort Stewart is Eric Waters at (912) 767-3417

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6.14. SUSTAINABLE DESIGN

6.14.1 LEED Rating Tool Version. This project shall be executed using LEED-NC-Version 2.2 and has been approved to obtain formal LEED certification. All costs associated with the obtaining formal LEED certification for this project shall be the contractor's responsibility.

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Revise RFP paragraphs as noted below:

Paragraph 4.2.11: Replace “US Army Information Systems Command (USAISEC) TG for the Integration of SECRET Internet Protocol (IP) Router network (SIPERNET) with “SECRET Internet Protocol (IP) Router Network (SIPRNET) Technical Implementation Criteria (STIC).

Paragraph 4.2.11.1 Delete paragraph in its entirety and substitute “ Specification for Section 27.05.28 PROTECTIVE DISTRIBUTION SYSTEM (PDS) FOR SIPERNET COMMUNICATIONS SYSTEMS found the following URL: https://rfpwizard.cecer.army.mil/HTML/docs/Refs/SECTION_270528-v3.pdf